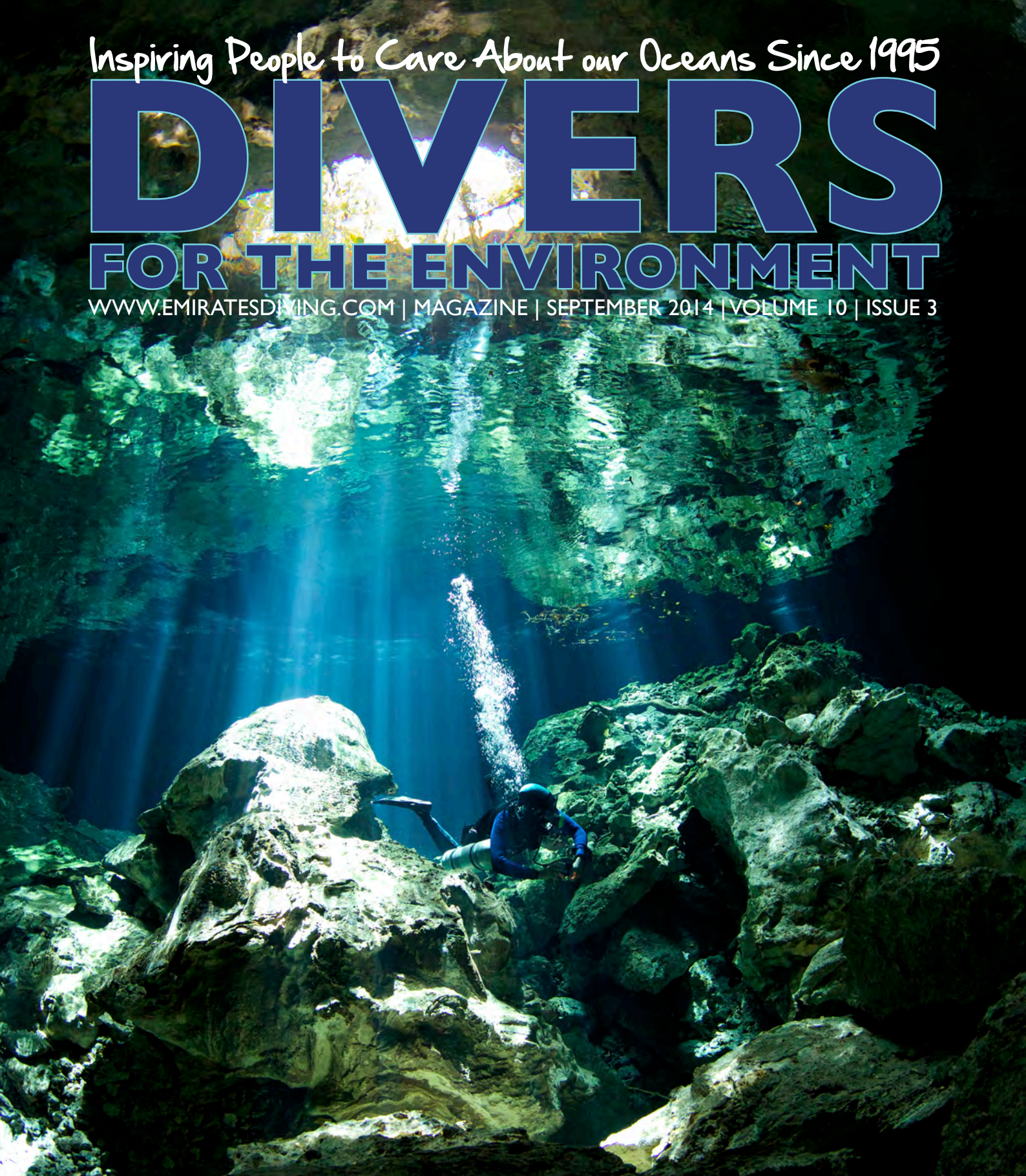
Inspiring People to Care About our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | SEPTEMBER 2014 | VOLUME 10 | ISSUE 3



CHASING THE LIGHT
DIVING MEXICAN CENOTES

EDA MEMBER DISCOUNT OFFERS • FREEDIVINGUAE IS ON A MISSION • **UAE DOLPHIN PROJECT** • THE DTRP CELEBRATES TEN YEARS • **MAFIA ISLAND** • DIVERS ALERT NETWORK

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Emirates Diving Association

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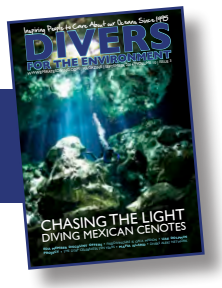
DIVERS FOR THE ENVIRONMENT

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 December 2014. Send all articles, feedback or comments to: **magazine@emiratesdiving.com**

EDA COVER

PHOTO BY SIMONE CAPRODOSSI



REDUCE REUSE RECYCLE

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DUSTERS AT THE READY, IT'S CLEAN UP ARABIA TIME!

IBRAHIM N. AL-ZU'BI
EDA Executive Director

As the summer is stubbornly but slowly starting to subside, it is my great pleasure to present to you our September issue of 'Divers for the Environment'. As always, you will enjoy reading articles we received from our loyal readers, fellow divers and friends; including those from various diving sites around the world who send in their experiences or advice to other divers and keep us updated on international diving and marine environment and conservation events.

It's been a busy summer so far for the EDA team – we've been working with local authorities to promote for diving among the younger generations, in the hope to encourage them to become passionate about marine conservation from a young age. In collaboration with the General Authority of Sports and Youth Welfare, we hosted more than 50 students a day from 11th of August till the 28th of August as part of "My UAE Summer 2014", this activity officially inaugurated our newly furbished members multi use hall in the diving village.

It's that time of year again for EDA's annual Clean up Arabia! Going strong in its 19th year, the event will start on the 31st of October and run until 7th of November. I am sure you are excited to join us all over the Gulf region to ensure we do the best we can to keep our oceans and beaches as clean as possible. The campaign is organized in collaboration with the Ocean Conservancy who will start the global campaign this September. Looking forward to seeing you all there and a big thank you in advance to all our clean up volunteers and of course, sponsors. We couldn't possibly achieve so much without your support.

As some of you may know, EDA is a Reef Check (RC) Training Facility .The Global Diving and RC movement are using tools such as 'Divers for the Environment' to promote and share their work, so I am sure you will enjoy reading our Reef Check news and finding out what your fellow divers are up to in other countries.

Thanks to our good friend Simone Caprodossi, underwater photography enthusiasts will be reading all about his adventure chasing the light whilst diving in Mexico. I would also like to thank Mohamed Abdulla for his 'Diving in Lembeh' article. The cover of our June issue of "'Divers for the Environment" was Mohamed's winning photograph from Digital Online, EDA's Underwater Photography and Film Competition, so we're happy to see more from him in this issue too, especially sharing his international diving experience with us.

Finally, I want to remind you to follow us on twitter twitter.com/EDA_UAE and send us your tweets! You can also like us on Facebook and share your thoughts, stories, experiences and photography! Your support and contribution to our social media platform encourages others to join us as environmental and diving enthusiast, so please do keep on supporting and sharing with us.

I hope you have all managed to escape the heat and explored somewhere new this summer. It's a wonderful world, so if you haven't managed to go off exploring just yet then make sure you get a chance in October for the Eid break. Eid Adha Mubarak in advance, and as always happy eco diving.

Dive Safe!

Ibrahim Al-Zu'bi

EDA MEMBER DISCOUNT OFFERS




Calling all scuba lovers to join an exclusive journey to a five star safari under the sea! Located in the Maldives' first ever UNESCO Biosphere Reserve, the resort is home to a vast array of marine life. With the resorts remarkable 360° reef system and three fantastic underwater caves, there is no better place in the Maldives to explore the waters to your heart's content.

PRIVILEGES:

- International buffet breakfast at The Market restaurant.
- One PADI adventure dive with full equipment and boat.
- One guided snorkel on the house reef.
- Wi-fi, Nespresso coffee, drinking water and Molton Brown bathroom amenities.

TERMS & CONDITIONS:

- Rates are subject to 10% service charge, 8% GST and mandatory Maldivian bed tax of USD8 per person per night regardless of age (subject to change).
- Subject to space and rate availability.
- Mandatory seaplane or domestic transfers will be arranged by the resort at an additional charge.
- Children below 12 stay, play and eat free of charge.

HOTEL DESCRIPTION

Dusit Thani Maldives blends graceful Thai hospitality with the unparalleled luxury setting of the Maldives. Encircled by white sandy beaches, a stunning 360 degree house reef and a turquoise lagoon, the luxury resort on Mudhdhoo Island in Baa Atoll – the Maldives' first ever UNESCO Biosphere Reserve – is just 35 minutes by seaplane from the capital Malé and 10 minutes by speedboat from the Dharavandhoo Domestic Airport in Baa Atoll.

At Dusit Thani Maldives, the elegance of contemporary Thai interiors are carefully integrated with traditional Maldivian architecture. The 100 villas and residences each offer a haven of modern sophistication with luxurious amenities and cutting-edge technology. The 122sq.m Beach Villas offer generous living space and wide vistas of the lagoon beyond. Fifteen Beach Villas have private pools. Lagoon Villas with Pool are up to 150sq.m of spacious living, with beach and lagoon access. Dive into the lagoon from 178sq.m Ocean Villas with Pool, complete with spacious deck, private pools, daybed and sala. The two-bedroom Beach Residences with Pool (570sq.m) and Ocean Pavilions with Pool (250sq.m) offer gracious living with larger private pools, and both indoor and outdoor dining facilities.

Home to marine life including eagle rays, manta rays, a variety of turtle species and the endangered whale shark, the remarkable house reef encompasses the island, allowing guests to swim the 360-degree faroe reef system and three underwater caves alongside the schools of bannerfish and big eyed trevallies.

For guests who don't know their manta ray from their monkfish, but would like to, the islands onsite Marine Biologist, Lauren Arthur, is on hand to talk them through Baa Atoll's phenomenal marine biodiversity. And for those who really want to take advantage of their unique vista, there is once in a lifetime opportunity to explore the reef during the day and night, join reef clean ups and monitor sea turtle nesting habits whilst staying at the resort.

FOR EDA MEMBERS
Dusit Thani Maldives are pleased to offer a 15% discount for all EDA members on their existing Aquatic Magic Package. In addition, all EDA members will also get a 20% discount on all activities at their Dive Centre.

The Dusit Thani Maldives has created a dedicated promotions code:
PROMOEDA

You will find the special rate 'EDA Aquatic Magic' whilst booking online. You must show your EDA membership card whilst there.

Valid Until: 26th December 2014

Dusit Thani Maldives
P.O. Box 2188
Mudhdhoo Island
Baa Atoll
Republic of Maldives

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Website: www.dusit.com/dtmd

For over 25 years, the NiMAR brand has been synonymous with underwater photography and camcording.

The company was set up in the Eighties as part of a company based in Correggio (Reggio Emilia – Italy) in the forefront in the plastics industry.

In the following years, it manufactured the first underwater Video 8 camera housings and also made a name for itself on the market thanks to cooperation with prestigious brands in shooting No Limits free-diving record attempts.

At the same time, it developed a line of products dedicated to underwater photography and exported its brand worldwide. It has recently officially teamed up with Nital S.p.A. to make a new series of underwater housings for large-scale distribution.

As in the past, today NiMAR's strong point is the experience of its team and the company continues to invest in research and innovation to provide its customers with ongoing quality and reliability.

FOR EDA MEMBERS
NiMAR is offering EDA Members a 5% discount for the purchase of their products.

You will find all the info about the product line directly on the official website: **www.nimar.it/index_e.asp**

Valid Until: 31st December 2014

5% Purchasing Discount for all items shown on their web shop:
www.nimarshop.com/en/

NOTE: When making an order, EDA members need to send an e-copy of their EDA Membership Card to get the discount.

Do not hesitate to contact the company for further information.

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Youtube: www.youtube.com/Nimarsrl
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THE EDA HALL OFFERS A PLACE TO LEARN

EDA, along with The General Authority of Youth and Sports Welfare, Heritage/Diving Village, The Dubai Art and Culture Authority, Dubai Police and The Technical Dive Centre (TDIC) hosted 50 children per day from the 11th – 28th August at the newly furbished EDA Hall for the government initiative called 'Saif Belady', My UAE Summer. Talks were given about diving and a video was shown on the pearl diving heritage. After the presentation, they were free to admire the pearl diving equipment and modern day diving gear display.

ABOUT SAIF BELADY – MY UAE SUMMER

In line with the directions of His Highness Sheikh Khalifa bin Zayed Al Nahyan – President of the UAE, His Highness Sheikh Mohammed bin Rashid Al Maktoum – UAE Vice President and Prime Minister and their Supreme Council Members and Rulers of the Emirates, a program was developed to care for the youth and to develop activities to fill their leisure time during the summer months.

The Ministry of Culture, Youth and Community Development and The General Authority of Youth and Sports Welfare developed the National Program for My UAE Summer's activities with the collaboration of strategic partners, shareholders and supporters of the program. The basis of the vision is geared towards the continuous development to achieve goals which are compatible with the objectives of the federal government in order to achieve Vision 2021.

EDA VISITS ABU DHABI SUB AQUA CLUB

EDA was invited by the members of the Abu Dhabi Sub Aqua Club on the 9th June 2014 to give a presentation about EDA's various projects and activities. The dive club is located within The Club in Abu Dhabi which is a complete family entertainment centre with beach, sports and health complex and with a variety of restaurants and bars.

Before the presentation began, a couple of the members gave EDA a grand tour of the facilities of the dive club which were fantastic. The atmosphere in the room was friendly and relaxed and around 15 people attended the presentation. The talk ended with a Q&A session and the latest issue of the EDA magazine was given out to all the attendees, with extra copies to keep at the Club's library.

DEBRIS MONTH OF ACTION: THE FIGHT AGAINST MARINE DEBRIS CONTINUES

September is Project AWARE's Debris Month of Action – a time when thousands of scuba divers around the world unite to take action against the rubbish from our everyday lives that makes its way to the ocean. Marine debris consists of litter such as plastic bags, food wrappers and drink bottles as well as enormous fishing nets, cars and industrial waste. It's unsightly, costly for local communities and endangers some of our most vulnerable underwater species.

During Debris Month of Action, volunteers will once again come together in their favorite local dive sites to remove and report the trash we find underwater. Divers can find events located across the globe or download tools and tips to conduct a Dive Against Debris survey anytime, anywhere at projectaware.org.

"Marine debris kills countless marine species silently and needlessly each year. But divers are using their unique skills to fight back and contribute the underwater debris data needed to show the true extent of the marine debris problem and devise solutions," says Alex Earl, Executive Director, Project AWARE.

As shown on the new interactive Dive Against Debris Map launched in April 2014, plastics constitute nearly 70 percent of the trash removed and reported since June 2011. Globally, we produce and consume more than 230 million tons of plastics every year. That's almost two hundred times as much as we did in 1950. Far too much of that plastic ends up in the ocean, killing marine life and destroying habitats.

"By visualizing the types and amounts of debris divers are reporting on the online map, Project AWARE is aiming to connect like-minded advocates, inspire year-round action to remove and report underwater trash, and show the extent of the problem from a unique, underwater perspective," said Ania Budziak, Associate Director of Science and Policy for Project AWARE. "But beyond that, in longer term, we hope to use the information divers report to implement waste management policies at various scales – national, regional and global – necessary to prevent debris from reaching the ocean."

To aid the organization's underwater efforts, Project AWARE has recently launched a PADI approved course – Dive Against Debris Distinctive Specialty – to help train and equip scuba divers as citizen scientists. Divers receive the necessary skills and become certified with PADI, a globally recognized dive training organization.

Volunteers can find out more about Debris Month of Action and volunteer opportunities to help protect the ocean on Project AWARE's website, **projectaware.org**. Want to find out more about the types of trash found in your local waters? Visit the Dive Against Debris Map at **projectaware.org/DiveAgainstDebrisMap**.

SARA CAMPBELL: WORLD-CLASS FREEDIVER

96m World Record. Photo by Blue Eye FX Productions

Sara Campbell is an amazing world-class freediver. Alex Boulting (Co-Founder and Owner of FreedivingUAE) interviews Sara Campbell, a four times freediving World Record holder and the deepest (unofficial) CWT dive by a woman on one breath ever to 104m. Sara discusses her unique approach to coaching individuals in freediving at her 'Discover Your Depths' practice in Dahab, Egypt.

ALEX: So, let's start off by talking about your 'Discover Your Depths' coaching workshop apprenticeship program and the distance coaching that you offer. And, how they differ from your usual AIDA courses.

SARA: 'Discover Your Depth' I suppose as a name really summed up what I was experiencing myself and what I felt I could share with other free-divers. So not just the physical experience of depth that we get when we're in the water, but the very personal experience of depth. Because I think most of us spend our lives just "scratching the surface" of who we are and what we're capable of and either don't have the opportunity or the courage or the time to really explore ourselves in more depth. So what I'm doing is not purely free-diving, but it's really much more of a personal journey. It's about transformation and using the water actually as one of the tools of transformation alongside yoga and meditation and Pranayama.

ALEX: I just wanted to explore a bit more about what you mean by, "intuitively" working with students?

SARA: Yeah, I mean obviously when you're working in the way that I work, nothing comes out of a box. You know that the AIDA courses are great because they give people a really solid basis for good techniques and safety practices in the water. But you know very often, you have a group of four or five students and two-thirds of them will be doing great and one of them will really struggle and have issues. And, that for me – that really is the person that gets interesting. I mean, obviously equalization problems are kind of set aside. But it's the fear and the emotional side of freediving. Because when we get in the water and we're holding our breath, we are triggering a whole load of subconscious issues and fears that we carry with us unknowingly a lot of the time and the water brings them out.

When I talk about working "intuitively", it's really each one of us is an individual and comes to the water with a completely different history and background. For me the fascinating thing is that water shows me very clearly what is going on for people. I can see fairly rapidly you know, if someone has issues with control, or someone has issues with trust, or if somebody has issues with self-esteem. These really, really show up very, very strongly when I work with someone in the water. For me the interesting part is not whether they've got a perfect finning technique, or whether they can get to 50 meters as opposed to 30 meters, but it's the personal side of the journey that they go on; of actually seeing themselves more clearly; and being able to go on and move through some of those things that may have been holding them back in life before they were, or possibly even were not aware of in the past.

ALEX: Is that why you define it as "coaching" rather than "instruction"?

SARA: I think, you know, instructors are teaching a syllabus – which is set and either the student is able to fulfill the requirements of that syllabus or they are not. As the Coach you are understanding the person in front of you – where they are trying to get to and it's not always about records with everybody, or new depth. So, you're trying to understand where they are getting to and also how to get them there. There is no syllabus which gives you that information. You really have to base your teaching, your instruction with that client on your own experience – not just in the water – but your life experience. For me of course, I draw very, very strongly on yoga teachings and my own yoga practice and meditation practice.

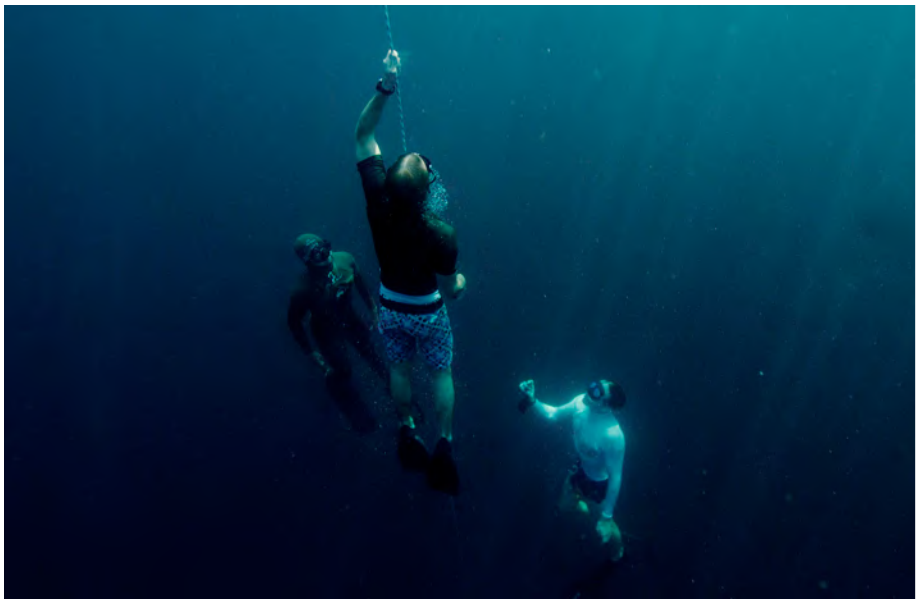
ALEX: What was it that attracted you to work as a Coach?

SARA: Initially, I remember in 2007 when I was just churning out National Records and came up with the World Records, that people would often ask me how do you do this? And, I couldn't actually put my finger on it; I thought that I was doing what everyone was doing. I hadn't really taken apart what it was that I was doing, if there was anything that was different. In 2009 I started to get requests for Coaching; to teach mouth-fill. When I started teaching mouth-fill, I was looking at what people were doing and what I was doing. I realized that instinctively I had been using a whole lot of yoga and meditation techniques just simply because they came so naturally to me. They were already a big part of my life. I didn't really separate the yoga from the freediving at all. When I started to see that, actually what I'd been doing was really quite radically different to what I had experienced and that I had believed people to be doing around me. I realized that I could make a difference and that was when the excitement really came in for me. That yes, I can teach people how to dive, but I can also give them a greater experience of themselves. That's where my passion is: it's seeing the personal transformation that occurs when somebody comes to dive with me – or comes to practice yoga or meditation with me. It's not all about being in the water necessarily. That's what really, really excites me and is the passion behind what I'm doing. There's a lot going on right now behind the scenes. Yeah, it's the personal transformation.

You can listen to the full interview here **www.freedivinguae.com/Sara_Campbell_Interview**

For more information on Sarah's 'Discover Your Depth' practice, you can visit her website **www.discoveryourdepths.com**

FREEDIVINGUAE IS ON A MISSION TO RECRUIT FIT, MOTIVATED EMIRATIS FOR THE NEXT FREEDIVING AIDA WORLD CHAMPIONSHIPS



FreedivingUAE, a local freediving academy founded in 2009, are recruiting fit, motivated Emiratis with some snorkelling or scuba diving experience and who are up for a tough challenge. These Emiratis will go on a journey to become part of the freediving elite during an unforgettable adventure to help bring back some of the glory of the UAE's rich pearl diving history. "We think there are lots of potential Emirati freedivers who would be up for this challenge," says Alex Boulting, co-founder of FreedivingUAE.

The UAE seems the natural place to set such a challenge since pearl diving brought wealth to the region before the discovery of oil. The only thing FreedivingUAE needs are people who can dedicate 6 months of their life to achieve something amazing for their nation whilst leaving a legacy for future generations of freedivers in the process. Thirty Emiratis have already expressed an interest in becoming future National Champions during the initial stages of recruiting.

The excitement from the Emiratis who have submitted their application is evident from the reasons they gave for wanting to participate. One applicant stated, "I am so addicted to the sea. I can't spend a few days without having a dive, even in the coldest of days I would still dive and it's a dream to dive professionally like a fish." While another is quoted as saying, "Freediving has taken me to places I never imagined I would see. Pushing myself to the limit is hard without any help and expertise showing me the way to accomplish my goal in breath hold and deep diving."

"Even though we've received some amazing applications, we want to extend the opportunity to more Emiratis," says Boulting. He invites interested applicants to visit **www.freedivinguae.com/60-in-6**.

You can also listen to Alex Boulting being interviewed about the challenge here: **www.freedivinguae.com/future-uae-freediving/**

WHO ARE FREEDIVINGUAE?

Of course, a great challenge not only needs great competitors but also great trainers to help them reach their goal. FreedivingUAE was co-founded by Adel Abu Haliqa (previous UAE National Freediving Champion) and Alex Boulting (AIDA Instructor Trainer) in 2009. Since 2009 FreedivingUAE have trained 6 more AIDA instructors who all contribute to this challenge. FreedivingUAE is a professional community of freedivers who have a passion for passively exploring the underwater world. Freediving UAE is the only company in the UAE specializing in courses and training in Freediving.

The centre's long-term goal is to increase freediving awareness in the UAE as well as increasing the sport's popularity as a tourist activity. Its short-term mission is to put the UAE on the international freediving map by organizing a national team and running competitions locally. The first of which is this "6 to 60 metres in 6 months" challenge.

"In 2015 we want to send the first UAE national freediving team to the AIDA World Championships. To achieve this goal we need to train 6 Emiratis to reach 60m in 6 months," declares Boulting.

FreedivingUAE have already engaged elite freediving coaches who think the challenge is achievable and have offered their assistance. One is Ahmed Khoori, the UAE National Champion, who holds the current UAE national record at 45m for a constant weight dive and 46 meters for free immersion. Many current freediving champions have managed to make the 60m depths within 6 months. However, this is not easily achieved, as there are critical physiological and psychological barriers that the human body needs time to overcome.

There is the capability within the UAE to train people to around 40m but depths beyond that will require specialist training from international freediving coaches. FreedivingUAE intend on bringing the best freediving coaches to the UAE for this challenge and send the selected few to train overseas. Whether or not the participants will be up to the challenge remains to be seen, but the initial reaction from the applicants certainly shows that it will not be for a lack of heart.

FreedivingUAE are seeking sponsorship for this challenge. So, if you are interested in participating or learning more about the dive centre, feel free to contact them via email, through their website or on social media.

EMAIL: contactus@freedivinguae.com
WEBSITE: www.freedivinguae.com
FACEBOOK: www.facebook.com/FreedivingUAE
TWITTER: @FreedivingUAE

WELCOME TO THE DIVE CENTRE

FEATURE **JASON SOCKETT** PHOTOGRAPHY **THE DIVE CENTRE**

HOW IT ALL BEGAN

In 1996 I learnt to dive whilst working in Oman and I can honestly say, by confined water 2, I was hooked. I can even remember thinking, 'why do I need to go into the sea, I am having a great time now'…oh I am so glad I did.

A lot of that credit has to go to the PADI Instructor, Simon aka Stumpy. His passion for diving was amazing, a valuable lesson I have always tried to keep in mind…how important the impact of being a conscientious and enthusiastic instructor can have on an Open Water student or any student for that matter.

I have had an amazing career and journey in diving, having lived in Khasab, Dibba, Khorfakkan and Dubai, working for many dive centres and working with many great friends. Now working with DIMC, we have been very fortunate to be able to create THE Dive Centre. A dive centre I have always wanted to run and work in.

THE TEAM

We have a small team consisting of Jake, Nic and Jurvez with great support from some amazing instructors and Divemasters, John, Ryan, Mark, Steve, Daniel, Niel, Ryan, Niels, Marc, Jodie, Fiona, Carl and Reg.

HOW DID THE NAME COME ABOUT?

I tried to think of a name for ages, it's a lot harder than you think!

My Dad then sent me an email and simply asked, 'How is The Dive Centre coming along?

WHAT DOES THE LOGO MEAN?

They are the symbols for air and water. The logo is cleverly designed by my great friend Paul Tomlinson, to flow diagonally downwards, to simulate descending into the big blue water!

WHAT CAN YOU EXPECT FROM US?

A relaxed and chilled out environment, where hopefully, you instantly feel part of the family.

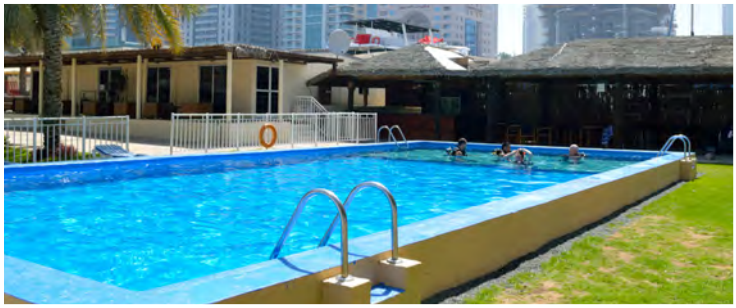
Our passion is diving and we all love to pass on that passion. The courses are run in small groups with the same instructor. Dives are not rushed, pool sessions are not rushed.

You can even join us for a BBQ (Braai) after your dives!

Keep an eye on our Facebook page for our Dive Against Debris in partnership with DIMC and Project AWARE.

We look forward to seeing you at THE Dive Centre sometime soon.

www.thedivecentre.ae



AL MARSA TRAVEL LIVEABOARD TRIPS

Travel 120kms from Dubai to Musandam and be transported into a mystic world of nature as you discover the wonders under the sea. Call Al Marsa Travel – the diving and cruising specialists since 1999 – and check into the traditionally styled livable dhow, equipped with all modern amenities. Trips can be booked for minimum one night and can go up to seven nights or more. Guests can either enjoy the incredible surroundings as the dhows sail across the picturesque bays or appreciate the exotic marine life spread across over 22 dive sites. An excellent trip for divers (of all levels) with 2-3 dives a day, each dhow is accompanied by a PADI/EFR certified diving crew member. Starting from Dhs750 (per person per night – full board).

Al Marsa Travel is a PADI 5 Star Dive Centre. We are located in Dibba Oman port, our office is on the waterfront. PADI has named us one of their 'Top 10 PADI Dive Centers' across the whole Musandam Peninsula. Over the years we have built a reputation as one of the Musandam's top Dive Centre's and are well known amongst the Musandam diving community for our good team spirit and level of professionalism. Dive with us and you can relax knowing you're in the good company of the Musandam's most respected dive operation with some of the region's most experienced professional dive team. We are also listed on www.tripadvisor.com as one of Dibba Musandam's top dive centers.

We are the main recommended Dive Centre for many national and international travel agents and tour operators offering tours in Oman and have been working with most of these companies for many years and continue to provide our services to their guests, such as Schoener Tauchen, Beluga Reisen, Dive Worldwide, Orca Reisen, SUBOCEA, Dive & Travel, Fun & Fly and Worlwidediving. We also have many loyal customers that return year after year and recommend us to their friends and have therefore built up a good reputation by word of mouth, of which we are very proud.

At Al Marsa, we have a dedicated, permanent team who are all passionate about diving! Our Instructors, Dive Masters and maintenance crew are all highly skilled and qualified and have an excellent command of English. The team have worked with Al Marsa for many years and bring a wealth of diving knowledge and experience that covers all the Musandam area

We have many dive sites in Musandam, each unique in its own right and breathtakingly beautiful and our dive team will guide your divers around the best and most famous including Octopus Rock, Lima Rock, Ras Marouwi, Ras Sanut, Ras Lima and Om El Fayarin.

The centre is fully equipped with the latest scuba gear and we frequently purchase new kit, everything from the regulators to the fins, BCD's to masks are well known quality brands. We have our own compressor on site and a highly skilled maintenance crew.

DIVING IN MUSANDAM

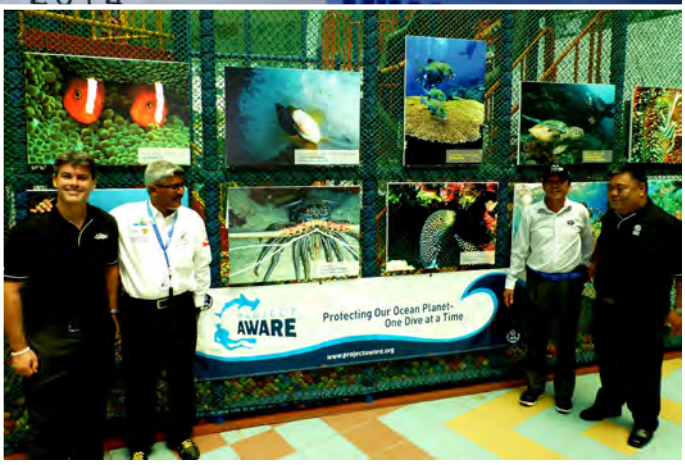
What really sets this diving apart from the Red Sea is that no one else is in the water within miles – you are out here alone and again that just adds so much to the experience. Given the choice of the now overcrowded northern Red Sea or the Musandam peninsula, while the Red Sea definitely offers more variety and colorful reefs, this is a totally overlooked corner of effectively a private diving nirvana; also with guaranteed sunshine.

QUEEN EXPLORES THE MUSANDAM

Al Marsa Travel is now organizing seven night trips on the new Oman Liveaboard Queen of Musandam, leaving every Sunday.

This 25m boat has six air-conditioned, en-suite cabins for 12 guests. Sightings on dives amid "dynamic underwater topography" include lobsters, rays, turtles, barracudas and jacks, plus the possibility of seeing whale sharks, sunfish and pilot whales, with a wide range of critters making the Musandam a "macro-photographer's delight".

WORLD OCEANS DAY KIDS SCUBA



World Oceans Day is the official UN-designated international day of ocean celebration. On June 8th each year, we celebrate the ocean, its importance in our lives and how we can protect it. Connect with your family, friends, community and the entire planet on World Oceans Day to take action and create the future you want.

The 2013/14 two-year theme is, "Together we have the power to protect the ocean!"

DOING THEIR BIT FOR WORLD OCEANS DAY

Syed Abd Rahman from Kids Scuba – a PADI 5 Star Dive Centre in Kuala Lumpur – was recently invited by the Ministry of Science, Technology and Innovation, MOSTI, (Malaysia) to assist with preparations for the World Ocean Day event in Kuala Lumpur. The Marine Parks of Malaysia and all units of Marine related governmental organizations operate under this ministry.

The World Ocean Day Opening ceremony event was launched by the Minister of Science, Technology and Innovation YB Datuk Dr. Ewon Ebin on June 8, 2014 at the National Science Center in Damansara, Kuala Lumpur.

During the opening ceremony, three PADI Junior Open Water Scuba students from Kids Scuba, age 16, 12 and 11 year old Hanani, Danial Hafiz and Najwa Amni assisted with the Opening Launch holding the WOD Banner while scuba diving in the oval shape entrance to the Aquarium.

Together attending the WOD opening ceremony was PADI Course Director Mr Clement Lee from Sabah, Mr Johnny Chew, Regional Manager of PADI Asia Pacific and Mr Tim Hunt from PADI Asia Pacific Sydney office.

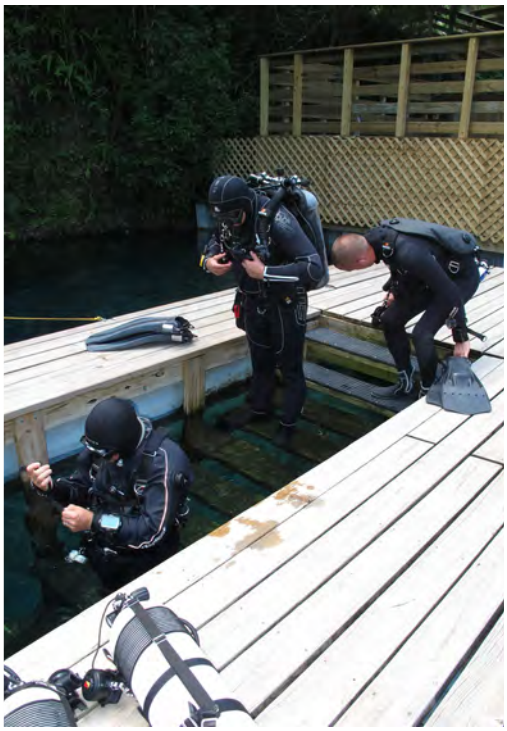
Kids Scuba also conducted Marine Awareness talks for kids and teens together with an Underwater Image Gallery during the World Ocean Day exhibition. Kids Scuba also participated with a booth to promote Scuba Diving courses.

www.kidsscuba.com

CAVE DIVING – A STATE OF MIND

FEATURE **PAUL SANT** – COURSE DIRECTOR, DIVERS DOWN UAE

Photo by Peter Lapin



The 27th of June saw the start of my journey to Lake City Florida and Dive Rite USA for a cave course myself and 4 others were to undertake.

After getting lucky with Air France and having a seat with enough leg room for a giraffe, I arrived fresh and ready to go. Yuri collected me from Jacksonville International Airport and we drove our soon to be, very smelly hire car, across to Lake City and checked into our home for the next 15 days, the Travel Inn.

The 28th was a rest day to get some shopping from Wallmart (we had to do it!) and sample a few eating establishments. Brice arrived later in the day and Russell was scheduled to get in on the morning of the 29th with the 2nd, soon to be smelly hire car! The fifth member of the cave team was Chris who was not due in for another week as he already held a cave diving license, more on this later.

Dive Rite USA manufactures diving equipment and as their slogan says, it's "for serious divers." Dive Rite was founded by Lamar Hires in 1984 and produces recreational equipment but excels in Tech gear and Sidemount, as well as lamps and computers. Lamar introduced the training systems to the cave community and is one of the few true gurus left in cave diving. We had the great privilege of having him as our Instructor.

Day one was theory (not much as we had already completed the NASE eLearning course) and setting up equipment for the following week's training, followed by a lunch prepared by Lamar's wife Leeann and a tour of Lamar's private dive locker or man cave!

Excitement was high when we arrived the following day to complete the cavern course at "The Blue Grotto". Luckily the guys had all trained on sidemount with myself or like Yuri, had previously trained on twins, so the course was a lot smoother as we could focus on line drills and not have to practice our buoyancy and finning skills first!

We also had the pleasure of diving with a fresh water soft shelled turtle named Virgil who is not at all bothered by divers. Infact he even hitched a ride on my Nomad BCD, I only found out when I went to use the back dump valve and touched his belly and yes it made me jump!

The following days were all about cave diving (and experiencing our smelly new rental car, wet gear and Florida sun in the car boot), the techniques used to safely enter a cave and return, or as Lamar liked to remind us, we were learning how to recreational cave dive. This means we follow a main line (Gold Line), set jump lines to smaller lines (not main lines) and place gap lines when we move between the gold lines. Non recreational cave diving is going into a cave blind, not knowing what is around the corner and laying your own line with directional arrows to get out!

WHY "IT'S A STATE OF MIND?"

When I teach the Rescue Diver Course I always try to explain that panic can be prevented by knowing what the stressor is and by using rational thought, you can normally prevent panic from occurring. On top of this, having experience whilst staying within the level of your training, the prospect of suffering a panic attack whilst diving is reduced.

I am glad I drum this into my students, as my first cave dive into the Peacock Spring system, I felt and luckily recognized certain stressors occurring. All I had to do was remember I was with a good Instructor, I was following a line, I had the best dive equipment and I had two or three of everything! This did put me at ease and allowed me to enjoy my first real cave dive, it also reinforced the importance of proper training and knowing your own personnel limits.

After several days we finished our full cave course, having dived the Devils Ear, Devils Eye and most of Peacock. We felt confident in our skills and knew we were capable of cave diving safely without an Instructor. This is something many Instructors forget, when a student who has been trained by any agency finishes their basic entry level certified course they should feel ready to dive independent of their Instructor. Lamar taught us by showing the skills, then letting us plan, lead and conduct the training dives, something PADI is now doing with the new Open Water Course.

We stayed on for a further week so Chris could join us for a week of diving caves with flow (current) in Mexico where he learned there is little to no flow. This proved an eye opener to him as well as silt out (no visibility due to kicking the bottom).

Lamar enjoyed our friendly banter towards Chris and he mentioned none of us knew

Photo by Peter Lapin

what flow really was! So the following day he took us to Little River Springs and yes, that was real flow, so much so, we got spat out of the cave after the dive and used death grips on the rock to do our safety stop, a great dive.

$1200 for the cavern, cave intro and full cave course and we got to learn from a true legend and inspirational diver, Lamar Hires. We had the unique opportunity to spend time in Dive Rite's factory and had custom made gear including our lights laser engraved with our names on them, a truly fantastic Divers Down trip.

Next year we plan to go again so those that want to undertake cave courses can and those that are already divers can dive some of Florida's cave country! I do recommend you complete either sidemount or Tec training with us prior to the trip.

A big thank you goes out to Lamar, Leeann, Yuri, Brice, Russell, Chris and John and the Dive Rite team.

JAFZA DIVERS COMMIT TO SAVING THE MARINE ENVIRONMENT

Earlier this year Jebel Ali Free Zone (Jafza) brought together a team of diving enthusiasts from amongst its staff in collaboration with Emirates Diving Association.

The "Jafza Divers", completed a refresher course in June and completed their first dive immediately afterwards off the coast of Dubai.

This proved to be an incredible experience for all members of the team who explored the rich marine life surrounding the Sheikh Mohammed Barge wreck off Dubai's coast and came back with a renewed appreciation for the marine environment, the sea and the world we live in.

"I would recommend diving to anyone who enjoys the outdoors and the sea. My personal experience really highlighted the importance of protecting our marine environment, said Ali Karam who works with Jafza's Procurement and General Services Department.

Khalid Al Marzooqi of Jafza's Global Sales Department and an active member of Jafza Divers said, "We have to understand the sea and the marine life that exists in the Gulf region. This understanding will bring with it an appreciation for the efforts being put in by our government to save the environment and will give us a wake-up call on how we can contribute in the efforts to save the environment for our future generations." He added that this initiative will soon be open to all companies in the Free Zone, as Jafza would like to engage its partners and customers to create awareness about the conservation of the environment.

"Jafza Divers" membership is currently open to all Jafza employees and their families and soon a 'community' will be created to include employees from Jafza-based companies in Jafza Divers.

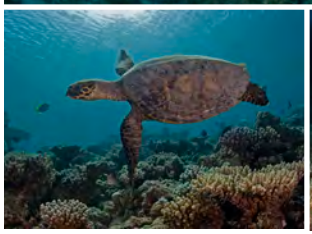
Although diverse, the founding members of the Jafza Divers are united in their motivation and commitment to the team. "We created this team because we are conscious about the environmental impact on our seas and we aim to raise awareness about issues that have an impact on marine life in the area.

"Jafza operates one of the largest free zones in the world which houses the largest port between Rotterdam and Singapore, therefore it is our responsibility to ensure that we operate ethically and sustainably to limit any environmental impact on the marine habitat", said Abdulaziz Redha from Jafza Global Sales Department, another Jafza Diver team member.

As Jafza is very much focused on conserving Dubai's natural habitat of which Dubai's marine life is a major component, it follows that the Jafza divers are committed to furthering that cause by assisting in ocean clean ups, raising awareness of issues that affect the marine world and preserving and maintaining the UAE's unique marine environment.

DUSIT THANI MALDIVES:

AN INTEGRAL PART OF UNESCO BIOSPHERE RESERVE (MALDIVES)



Dusit Thani Maldives is located on the Eastern side of Baa Atoll, the Maldives only designated UNESCO Biosphere Reserve which is home to significant marine biodiversity. It is here that great emphasis is given to conservation, research and development to foster cultural and biological diversity of exquisite marine life existing in the Baa Atoll region of the Maldives.

It was in June 2011 during the 40th anniversary of UNESCO's Man and the Biosphere Programme in Dresden, Germany, UNESCO declared the Baa Atoll, a Biosphere Reserve. The Baa Atoll is home to some of the richest waters in the Maldives. It lies approximately 125km NW of Male' the capital of the Maldives. It has a total area of approximately 1,200km^2. The atoll is comprised of 75 islands; 13 of these are inhabited with a combined population of approximately 12,000 people. Six islands have been developed as resorts; the remaining 57 islands are uninhabited.

Dusit Thani Maldives is one of the six resorts located in Baa Atoll region (UNESCO Biosphere Reserve) and is therefore, naturally blessed with extensive coral house reefs which harbours essential biodiversity.

Mudhdhoo Island where the resort is located boasts of its own house reef which abounds in big-eyed trevallies, oriental sweetlips, lunar fusiliers, bicolour parrotfish and an array of butterflyfish species. Manta rays regularly visit the house reef in season and a few lucky guests have also encountered whale sharks. During the North-East monsoon season, Iruvai, we also have eagle rays, stingrays and juvenile black-tip sharks visible on our house reef. Let's not forget the elusive pink frogfish, 'pinkie' who makes occasional appearances to surprise our guests.

The powder-blue surgeonfish is one of the most popular underwater creatures and is encountered by all our guests (including those who don't enter the water) as they often swim in shallow areas in the lagoon. Maldives has their very own species of 'Nemo'; Maldivian anemonefish (*Amphiprion nigripes*) which is a common sight in resort's house reef.

Come and explore the stunning marine biodiversity of the UNESCO Biosphere Reserve at Dusit Thani Maldives!

WHERE THERE'S LOVE, THERE'S A 'RAY OF HOPE'
A CREATIVE CSR CAMPAIGN BY DUSIT THANI MALDIVES

Dusit Thani Maldives lays claim to being one of the leaders of sustainable resort development in the Indian Ocean. And this premier 5-star resort is also helping to improve living conditions for its local community, as well as provide educational and environmental development, through its creative 'Ray of Hope' CSR project.

The word 'ray' in this case refers to a spotted eagle ray. The reason it was chosen is simply because eagle rays are majestic and gentle creatures often found gliding over the house coral reef surrounding the resort.

Eagle ray soft toys are placed in all guest villas and the price to 'adopt' it is only USD40, with all of the proceeds going towards the resort's Green Fund. The fund supports all green environmental initiatives on the island, in addition to various community-based projects.

More than half of Dusit Thani Maldives' employees are local people from the nearby islands and the proceeds from sales are invested in self-sustaining environmental and community projects.The resort aims to provide necessary facilities, including computers, and improve living conditions on Dhonfanu Island, while also providing educational development.

The resort's marine biologist Lauren Arthur leads this project. Lauren works closely with the neighbouring Dhonfanu to help implement various projects, such as the implementation of a waste management system, instigating beach clean-ups with help from Dusit Thani Maldives, tree-planting projects, educational and workshops and more.

"A long-term goal is to have the school become free of plastic bags," says Lauren Arthur. "We have already established an Environmental Club on Dhonfanu that consists of 29 young ambassadors who will help look after their home island. We are also proposing a longer-term plan to build a pre-school on the island, as there is currently nothing available for children of that age group."

THE SPINY SPIDER CRAB

FEATURE AND PHOTOGRAPHY **ANDREW ROUGHTON**

One of my favourite things about diving in temperate waters is the changing of the seasons. Sure, its hard work getting a dry suit on when it's freezing cold and lashing down with rain in the winter. And it's much nicer to slip into crystal clear tropical waters with nothing but a skin suit on, but you don't get the seasonal changes in conditions or marine life. You get a distinction between winter and summer and day and night when diving in tropical climes, but you can't see completely new species entering your waters in as noticeable a way as you do in each quarterly season in temperature shores.

Now, as we have entered summer, the most recent addition to my local shore dive is the Spiny Spider Crab. Also known as *Maja squinado*, the European Spider Crab, or even the Spinous Spider Crab, the Spiny Spider Crab is a migratory crab found across the North-East Atlantic Ocean and Mediterranean Sea. It is a remarkable creature that can travel up to one-hundred and sixty kilometers in a course of an annual migration. However, I do not wish to admire its migratory abilities here. Conversely, I wish to admire its taste.

Having dived in a lot of marine reserves, written widely about the preservation of our ocean's ecosystems, and focused on observing – rather than taking – marine life, it feels a little contradictory to encourage bringing a delicious Spiny Spider Crab home for the pot. However, unless one is a vegetarian, one has to accept that some animals need to die for humans to live. And crabs really are the rabbits of the ocean. That is, they are plentiful, reproduce frequently and taste great. Therefore, as long as divers take responsibly (and by that I mean one or two crabs per dive), capture carefully and kill humanely, I have no objections to adding a culinary dimension to scuba diving.

As such I have added a recipe for preparing a delicious meal using the meat from two good sized Spiny Spider Crabs. You will need the following:
Four hundred grams of pasta.
One tablespoon of olive oil.
Two finely chopped garlic cloves.
Two deseeded and finely chopped red chilies.
One tablespoon of crushed fennel seeds.
One lemon.
Two hundred grams of brown crab meat.
Two hundred grams of white crabmeat.
A small bunch of roughly chopped flat-leaf parsley.
Extra virgin olive oil.

Start by cooking the pasta in a large pan of salted boiling water until al dente. Simultaneously heat the olive oil in a frying pan over a medium-low heat and fry the garlic, chillies and fennel seeds for two minutes until soft, but not coloured. Next, add the zest of half your lemon and the juice of it all and then stir in the brown crab meat.

Drain your pasta, reserving a few spoonfuls of the cooking water, and toss with the sauce along with the white crab meat and parsley. Add the extra water if the dish seems too dry. Season to taste and then divide between bowls. Finally, drizzle each bowl with a little extra virgin olive oil, serve immediately, and enjoy!

REEF CHECK AUSTRALIA VOLUNTEERS MONITOR 24,000M² OF THE GREAT BARRIER REEF OVER THREE YEARS

BY **REEF CHECK AUSTRALIA**

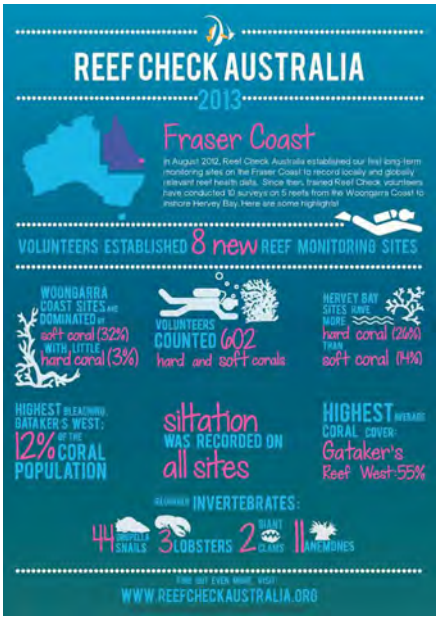
Reef Check Australia (RCA) has released three reports on surveys conducted in recent years. This work was made possible by a dedicated group of field and office volunteers, industry supporters, funders and advisors. Find out more about your favorite Australia reef spot in these press reports:

2011-2013 Great Barrier Reef Summary Report
2013 South East Queensland Season Summary Report
2013 Heron Island Summary Report

Download the reports here:
http://www.reefcheckaustralia.org/data.html

Last month RCA launched a series of regional posters to highlight key findings.

RCA kicked off their 2014 Great Barrier Reef survey season in May with a survey at Middle Reef. Find out how to get involved at **reefcheckaustralia.org**.



REEF CHECK CALIFORNIA LAUNCHES SPEAKERS BUREAU AND NEW VIDEO

Though Marine Protected Areas (MPAs) dot the entire California coastline now, few people outside of ocean users and advocates know about them. Reef Check has been monitoring many of these areas and believes that it is essential to broaden the public's knowledge about California's MPAs. To this end, we created a Speakers Bureau and produced a video with the goal to increase awareness about MPAs, the importance of ecosystem monitoring and to highlight a way in which the public can get involved here in California. This spring, we trained groups of Reef Check volunteers in Los Angeles and Monterey as speakers and now have a network of presenters ready to spread the word about California's MPA network and how we monitor their condition. If you are interested in having one of our speakers give a presentation, please contact **rcinfo@reefcheck.org**.

Three RC volunteers, Kim Glenn, Camilla Hall, and Michelle Hoalton are featured in the video discussing what it means to be a Reef Check diver and a citizen scientist. Throughout the dialogue in both the video and the Speakers Bureau presentations, audiences learn about Reef Check, the training involved in becoming a Reef Check citizen scientist and what a survey involves. Kim, Camilla and Michelle share their motivations for becoming a Reef Check diver and what brings them back to the program every year. While Camilla and Kim speak about the friends they have made and continue to dive with outside of Reef Check, the video sums it up nicely: "Reef Check volunteers are more than just a data counter. They really learn a lot about the marine environment and become a part of the community that cares about the ocean and does something about it. One volunteer can make a huge difference, all the data is going to be used by the state to look at the ocean and the health of our reefs."

The video was released on May 29th on YouTube. Check out the video and share it with family and friends. **http://is.gd/NAZFzo**

MICHIGAN HIGH SCHOOL STUDENTS TAKE A FIELD TRIP TO THE DR

BY **ALICIA MATUREN**

Teaching high school Spanish is very rewarding. Doing it in the Dominican Republic with the added bonus of exploring the oceans and learning about reefs and conservation is even more remarkable!

I had the privilege of taking 12 students from my Advanced Placement Spanish class at Plymouth High School and a colleague, Denise Zarate, to Las Galeras in February 2014. We sat paying rapt attention to our great Reef Check Professor, Ruben, as he showed us photo after photo of fishes, invertebrates and substrates.

Other learning opportunities came in the form of power tools- the kids loved assembling their own under water writing boards. Teenagers jump at the chance to use a drill and play with fire! Later we did dry beach time. It was very helpful to lay out our transect lines on the beach and pace them off, getting an idea of how to measure.

Our first day in the water… well, we were challenged. But I love a challenge! We passed our book tests and headed out to the reef to collect data. The students learned so many things: how to work as a team, how to handle the currents, how to accept urchins, the negative reef impacts of over fishing and unprotected waters. The list goes on and on. The students got so excited whenever they saw a fish they had learned how to identify. Substrate hand gestures were a hit today and every day thereafter. Just today I congratulated a student with a "Hard Coral" sign that now replaces our "high fives!"

We are so grateful to Reef Check for this invaluable training. We all look forward to continuing our education, as learners and as teachers, to protect our oceans. Thanks Reef Check!

REEF CHECK MALAYSIA RELEASES 2013 SURVEY REPORT

BY **REEF CHECK MALAYSIA**

Reef Check Malaysia's report indicates need to preserve coral biodiversity with anticipated increases in water temperatures and pollution.

Reef Check Malaysia (RCM) released its 2013 annual reef survey report, revealing the continued need to preserve coral biodiversity around Malaysia and enhance their resilience against the growing problems caused by increasing water temperatures and pollution. The report also revealed other issues such as dynamite fishing and possible poaching in Marine Protected Areas (MPAs).

According to widely accepted Coral Reef Health Criteria, Malaysian reefs are considered to be in "Fair" condition with an average live coral cover at 48.33% (compared with 46.37% in 2012). The report also indicated a continuing trend of recovery from the bleaching event that killed coral reefs around South East Asia in 2010.

Reef managers however, are advised not to be complacent despite the positive rating. "I urge all coral reef managers to remain cautious despite the slight increase in live coral cover," said Julian Hyde, General Manager of RCM. "Similar to how we manage our health, we need to adopt the same 'prevention is better than cure' mindset to manage our reefs. It is important they remain healthy and become resilient to preserve their huge biodiversity, helping them to adapt and survive the real threats of global warming."

Moreover, the "Fair" rating does not reflect the full spectrum of issues faced by coral reefs. For example, the surveys indicated possible cases of illegal fishing in MPAs, with low levels of high-valued species such as groupers and lobsters.

"As a signatory to the Convention on Biological Diversity, Malaysia has a commitment to protect 10% of its natural resources. MPAs are important because they provide this protection to marine ecosystems. Hence, in an MPA, we would expect to see an increase in high-value indicator species over time. However, the surveys recorded almost little or no growth among these species," said Mr. Hyde. "This trend is more prominent in Peninsular Malaysia. Surveys in East Malaysia, however, indicate the use of dynamite fishing, which causes structural damage seen on the reefs."

The report, "Status of Coral Reefs in Malaysia, 2013", documents the general health conditions of coral reefs around the major islands of Malaysia. Surveys were conducted over the year at 196 sites (an increase from 165 sites in 2012) across East and West Malaysia. The sites comprised established MPAs and non-protected areas.

Reef Check surveys are conducted annually, usually at the same sites, to ensure the integrity and consistency of data. The 2013 reef surveys were made possible through public and private partnerships. Support was garnered from Government Agencies such as the Department of Marine Parks Malaysia (DMPM) and Sabah Parks, as well as the private sector including dive operators, recreational dive volunteers certified as EcoDivers and corporations. Funding was provided primarily through organizations which included Alstom Power, F&N, the GEF Small Grants Programme, Khazanah Nasional Berhad, KPMG in Malaysia, KOSÉ Malaysia, La Mer, Murphy Oil Corporation, Persatuan Akitek Malaysia, Russell Bedford LC & Company, Shell Malaysia and YTL.

RCM's "Status of Coral Reefs in Malaysia, 2013" report is the only document that records the status of coral reefs in Malaysia. It is shared with the Department of Marine Parks Malaysia and Sabah Parks while internationally, it is shared with the National Oceanic and Atmospheric Administration (NOAA) and international coral reef databases such as Reef Base.

If you would like to get involved with RCM, please visit **http://reefcheck.org.my**

Download the report: **http://is.gd/uO8uwS**

PEEKING BELOW THE SURFACE

INTERNATIONAL NONPROFIT OBSERVES WORLD'S REEFS, PROMOTES CONSERVATION OF VITAL ECOSYSTEMS

BY **SEAN ROBB**

On the sunny first day of June, volunteers from the nonprofit organization Reef Check surveyed kelp forests and rocky reefs off the coast of Salt Creek Beach.

Reef Check is an international nonprofit dedicated to the conservation of two of the ocean's vital ecosystems – the tropical coral and rocky reefs of the world.

Through global surveys of coral reefs, the organization aims to educate the public on the value of and crisis affecting reefs and marine life. With teams of volunteer surveyors, Reef Check has created an international network of supporters that collaborate to produce sound and sustainable solutions all while inspiring local community action to protect and rehabilitate reefs worldwide.

Founded in 1996 by ecologist Gregor Hodgson, the Los Angeles-based not-for-profit organization has grown to include reef-surveying volunteers in more than 90 countries and territories across the globe.

Ten such volunteers were on hand on Sunday, all of whom were highly experienced scuba divers who have participated in numerous Reef Check dives. But before they took to the waters off Dana Point, volunteers were given detailed instructions from Colleen Wisniewski, regional manager for Reef Check California, on what to look for among the reef and what to record on their underwater slates.

"Simply put, we could not do this project without volunteers," Wisniewski said.

Reef Check conducted the first-ever health survey of coral reefs on a global scale in 1997. Findings were published in a scientific journal two years later, highlighting the impact humans have on coral reefs. In 2002, the organization released its first five-year report which compiled data collected by thousands of volunteers in more than 80 countries that showed a decline in coral reef health worldwide.

While the report showed most reefs in the world were impacted negatively by humans due to overfishing, pollution and climate change, it highlighted that through monitoring, management and protection, the world's reefs could recover.

Reef Check's reach has grown ever since, including the expansion of research right in its own backyard. The organization launched a California-specific reef program in 2005, tasked with monitoring the state's more than 1,000-miles of coast.

In California, there are just six staff members and more than 250 active Reef Check volunteers. One hundred of those volunteers work to survey sites in Southern California. All volunteer divers are required to go through a strenuous set of courses that involve memorizing a large number of different marine species and how to survey various types of reefs.

Once in the Dana Point State Marine Conservation Area waters Sunday, divers dispersed into pairs to survey 30 meters of reef. Looking at different marine species living in the reef, they identified and measured each fish and invertebrate to the nearest centimeter. They also examined the rocky coral, logged observations of the kelp-filled forests below the surface and documented the substrate or ocean floor, where plants and marine animals live.

These reefs off the shore of Salt Creek are the only ones the organization monitors in the Dana Point area – in part, because these reefs differ from all others along the Orange County coastline.

"The kelp here is more stable than any other kelp in Orange County and it's actually probably the healthiest too," Wisniewski said.

Reef Check monitors more than 50 sites in California, including reefs near San Diego, Catalina Island, Laguna Beach, Newport Beach and Los Angeles. But through a partnership with area resorts, Reef Check is able to monitor Dana Point's near shore reefs twice a year, as opposed to once a year as is the case for other locations.

Two years ago, the Dana Point Tourism Business Improvement District signed on to help Reef Check research the local underwater ecosystem. Much of Reef Check's funding is provided through donations and most recently, a program called Adopt-a-Reef. TBID was a founding partner for the Adopt-a-Reef program back in 2012 and since corporations like Quicksilver and Patagonia have also signed on.

The TBID is comprised of Dana Point's four major resorts: The Ritz-Carlton Laguna Niguel, St. Regis Monarch Beach, Laguna Cliffs Marriott and Doubletree Suites by Hilton Doheny Beach.

It was formed in partnership with the city of Dana Point in 2009 to market the city as an overnight tourism destination. Through a $3 a night self-assessed bed-tax, TBID embarks on campaigns for the city and helps sponsor attractions like last year's Elephant Parade, which brought more than 30 colorfully painted elephant statues to Dana Point to raise awareness and funds for the endangered Asian elephant.

This partnership, however, will help provide Reef Check the needed funding so staff and volunteers can continue their research, which is shared with policy makers, academics and the general public to help educate and influence decisions regarding underwater ecosystems.

"The biggest thing for us is that if it wasn't for our ocean then we wouldn't be a destination for visitors so we feel the need to protect it," said Matt McNally, director of destination services for the resorts.

Through the Reef Check partnership, the improvement district hopes to further protect local reefs and educate the city and its visitors, on its unique environment. Dana Point's resorts hope this relationship will help spread Reef Check's message and attract more partners to the cause, McNally said.

Lyn Evins has been working closely with Reef Check. Evins, the outdoor events coordinator at The Ritz-Carlton, observed Sunday's dive from the boat and spoke on the partnership's meaning.

"I think it's very important to the community that we protect these reefs and show the city and tourists how special these reefs are," Evins said.

Reef Check will hold an event Sunday, August 10 at Salt Creek Beach to teach visitors, especially children about the nearby tide pools, all while spreading Reef Check's mission. To learn more about Reef Check's international, national and regional work and to see data collected, log on to **www.reefcheck.org**.

WHAT'S BELOW?

On Sunday, June 1, volunteer divers from the nonprofit Reef Check took to waters of Dana Point's coastline in a state-protected marine conservation area to survey reefs and kelp forests. Through a partnership by area resorts, the organization is able to conduct two dives a year, monitoring the impacts humans can have on marine ecosystems. Findings from each dive volunteers make worldwide is compiled into an online database, **www.data.reefcheck.us**, and is available for public review.

Here are a few findings from Reef Check dives near Salt Creek Beach over the last two years:

- Average diving depth: 7 meters.
- Top 5 fish recorded: Barred sand bass, opaleye, pile perch, rock wrasse and rainbow perch.
- Top 5 invertebrates seen: Red Urchin, kellet's whelk, bat star, pink abalone and purple urchin.
- Top five seaweeds documented: Giant kelp, sea palm, laminaria, pterygophora and bull kelp.
- Substrate make-up: 55.6% bedrock, 25% sand, 12.8% boulder and 6.7% cobble.

RED SEA ENVIRONMENTAL CENTRE

COMPLETES 12th SERIES OF REEF CHECK MONITORING

By **REEF CHECK ECODIVER TRAINER NINA MILTON**

From March to April 2014, the Red Sea Environmental Centre in Dahab carried out the 12th Reef Check survey series since 2006. A total of ten sites were surveyed at two depths, 5 and 10 meters (2 sites only at 10m).

The first week was spent on Reef Check presentations, underwater identification, and buoyancy control. The newly acquired knowledge was then tested on land and underwater.

Even before we could begin with the first survey dives, heavy rainfall hit the region, which occurs only every 2 to 3 years in the area. Due to the heavy rainfall and following floods, some sites had a high percentage of silt. Fortunately, most dive sites were not affected because they are not adjacent to the desert valleys (wadis) where the floods entered the sea.

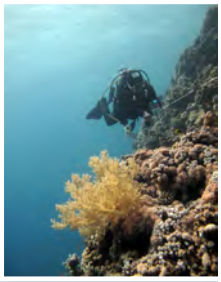
Our team, all now newly certified Reef Check EcoDivers, was made up of four German students in biology, environmental science and aquatic tropical ecology, two experienced dive instructors from Egypt and Austria and a freshly educated doctor of science (this year's winner of the Reef Check Germany Award). Joining our team was also a veteran Reef Checker from France who has participated in several Reef Check surveys worldwide.

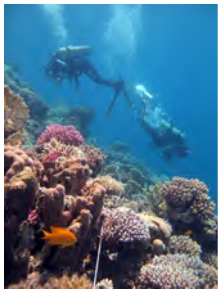
Currently, the team is working on analysis of all the data recorded since 2006. At first glance, there appear to be no major changes. Hard Coral cover is relatively stable over the years at most sites with up to 45% cover at some sites. Nutrient Indicator Algae has increased slightly at some locations over the last couple of years. The fish surveys show that Groupers have declined in abundance since 2006 with small individuals (30-40cm) as the most common size class. Most groupers are immature and cannot reproduce until they reach about 50cm in length. Other fish species targeted for food, such as snappers and sweetlips, showed low abundance throughout all years. Butterflyfish were the most common indicator fish, despite a decrease since 2006.

The second most abundant fish group were Parrotfish. Over the last couple of years, there has been an increase in Giant Clams of the smallest size classes.The local Bedouin free dive to collect large clams for food. Lobsters have not been recorded once since 2006. Some sites appear to be affected by the increase in tourism with damaged corals, mostly at sites used by novice divers and very popular dive sites, however, most reefs surveyed were characterized by relatively stable substrate cover. Given the general decline in coral reefs in places such as the Great Barrier Reef in Australia, this is really good news.

Thank you to the team for lots of fun, enthusiasm and the good work you all put in. Thanks to Sinai Divers for the great support over the years.

For more information on how you can get involved, contact Nina Milton at:
nina.milton@redsea-ec.org





FEATURE CREATURE

HUMPHEAD WRASSE (*CHEILINUS UNDULATUS*)

FEATURE **IUCN RED LIST 2014.2** PHOTOGRAPHY **SIMONE CAPRODOSSI**

RED LIST CATEGORY & CRITERIA: ENDANGERED
Scientific Name: *Cheilinus undulatus*
Common Name(s):
English: Giant Wrasse, Humphead, Humphead Wrasse, Maori Wrasse, Napoleon Wrasse, Truck Wrasse, Undulate Wrasse
French: Napoleon

Justification: The Humphead Wrasse is widely distributed but is nowhere common, naturally. Densities rarely exceed 20 fish per hectare in the preferred habitats of outer reefs; more typically not more than 10. Wherever it is fished, even if only moderately, density quickly declines to 25% or less of peak densities recorded at no fishing – this is known from 24 different studies based on fishery-independent data from 11 range states (Sadovy et al. 2003). It appears to be extirpated from several edge of range locations (Sadovy et al. 2003). It is particularly heavily exploited (i.e., high levels of fishing pressure) at the centre of its range in southeastern Asia where its coral reef habitat is most abundant and particularly in key supply countries for the live reef fish trade, Malaysia and Indonesia and out of Palawan, its stronghold in the Philippines. In these countries all available fishery-dependent and trade-related data suggest declines over 10-15 years in exploited areas of 10-fold or more with fish now considered rare in areas where once it was common. Buyers of this fish are continually having to source new areas as numbers decline and the pattern of fishing reported is one typical of rapid serial depletions. Much of the capture in all major source countries for live fish are of small fish, mainly juveniles, according to all reliable accounts. Moreover, juveniles are the preferred size range for retailers of live Humphead Wrasse. Severe declines have also been noted nationally wherever the species is taken by speargun at night. Such is the concern for this species that it is one of the only reef fish protected by name (i.e., species name) across a range of countries. It is everywhere accessible to live fish catcher boats which can visit the most remote locations at will. Some spawning aggregations have been noted to decline or have disappeared in eastern Malaysia and Australia.

The total global catch of this species is estimated to be no more than 400mt annually (Sadovy et al. 2003), yet despite this low volume, severe declines are noted in all places for which data are available and occurring very soon after fishing begins, reducing numbers by more than 50% (see country accounts and summary table) (both fishery-dependent and fishery-independent) and where management is not effective. Much of the trade is now in juvenile fish which is the preferred market size for live fish. It is severely reduced anywhere that it is fished unless a) it is effectively managed, b) there is no export trade or night spearfishing and c) it is not included in marine protected areas. It is a species that appears to be highly conservation-dependent. There is no regional fishery management authority for this species and FAO does not collect data on it.

The listing of this species as Endangered is based on a population reduction of at least 50% over the last three generations (approximately 30 years) based on an index of abundance and actual or potential levels of exploitation (A2bd). The declines are predicted to continue or even accelerate because of the likely growth of the live fish export trade (A3bd).

This species can live at least 30 years (25 for males and 32 for females) and becomes sexually mature at six years (J.H. Choat, C.R. Davies, J. Ackerman and B.D. Mapstone, unpublished manuscript). This means that its generation time is expected to be in the order of 10 years and that the rate of intrinsic population increase is likely to be

low; natural predators are few and natural mortality rate was determined to be 0.14 or less (J.H. Choat, C.R. Davies, J. Ackerman and B.D. Mapstone, unpublished manuscript). The species is particularly vulnerable because the bulk of the fishery for live fish, at least in east Malaysia, southwest Philippines and Indonesia (the major suppliers for the live reef fish trade and the centre of the species' range) is selective for juvenile sized fish since this is the preferred size class for consumers and gains the highest prices. This selective fishery for animals below but close to the size of sexual maturation has the potential to severely reduce the reproductive capability of exploited populations. The species cannot be artificially cultured (i.e., hatchery produced) to relieve fishing pressure.

The declines are projected to continue or worsen in key source countries for live fish because:

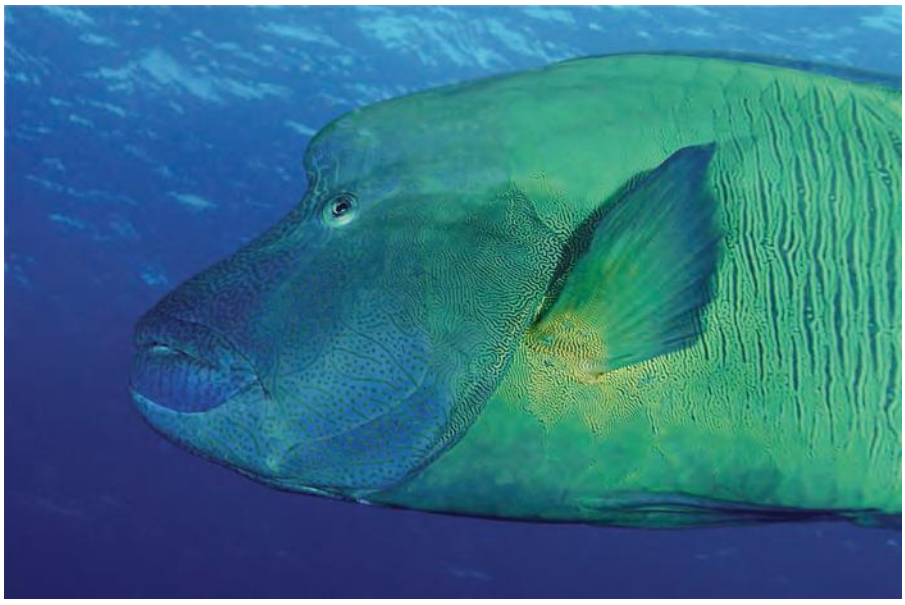
a) The species is one of the two most highly valued fish, economically, in the luxury live reef fish trade on a per kg basis;
b) Of the probable intrinsic vulnerability of such a large and long-lived reef fish, that is also hermaphroditic with relatively few adult males, and an aggregation-spawner, to overfishing; and
c) In places where the species has declined but is still actively sought, fishers only find a few fish a month or a year, at most;
d) The projected growth in the live fish trade, especially into mainland China in the next few years.

Finally, despite regulations in many places, there is much illegal, unregulated and unmonitored trade, according to many verbal accounts by fishers and traders and there is no regional management authority actively engaged in managing this small fishery and FAO does not collect data on it. It only remains abundant where protected or not fished at all. Protective legislation in most places appears to be ineffective.

Follow the link below for a summary of the population data derived from fishery-indepent and fishery dependent sources.

History: 1996 – Vulnerable

Range Description: The Humphead Wrasse is widely distributed on coral reefs and inshore habitats throughout much of the tropical Indo-Pacific, from western Indian Ocean and Red Sea to southern Japan, New Caledonia and into the central Pacific Ocean. In Australia, it occurs on offshore reefs of north-western Australia and the Great Barrier Reef (Pogonoski et al. 2002). It is rare in the southern part of the Great Barrier Reef in the Capricorn-Bunker Group (Russell 1983) and at Middleton and Elizabeth Reef (Gill and Reader 1992). This species appears to occur predominantly at depths of less than 100m. It is not known from the Hawaiian Islands, Johnston Island, Easter



Island, Pitcairn Is., Rapa or Lord Howe Islands, Kermadec or Australes Is. and evidently does not occur in the Gulf of Oman, the Persian Gulf, Reunion Is., Mauritius or Rodrigues Is.

Adults are known to occur largely on outer reef areas, often in association with channels and passes. Spawning aggregation sites have been reported from outer reef areas.

Countries: Native: American Samoa (American Samoa); Australia (Ashmore-Cartier Is., Lord Howe Is., Queensland); British Indian Ocean Territory (Chagos Archipelago); Cambodia; China; Christmas Island; Cocos (Keeling) Islands; Comoros; Cook Islands; Disputed Territory (Paracel Is., Spratly Is.); Djibouti; Egypt; Eritrea; Fiji; French Polynesia (Tuamotu); Guam; Hong Kong; India (Laccadive Is.); Indonesia; Israel; Japan (Nansei-shoto); Kenya; Kiribati (Gilbert Is., Kiribati Line Is.); Madagascar; Malaysia; Maldives; Marshall Islands; Mayotte; Micronesia, Federated States of; Mozambique; Myanmar; Nauru; New Caledonia; Niue; Northern Mariana Islands; Palau; Papua New Guinea; Philippines; Pitcairn; Samoa; Saudi Arabia; Seychelles; Singapore; Solomon Islands; Somalia; Sri Lanka; Sudan; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Timor-Leste; Tokelau; Tonga; Tuvalu; United States Minor Outlying Islands (Wake Is.); Vanuatu; Viet Nam; Wallis and Futuna; Yemen

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

Population: Abundance estimates on northern Queensland (Australia) reefs are 2.5–3.5 adults per 8000m² (Choat in Pogonosky et al. 2002).

There are no data on total numbers of this fish globally. However, adults are largely limited to outer reef areas which are a small proportion of the total reef area within its distribution and even in preferred habitats, densities are very low for a commercially exploited species (rarely > 10 fish per 10,000 square meter when not fished). It is considered uncommon to rare naturally. Nothing is known about the extent of subpopulations or degree of fragmentation but available suitable habitat is a major determinant of its distribution. Some edge of range extirpations are suspected.

The species is hermaphroditic, changing sex from female to male. The sex ratio of samples and fish observed in the field is female biased. Under IUCN criteria for mature individuals, there should be a correction made to factor in the sex bias which effectively reduces substantially the estimates of fish numbers included in this assessment.

Population Trend: Decreasing

Habitat and Ecology: In one study, small post-settlement humphead wrasses were found in a species of seagrass (*Enhalys acoroides*), four species of hard coral (three *Acropora spp.* and *Porites cylindricus*), and in the soft coral *Sarcophyton sp.* (branching form; M.A. Tupper, pers. comm.). After settlement, juveniles and adults live associated with reef or near-reef habitats of seagrass beds and mangrove areas, with juveniles typically inshore and the largest individuals found in deeper waters of outer reefs or lagoons (Myers 1999). Juveniles of 3-20cm TL and larger, occur in coral-rich areas of lagoon reefs, particularly among live thickets of staghorn, *Acropora spp.* corals, in seagrass beds, murky outer river areas with patch reefs, shallow sandy areas adjacent to coral reef lagoons and mangrove and seagrass areas inshore (Randall 1955, Randallet al. 1978, Myers 1999, J.H. Choat, pers. comm.). Recruitment patterns may vary considerably between years (M.A. Tupper, unpublished data). Adults are more common offshore than inshore, their presumed preferred habitat being steep outer reef slopes, reef drop-offs,

reef tops, channel slopes, reef passes, and lagoon reefs to at least 100m. They are usually found in association with well-developed coral reefs (Vivien 1973, Randall et all. 1978, Winterbottom et al. 1989, Allen and Swainston 1992, Sluka 2000). Typically they are solitary or paired, but have also been noted in groups of 3-7 individuals (Donaldson 1995). They appear to be somewhat sedentary in that the same individuals, indentifiable by distinct natural markings, may be seen along the same stretch of reef for extended periods. Indeed, many commercial dive sites have their 'resident' Humphead Wrasse, a favoured species for divers. Natural densities are evidently never high, even in presumed preferred habitats. For example, in unfished or lightly fished areas, densities may range from two to rarely more than 10-20 individuals per 10,000m² of suitable reef. In fished areas, however, densities are typically lower by tenfold or more and in some places fish no longer appear to be present.

Accounts of reproductive activity in the field reveal that, depending on location, this species spawns between several and all months of the year, in small or large groupings, that spawning coincides with certain phases of the tidal cycle and that groups of spawning fish can form daily, at a range of different reef types. Spawning areas and aggregated adults have been noted regularly along specific sections of reef, sometimes associated with no obvious topographical features, sometimes close to the shelf edge on outer reefs, or adjacent to exposed reef passes near fairly steep drop-offs, or on mid-shelf (unspecified) reefs (P.L. Colin, J.H. Choat, R. Hamilton, S. Oakley, pers. comms.). The species is evidently a daily spawner that probably does not migrate far to its spawning site(s), spawning for extended periods each year, i.e., a 'resident' spawner (Domeier and Colin 1997, P.L. Colin, pers. comm.): groups of up to 150 fish were observed in Palau along the shelf edge in a loose aggregation.

Probable spawning aggregations have also been noted on Australia's Great Barrier Reef (GBR), Fiji, New Caledonia and in the Solomon Islands. Although spawning was not always observed, aggregated fish were ripe, or exhibiting behaviour likely associated with spawning. On the GBR, aggregations of up to 10 large males and 20-50 smaller fish (35-95cm TL) were noted (J.H. Choat, pers. comm.). GBR aggregations from the Ribbon Reefs and north of Jewell Reef, once noted to include hundreds of fish, are no longer known at the same sites (Johannes and Squire 1988, L. Squire, pers. comm.).

The longevity of this species is up to at least 32 years, with females outliving the males (the oldest female recorded was 32 years), and sexual maturity is reached at about eight years of age (Choat in Pogonosky et al. 2002). Histological studies show that sexual maturation is reached at a size of between 40cm and 60cm total length (Sadovy, unpublished data). This species is thought to be a protogynous hermaphrodite, with sex reversal occurring at about 15 years of age (Choat in Pogonosky et al. 2002). At a total length of approximately 111cm (Lau and Li 2000). Males grow very rapidly (Choat in Pogonosky et al. 2002).

It feeds on a variety of molluscs, fish, sea urchins, crustaceans and other invertebrates (Randall et al. 1997).

Systems: Marine

Major Threat(s):

1) Intensive and species-specific removal for the live reef food fish export trade of a naturally uncommon and vulnerable species;
2) Readily accessible to spearfishing at night with SCUBA or hookah (i.e., compressed air) gear and easy to catch with cyanide, or other poisons such as Derris trifoliata, due to predictable adult habitat and shallow depth range;
3) Lack of coordinated, consistent national and regional management largely due to limited management capacity and the sometime secretive nature of traders – in particular there is no relevant regional fishery management authority to address problems with this species;
4) Selective fishing, in particular the intensive take of juveniles for direct export sale and for grow-out (also referred to as 'culture' – the species cannot be hatchery reared; and
5) Illegal, unregulated, or unreported (IUU) fisheries (Donaldson and Sadovy 2001).

In addition, the species' essential coral reef habitat is seriously threatened by human activity throughout the Indo-Pacific region. Destructive fishing practices, such as sodium cyanide use which stuns animals for capture and incidentally kills living coral, have been well documented and are spreading in the Indo-Pacific region (Barber and Pratt 1998, Burke et al. 2002, Bryant et al. 1998, Johannes and Riepen 1995). Despite its prohibition in many countries (including major exporters such as the Philippines and Indonesia), cyanide is still the preferred method for capturing certain live reef fish for international trade in some areas (Burke et al. 2002, Bryant et al. 1998, Johannes and Riepen 1995, Barber and Pratt 1998). Indeed, larger Humphead Wrasse are difficult to catch any other way, other than by night-time capture. When cyanide is applied, the fish often retreats into a crevice and becomes increasingly lethargic as the toxin reduces its ability to take up oxygen. Divers may break away the living coral to get access to the hiding area, and remove the fish to clean water where it will often recover for shipment or holding in net pens.

The most serious threat to this species is overfishing for the live fish export trade. They are mainly taken live for food – only rarely for the aquarium trade as far as can be determined. This species is long-lived and naturally uncommon, and if it is similar to other reef fishes of similar size and biology (e.g., sequential hermaphroditism; aggregation-spawner) it is expected to have low rates of replacement and therefore be particularly vulnerable to fishing pressure (Donaldson and Sadovy 2001). Moreover, being one of the largest of all reef fish, they have few natural predators which means that fishing mortality may rapidly exceed natural mortality, possibly accounting for the rapid declines noted once fishing intensifies.

Although data are not available from throughout its range, wherever there are significant exports and no effective controls, fish numbers have declined substantially within a decade or less and exploitation rates are expected to continue, or more likely, intensify. There are few refuges for this species since live reef fish carriers have access to all reefs where it occurs and it does not extend into very deep water, probably little more than 60m. Adults only occur in reasonable numbers where the fishery is effectively managed or where they occur in marine protected areas.

There has been speculation that Humphead Wrasse, and other reef fish, can be cultured or "farmed" to meet international demand. However, it appears that the use of cultured fish may actually pose a threat to wild populations in certain circumstances since it does not involve hatchery production (not yet possible for this species and unlikely to be possible at commercial levels for many years according to experienced aquarist M.A. Rimmer, pers. comm.) but the grow-out of wild sourced juveniles.

Conservation Actions:

Australia

Western Australia – complete protection since May 1998 because stocks determined to be insufficient and susceptible to overfishing. From December 1st, 2003, Coral Reef Fin Fish Management Plan (for Queensland waters, including the Great Barrier Reef Marine Park) prohibited all take and possession of Humphead Wrasse, other than for limited educational purposes and public display.

China

Permits are required for the sale of this species in Guangzhou province, southern mainland China – for conservation purposes.

Indonesia

Fishing permitted if:

- Done by researcher (with research permit) for the purpose of scientific and mariculture development, as well as by artisanal fishers (with specific fishing permit).
- Allowable weights are 1 to 3kg. Fish with weight less than 1kg and more than 3kg should be used for mariculture and/or freed to nature.
- Allowable fishing methods for catching humphead wrasse are hook and line, fish trap and gill net.
- With regards to artisanal fishers involved in fisheries business partnership, the fishers should sell the fish to its collector partners.
- Collector and exporters should develop a rearing and culturing facility in the collection site which is equipped with staff knowledgeable in reef fish culture.
- Provincial Fisheries Services much monitor, control and report on permits and volumes 3-monthly but no data were available despite multiple queries and are apparently not collected.

Maldives

All exports of Humphead Wrasse were banned in 1995, largely due to concern for recreational diving, a sector that values this species.

Niue

The interference, take, kill, or bringing to shore of the Humphead Wrasse is prohibited without written approval.

Palau

Illegal to fish, buy or sell humphead wrasse < 64cm TL. Illegal to export Humphead Wrasse irrespective of size.

Papua New Guinea

There is a 65cm minimum size limit for exporting Humphead Wrasse but this does not prevent fishers from catching and holding smaller Humphead Wrasse in cages (culturing) until they attain 65cm TL. All live fish operators are required to obtain licenses.

Philippines

Exports of all live fish are technically prohibited throughout the Philippines but this part of the code is evidently not implemented. Until recently Humphead Wrasse could not be exported from Palawan with an exemption for the taking of small fish for mariculture. The Palawan regulation is pending reconsideration. There was much illegal movement of this species outside of Palawan for subsequent export.

This species is listed on CITES Appendix II.

Citation: Russell, B. (Grouper & Wrasse Specialist Group) 2004. *Cheilinus undulatus*. The IUCN Red List of Threatened Species. Version 2014.2. **www.iucnredlist.org**.

DUBAI TURTLE REHABILITATION PROJECT
Jumeirah
HOTELS & RESORTS
STAY DIFFERENT™

A TREASURED PROJECT

THE DTRP CELEBRATES 10 YEARS

FEATURE AND PHOTOGRAPHY **ALLY LANDES**

In celebration of 10 years of continued success, 110 critically endangered hawksbill turtles were released back into the wild from the Burj Al Arab's private beach early that Monday morning. The turtles released had washed up with varying illnesses on UAE beaches earlier in the year and had been brought into the project for treatment.

There is a very special place in Dubai where a small team of dedicated professionals work together for the protection and rehabilitation of injured and sick sea turtles. On June 16th they celebrated their 10th year anniversary of operation by organising a very special sea turtle release. The Dubai Turtle Rehabilitation Project (DTRP) focuses on educating visitors about the plight of the sea turtle within the UAE and the region, including current threats and about the rehabilitation that takes place within the project.

In celebration of 10 years of continued success, 110 critically endangered hawksbill turtles were released back into the wild from the Burj Al Arab's private beach early that Monday morning. The turtles released had washed up with varying illnesses on UAE beaches earlier in the year and had been brought into the project for treatment. A handful of hotel guests, local media and a group of Emirati school children from the International School of Choueifat in Dubai were invited to be part of the official release. One of the project's aims is to involve children in the releases to raise awareness about turtle conservation within the younger generation.

The project runs in collaboration with Dubai's Wildlife Protection Office and with the veterinary support from both the Dubai Falcon Clinic and the Central Veterinary Research Laboratory. It is the only project of its kind at present in the Middle East and the Red Sea region adept at carrying out rehabilitation for endangered sea turtles. The DTRP has so far successfully released 692 of their rehabilitated turtles back to sea and continue to do so. To investigate the movements of the turtles they receive after they are released back into the wild, satellite tracking devices are sometimes sponsored and attached to some of the animals to help to understand their ecology. This initiative has so far shed a lot of light for the teams' curators to fully understand the life that these turtles lead.

Warren Baverstock, Aquarium Operations Manager at Burj Al Arab, commented, "With a long sea-faring history, sea turtles have long been recognised as an important part of Arabian culture and as such they are heavily protected by law in the region as declines in

populations have been recorded by scientists. I am delighted to be part of such an innovative project which is at the forefront of sea turtle rehabilitation protocols and veterinary procedures".

All the hard work and effort that the team have put in over the years is starting to produce research results. The sea turtles that are found are brought in to the DTRP by members of the public such as yourselves, who hand the turtle to the DTRP team and give a description of the symptoms that they think the turtle is suffering from. It has happened, on more than one occasion, that freshwater terrapins and tortoises have been mistaken for sea turtles, but the DTRP team are unable to deal with these exotic pets. Once the sea turtle has been registered into the DTRP, intensive examinations, veterinary treatment and husbandry support are given and the sea turtle is monitored throughout its recovery until it is deemed fit enough to be placed into the outdoor enclosure at Mina A'Salam hotel before its release back into the wild.

Once the turtles are placed into the outdoor enclosure they are subject to stardom and the opportunity is taken for educational talks and demonstrations to raise the public awareness about their biology and plight. These talks are open to the public and take place every Wednesday at 11am and Fridays at 1pm at the turtle enclosure next to the Al Muna restaurant located in the Mina A'Salam hotel. A DTRP team member presents a talk to the guests explaining the work done and answering any questions they may have. The guests also get to participate in feeding the turtles, which is especially rewarding for the younger participants that get to don the feeding gloves to dish out the buffet of greens and squid to the hungry turtles below.

Aneesh, our jovial host leading the talk on my morning's visit, explained how it is crucial that if we find a sea turtle that is covered in barnacles, to not attempt to remove the barnacles attached to the turtle's carapace in any way. The turtles' shells are incredibly sensitive and it will only cause more injury or worse, death in some cases. Through professional care, the turtles are placed in fresh water up to 2-3 days in the DTRP until the living barnacles die

and then the team are able to progress with the safe removal of the remnants, cleaning the carapace and monitoring the turtle's health in the process.

The largest turtle to have been tagged and released by the DTRP was Jade, a Green turtle that had weighed a whopping 150kg. Jade had a satellite tag attached to her and initially only travelled as far as Jebel Ali, where she was actually found. After a period of time, Jade then made a sudden dash for the Iranian coast in the Strait of Hormuz and then travelled back to her favourite spot in Jebel Ali; an amazing demonstration of the ability of sea turtles to navigate so precisely. Dibba, another green turtle that was satellite tagged, weighed in at 80kg and swam the farthest of any turtle released by the project, an amazing 8600km all the way to the coast of Thailand. Dibba was tracked for nine months until the tracking device's battery ran out of power and the communication was sadly lost.

Since the last release, there are currently 25 sea turtles undergoing varying forms of rehabilitation, each fighting their own battles toward recovery. Here are 3 unique candidates:

BABY TURTLE

This tiny little hawksbill is a hatchling and weighs in at just 8 grams. This tiny sea turtle washed up on a beach in Jumeirah and was brought in with the thought it would not make it through the night, but it is still fighting for its life. It is still currently being hand fed everyday and it is currently making a promising recovery.


Photo by Warren Baverstock

AMPUTEE

This juvenile hawksbill turtle was brought in to the project with both flippers on its right side amputated. Amputations are a common occurrence with turtles brought in to the DTRP and can occur when the turtle becomes entangled in fishing line or nets. The turtle is currently learning to compensate for his lack of limbs. Due to it severe injuries, this animal would not be able to survive in the wild on its own and so will be permanently housed in the DTRPs outside enclosure where it will be talked about for educational purposes and to highlight the threats that sea turtles face.

GREEN TURTLE RESCUE

On the 15th of June, the DTRP received a call from a kite surfer on Jumeirah Beach stating that they had seen a turtle floating close to the shore. David and Warren managed to catch up with the turtle seen floating and struggling with the strong current and winds. After watching it for about 20 minutes to assess the situation, it was clear this turtle would later wash up on the beach exhausted or dead. David went in to swim after it with the strong winds and currents, making it a long swim to reach the turtle and an even longer swim back to shore with it. Needless to say, both made it back exhausted, but safely and the turtle's rehabilitation is ongoing.

The DTRP is only one part of the Burj Al Arab aquarium teams daily duties. There are also all the aquarium specimens that make up the core foundation of the Burj Al Arab Aquarium and that have been under constant care and supervision since the opening of the hotel. The aquariums were refurbished back in 2012 with the design and purpose to improve and upgrade the living standards of the inhabitants. The zebra sharks are a number one attraction and a great pride as they are born and bred in the hotel through a process called parthenogenesis, a method of reproduction that doesn't involve a male, a scientific discovery made by the aquarium team themselves.

As the years go on, so does the growth of so many of the larger fish and they sometimes have to be moved into a larger aquarium


Photos by Warren Baverstock

space in either the Dubai mall or the Atlantis. There are many precautions to be taken and the quarantine period is put into place for the fish to adapt to their new surroundings. There is a lot of background work done in order for the transition to be a success and put as little stress on the animal as possible.

IF YOU FIND AN INJURED TURTLE

If anyone finds a sick or injured sea turtle around the UAE, please call the DTRP on **+971 4 301 7198** and leave a message for the Jumeirah Aquarium team or alternatively send them an email on **baaaquarium@jumeirah.com**

www.jumeirah.com/turtles

VOLUNTEERING AT THE UAE DOLPHIN PROJECT: "DEFINITELY A DAY I SHALL NOT FORGET IN A HURRY"

FEATURE **MIKE LAWRENCE** PREFACE **ADA NATOLI**

L-R: 1. Volunteers in action during a sighting. Volunteers help record sighting information, photo-identification data and video footage of the animals. All data is processed once on land. 2. Volunteers at work during a research survey. One of their main tasks is to constantly scan the waters in search of dolphins and record navigation data. 3. Volunteers are directly involved in all phases of the research. During a sighting, it is crucial to keep count of the number of individuals present, group distribution and presence of calves or juveniles.

These have been busy months for the UAE Dolphin Project! We have dedicated lots of time to our education and awareness campaign reaching schools and the public on several occasion, such as the Paddle for the Planet, Abu Dhabi Maritime Plan 2030 and through the public events organized by the Dubai Marina Yacht Club. We also started the first workshop in Dubai and Abu Dhabi training students to conduct the photo-identification data analysis, and they are doing great progress. Watch this space for exciting news soon!

For our fieldwork, it has been three long, hot and challenging months and the UAE Dolphin Project team is looking forward to the end of the summer and the return of more bearable temperatures! Thankfully it has been worth the effort as we had some valuable and interesting sightings! We couldn't have done this without the tireless commitment of our volunteers who have weathered extremely challenging working conditions at sea during the past months! Below follows a personal account from one of our most committed volunteers. Thank you one and all!

On Tuesday 29th April, I went out as a first time volunteer working for the UAE Dolphin Project from the Dubai Marina Yacht Club. We spent the day on the Dolphin Research boat out at sea about 5 miles off The Palm Jumeriah, looking for dolphins. Absolutely brilliant!

Very little is known about much of the animal wildlife off the Dubai/Abu Dhabi coast, so research is done to find out what is doing well and what is not, especially with all the constant coastal building work, island-making and basically pushing the land out to sea. A few dolphins had been spotted by various water based crafts over the months of November to February, but there were no sightings last month so the lead researcher was getting quite worried and when we set off at dawn this morning, we weren't expecting much, but the research was vital even if we were to draw a blank. If the cetaceans had gone or were declining, then maybe there could be money available to do something to set up a protected reserve etc, to try to give them a fighting chance.

Dr Ada Natoli leads the research and headed todays trip with 3 volunteers; myself (an Educational Developer from the UK), a Canadian Freelance Photographer and an Italian Freelance Events Manager; on a 30ft speedboat, Duretti Sportfisher. We set off at a steady 5 knots out of the harbour to follow the transects over the main area of interest that we would cover today. As volunteers, our job was to sit at the front of the boat and keep an eye out for signs of possible dolphin activity and as the sun rose (given it was already 25 degrees before the suns warmth broke through), the sea was very calm, making it good for fin spotting etc. Coming out of Dubai Marina it was just so picturesque and beautifully sunny that we just thought we would make the most of our boat outing, even if all we saw was sea. We would just report our route and note our observations!

At that time in the morning, there was loads of fish activity and lots of fish jumping with interested cormorants and terns focusing on the water's surface, so there was plenty to keep us entertained.

About an hour or so in, we hit it lucky and Brunella spotted some fins to the north of us, as we were heading west. We gradually drew closer and noticed that it was a good sized pod of bottlenose dolphins. They were strung out in line and were travelling north at about 5-8kph. We were about 5 kilometre offshore roughly inbetween Atlantis, The Palm and the Burj Al Arab. We reckoned there were at

least 24 individuals with several juveniles and 2 calves in this particular group. Our research leader kept a sensitive distance to minimise disruption to the pod, but sure enough, it wasn't long until some of them curiously came over to check us out and play around the boat. As well as observing the school, another of the volunteer jobs was to capture pictures of dorsal fins so that they can be identified and we spent more than an hour with this particular group. The calves seemed to be practicing tail slaps and were also jumping clean out of the water. We also recorded our GPS position, water depth, water clarity and temperature, as part of the research data collection. We also took notes about their activities etc. Dr Natoli could identify a couple of the larger fins from earlier trip photos from last year, but there were numerous new individuals as well.

After that early morning excitement, the researchers were really made up and had loads of new material to add to their research. We headed back to our planned transect and continued our horizon-scanning to both sides to see what else we could see. During the next hour, we saw a couple of sea snakes and a large green turtle which were pretty cool, seemingly out in the middle of nowhere.

After about another 30 minutes, someone spotted what they thought were fins about a kilometre away at 4 O'clock (relative to boat). Sure enough, getting closer, we noticed another pod of bottlenose dolphins. Totally different characteristics and behaviour with this group at this time. There were about 22 dolphins, all very closely packed that were very sedate and slow, probably resting/half sleeping. You would see lots of fins and slow breathing, with most of the group coming up to breath at the same time, then they would all disappear for a minute or two and the waters would seem totally still again. Eventually they would resurface as a united group. It was good to get lots of fin pictures to help with identification etc. After about half an hour or so, the group started becoming more active and broke away into three specific groups and seemed to be feeding. Again, some of the group came over to explore the boat and swim alongside in typical dolphin fashion.

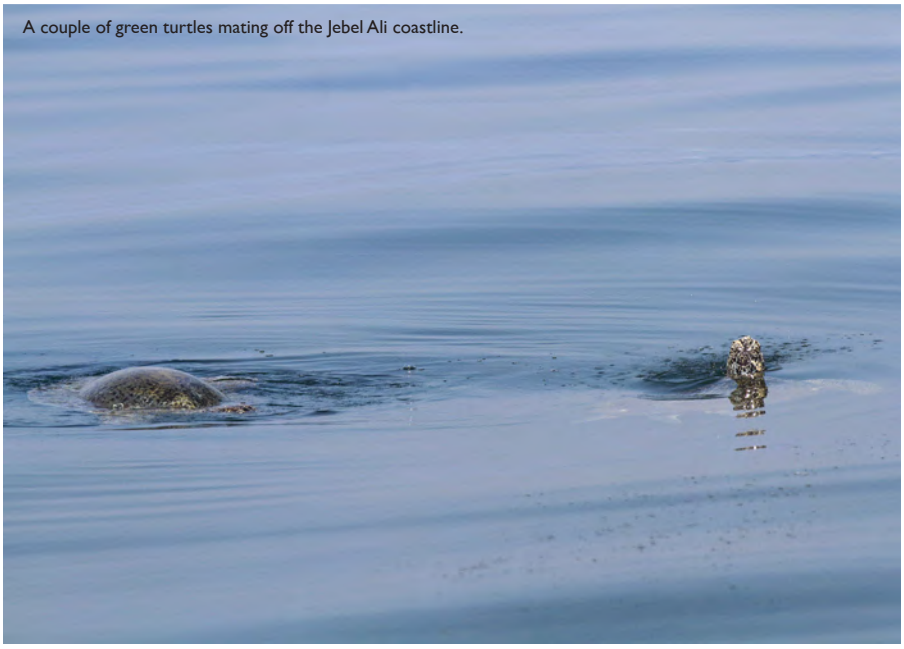
This really was quite unusual to see so many dolphins (in two separate pods) on the one trip. We were really lucky on this occasion. We then returned back to the planned transect to continue the course of observation around midday, but the sea surface was starting to get a little choppy and under such conditions it was difficult to spot fins breaking the surface. We decided to head back to Dubai Marina about 1pm, with a whole raft of data and photos to wade through. Definitely a day I shall not forget in a hurry.

On Wednesday 7th May, my followup Dolphin Research trip was very different to the first and quietly exciting. We left Dubai Marina and

A group of over 20 individuals of Indo-Pacific bottlenose dolphins sighted off the Palm Jumeirah. Several individuals amongst them have already been encountered in previous sightings.

Young Indo-Pacific bottlenose dolphin jumping beside its mother.

A couple of green turtles mating off the Jebel Ali coastline.



headed up under The Palm Jumeirah bridges, hugging the shore, then followed a transect zigzagging up to Dubai Creek with the World Islands to our left and Burj Khalifa to our right. Two large green turtles and three sea snakes later, we spotted something gently rising above the surface. A dark curved back, but no dorsal fin! We had come across a small school of finless porpoises – 4 adults, (we counted) including one mother with a calf clinging to her back. They are pretty difficult to spot and are quite timid, preferring to keep a safe distance between themselves and the boat. They were feeding on the numerous shoals of very small fish close to the shore. We carefully followed them for a couple of hours, but obviously most of the photos looked like a floating tyre. It was tricky to predict where they would come up after their dive, but absolutely fascinating, especially as not much is known about this species. I can't wait for the next opportunity to go out again – whatever it may bring!

On Sunday 18th May, my 3rd venture out with the UAE Dolphin Project came up with some very memorable sights, although this time, we didn't see any dolphins! The early morning sea surface was relatively ripple free, but with a slight undulation that made the boat feel like it was gently riding repetitive speed humps. The transect today covered the area from The Palm Jumeirah, down to Jebel Ali close from the shore to about 5 miles out. With such a smooth sea, it was fairly easy to see anything rising above the surface, but today, at least, it appeared that the dolphins must have been elsewhere! There were, however, numerous sea snake sightings and a lot of sea turtle activity to make up for it. Most of the sea snakes observed close to the boats trajectory were basking juveniles who quickly wiggled down into deeper water when our boat (and its wake) disturbed them. Very little appears to be known of the UAE sea snakes, but what little information is available, says that sea snakes are the most venomous of the world's snakes. One drop of sea snake venom is reputed to have the potency to kill five men. This high toxicity enables them to disable their cold-blooded prey, such as fish, crabs and squid on which they feed. Even young sea snakes that are born live at sea, have a venom as potent as any adult. So it was good to watch them from the boat! As for the turtles, most of the adults disappear under the surface if they think you are too close but we saw about 6 sightings of curious heads, followed by shell and flippers as they dove down. A brown shelled juvenile snacking on jellyfish was more curious than the older and wiser adults and did allow us to observe it for about a minute before disappearing.

With eyes peeled, we noticed a small fin directly ahead of us causing us to slow down and we caught sight of a metre long shark dart away to the right of the boat.

Shortly after this, we saw a small (perhaps one year old) turtle floating near the surface. We slowed and circled back around to see what it was doing. This little chap didn't seem to be diving down, so we approached cautiously to see that the poor little might was covered in barnacles, which are very much like parasites, affecting the animals buoyancy and makes it difficult to dive down. We brought the boat alongside and gently scooped him out of the sea. He was heavily covered and needed some specialised cleaning. The dolphin lead researcher would take him to the Dubai Turtle Rehabilitation Project at the Burj Al Arab, where they professionally remove the infestation without damaging its shell. He was a young hawksbill turtle (about 8 diameter carapace) and we kept him safe on the trip home in a round washing up bowl. Admittedly not very dignified, but our intentions were sound.

There were more sea snake sightings to add to our day, then in the distance Brunella spotted a darker glistening round shape rising just above the surface. We focused on where it had been seen and headed towards to have a closer look. Through the binoculars, it was concluded that it was probably an animal at the surface – but no dorsal fins! Getting closer we could see a flipper, then another flipper – oh dear was the response, it looks like it is a dead turtle with two flippers in the air. We slowed right down, but soon noticed that there was definite activity, so it wasn't dead – in fact it was a pair of large green turtles mating. We kept our distance as they obviously had their minds on other things and we didn't wish to disturb them. Soon, one of them noticed the boat and dived down, but the other kept circling with its head looking down at its mate below. The two then forgot about the boat and got back to their courtship. We gently backed away and left them in peace. It was a great relief to know that it wasn't a dead animal and that they were actively participating to increase their numbers. Our trip ended with us heading back to the Dubai Marina with the mission to drop off our young hawksbill, to the DTRP for a health check and a good clean up.

Young hawksbill turtle found along Dubai shores during a survey. The turtle was brought to the Dubai Turtle Rehabilitation Project. Photo by Jessica Mc Alees.

On Wednesday 21st May at 6am, there were only two of us for this trip. The sea was not particularly calm but the offshore wind was forecast to drop a little later, so we decide it was worth the shot and go out as planned. Todays transect was north of The Palm and up to Dubai Creek, but only out as far as The World Islands breakwater. The surface of the sea this morning could be best described as having large wavelets where crests were just beginning to break. This was going to be tricky as out of the corner of your eye, lots of waves looked very much like potential fins! Still, it was a lovely morning and what a fantastic backdrop for a boat-trip. With each of us scanning our respective halves of ocean between boat and horizon, we did notice several flocks of terns diving down to feed on the large shoals of fish, but unfortunately not much else. On the 3rd leg of the transect, we came in close to the Dubai Offshore Sailing Club where the sea was slightly calmer, we kept scanning, when "fin at 2 O'clock!" – or was it just a trick of the waves? We gently moved in closer to have a better look. Not an easy task, but yes it was a fin belonging to a humpback dolphin. From what we could make out it was a small group of 3 animals and one was a calf. A tail slap signalled that they were not happy with us being in their area. They seemed to be feeding, with their paths not being predictable and trying to capture photos at their next surfacing position was difficult. The youngster performed a leap out of the water, but the adults were not seeking such attention. We managed to follow them for about 8 or 9 surfacings, then they gave us the slip and the sea returned to playing wave tricks with our eyes. Unfortunately the wind didn't ease and as we continued up towards the Creek, we soon realised that it was to difficult to spot anything else, but we knew we were so lucky to have seen the small family group of humpback dolphins in such sea conditions. We were back at the Marina at around 10.30am.

If you would like to volunteer for fieldwork or on a more permanent basis, please contact us at **sighting@uaedolphinproject.org**.

If you encounter a dolphin or a whale dead or alive, please Report Your Sighting at **www.uaedolphinproject.org**!

Alternatively, you can send a text to **+971 56 671 7164** or email **sighting@uaedolphinproject.org** with the following information: Date, Time, Location and if you have any, photos).

You can also post it on the project's Facebook or Twitter pages. Please make an effort to take photos! You might just identify an individual!


.SPOT.
THE DIFFERENCE
Please report any whale shark encounters in the region to Sharkwatch Arabia.
SHARKWATCH
ARABIA
Encounters can be reported via the Sharkwatch Arabia Facebook page or at www.sharkwatcharabia.com
PHOTOGRAPH BY WARRENBAVERSTOCK.com

MAFIA ISLAND

FEATURE **CHRIS ROHNER** PHOTOGRAPHY **SIMON PIERCE**

Divers are underwater explorers. Wether it is the zero-gravity feeling experienced at neutral buoyancy, swimming back in time on a wreck dive, or ticking off another colourful nudibranch on your species list, divers love discovering new things.

Divers are underwater explorers. Wether it is the zero-gravity feeling experienced at neutral buoyancy, swimming back in time on a wreck dive, or ticking off another colourful nudibranch on your species list, divers love discovering new things. And when we do, we often want to learn more about our discovery. In the case of an underwater animal, we might wonder how far it can swim, how many of them exist and how fast they grow. Such information is lacking for many marine creatures and that is when the hidden marine biologist inside us starts to kick in. Now combine this drive for science, with a trip to remote Africa and the biggest fish in the world and we have ourselves an adventure!

The biggest fish in the world is of course the whale shark. Despite its huge size, many aspects of its biology and ecology remain unknown. After all, researchers have only studied this species in detail for a little over a decade. Whale sharks are globally threatened, which means that solid science is needed to better protect them from further declines. Whale sharks predictably aggregate at certain times and locations, allowing scientists to study a fish that otherwise is pretty hard to find in the open ocean. One of these places is Mafia Island, a beautiful, quiet island off the coast of southern Tanzania. And this is where you come in.

Dr Simon Pierce is a renowned whale shark expert and conservation biologist working with the Marine Megafauna Foundation. Interested divers can join him in the field and get hands-on experience on how whale shark research is being conducted. How far do they swim? To find out, Simon and his team attach small acoustic tags to the sharks that constantly transmit their signal. Whenever the tagged shark is within a certain range of a strategically placed underwater receiver, the information from the tag is stored in that receiver. After downloading these "listening stations", we can see where the shark spent most of its time. How many whale sharks are there? The first step with this question is to identify each individual. Luckily, whale sharks have a spot pattern that is unique to each individual, just like a fingerprint for humans. By taking a photo of each whale shark we encounter, we can build up the database and calculate the population size. How fast do they grow? To answer this, Simon uses lasers to project a scale bar on photographs of whale sharks, allowing him to get an accurate length measurement. He has been doing this for three years, and by re-measuring the same individual sharks over time, their growth can now be determined.

A whale shark research day on Mafia Island usually starts with a briefing on the beach before heading out on the water. While we search for whale sharks, Simon explains how the research equipment works. And then it is time to convert theory to practise. Swimming with a whale shark is pretty exciting in itself, so it can be a bit tricky to remember taking the identification photo, or checking for scars the sharks might have from boat strikes or net entanglement. But after a few tries, we get into science mode quicker and start collecting valuable data.

There is also plenty of time for relaxing on the beach, exploring the Swahili culture and historic ruins and of course for diving in Mafia Island's marine park. You can dive right off the beach in search of interesting macro life in the seagrass, photograph curious turtles on the shallow reefs of Chole Bay or drift dive along the deep wall outside the bay. The reefs here boast the highest biodiversity in East Africa and diving off the traditional dhows is so nice and relaxing you might just swap a whale shark day for more diving. In the evening, Simon talks about the day's results over a beverage, gives you some whale shark photography tips for the next excursion or tells tales of his previous marine biology adventures. Turns out that the life of a marine biologist on a field work stint is pretty awesome!

AQUAFIRMA runs a whale shark research expedition to Mafia Island from 6-15 November 2014 (**www.aqua-firma.co.uk**). They also run trips to Mexico's whale sharks as well as to many other destinations.

MARINE MEGAFAUNA FOUNDATION (**www.marinemegafauna.org**) conducts research on whale sharks, manta rays, turtles and other large marine animals.

MAFIA ISLAND DIVING (**www.mafiadiving.com**) offers dives and courses in the marine park and is based on the beach in Utende. Emirates flies to Dar es Salaam 7 times a week and from there Coastal Aviation (**www.coastal.co.tz**) or Tropical Air (**www.tropical.co.tz**) fly to Mafia Island every day.

DEEPER INTO DEPTH

FEATURE **PATRICK VAN HOESERLANDE**

At the end of my dive during which I have admired the attractive depths of the Spanish coast, I start rising to the surface. A glimpse at my dive computer tells me that I must perform a decompression stop of 6 minutes at 5 meters. My mind wonders off searching for an answer to the question: what does 5 metres mean?

As outlined in my previous article, 'It's about Time!' I suggest analysing this broad question with a two step approach by splitting it up into 2 distinct and smaller problems: the first one is, 'the unit of length' and the second is the 'reference'.

The depth of surface water is often referred to by the term water depth. Previously this was measured in fathoms. A fathom was the span of the arms of a small, adult man. This unit for depth could easily be measured by sailors using stretched arms while hauling in a line. Nowadays depth is, for reasons of standardisation, expressed in multiples of metres and for the deep sea, in multiples of kilometres.

THE METRE

The metre (symbol 'm') is one of the 7 fundamental units within the International System of Units ('Système International' or SI). As a unit for length, it is the basis of the metric system. The definition of a 'metre' has changed a number of times in the course of history – each time to become more accurate and to be more stably determined – because the development of science made more precise measuring possible. The first definition of the metre appeared in 1675 in the book of the Italian Tito Livio Burattini. He defined the metre as the distance of a pendulum that moves with a half period of 1 second. Although this was for the 17th Century an admirable performance in precision, the so defined metre was not truly universal. Firstly, the precision depended on that of another unit, the second. Secondly, the period of a pendulum depends on the local gravitational acceleration and thus on the position on earth and of the height above sea level.

Searching for a universal metre, the French Academy of Sciences defined in 1791 the metre as the distance at sea level from the arctic to the equator, measured along the meridian of Paris (and thus not the prime meridian through Greenwich!) divided by ten million.

Only until 1799, after scientists had measured the correct distance from pole to equator, that this new standard was determined. This metre, called the 'mètre des Archives', was then fixed through a bar of platinum. Later it was proved that the platinum metre was 0.2mm too short due to a miscalculation in the flattening of earth. However, the standard itself was not changed. It was even kept when in 1889, during the first 'Conférence Générale des Poids et Mesures', the metre was redefined more precisely as the distance between two notches on a bar made of 90% platinum and 10% iridium measured at the melting point of ice, the so-called X-metre.

Because a physical metre as the basis to calibrate precision equipment all over the world was extremely difficult to use, scientists were for decades searching for another, more appropriate definition. Thanks to the more accurate measurement of time by using atomic clocks, the current definition of the metre was fixed in 1983. The speed of light in a vacuum is now, by definition, exactly 299,792,458m/s. In turn this defines that the metre is the distance travelled by light in a vacuum in one 299,792,458th of a second. So, we are back to a definition by which time defines distance, but now the metre can be accurately determined in any laboratory around the world.

MOUNT EVEREST

Now that we have well defined the unit of length, we must still determine what 'depth' really is. This may seem simple, but like almost everything in life, this is not the case. For example there is the ongoing discussion on which mountain is the highest in the world. Is it the Mount Everest or the K2? Why is it so difficult to agree on the height of a mountain? You only need to measure the distance between the base and the top of the mountain right? Correct, however now comes the problem of, 'where exactly is the base of a mountain?' To answer that last question, you need to measure the height from the point on the earth's surface directly under the top of the mountain. Because we are not able to dig through the stone towards the base – even that would, however not prove the solution – we must come up with a mathematical model of the earth. This model is called a geoid. This name comes from geodesy, also called geodetics, the scientific discipline that deals with the measurement and representation of the earth, including its gravitational field, in a three-dimensional time-varying space.

The most simple form of a geoid is a sphere. But, as we know this is not correct because the earth is, due to the centrifugal forces, flattened at the poles. An important characteristic of the geoid is that the gravitational force is perpendicular to its surface. Now, gravitational vectors don't always point towards the centre of the earth, because they are also influenced by large masses, such as mountains. And so, the foot of the mountain is influenced by the mountain itself. The discussions are in fact not about the 'height' of the summit, but on the impact of the mountain on the exact position of the base.

DEPTH

But what about depth? There are no mountains in the sea (however, the deep sea explorers have found mountains and valleys), so there are no influences of large earthly masses. And the 'top' is the surface of the water. Nicely flat and visible. But, there are the waves. Must we simply wait for a calm day without wind? But what about the tidal movements? Easy? The determination of the reference plane depends on the 'why' you need the reference. For sea navigation you want to create a map that prevents vessels to run aground. You will therefore ensure that risks which lead to the overestimation of the actual depth are as low as possible. In other words, you want a reference plane that is as low as possible.

In the lower European countries, the water level for fresh waterways is given in relation to e.g. the 'Normaal Amsterdams Peil' (NAP). On nautical charts the depth from surface to bottom is given in reference to the NAP and thus the correct water depth can be calculated at any time. For convenience, the NAP is often equated to the average sea level. However, the NAP is nearer to the average high tide level of the river IJ, before the closure (the IJ was formerly an arm of the sea). In the beginning the NAP corresponded with the geoid, but nowadays this is no longer the case. The ETRS89 (European Terrestrial Reference System 1989) is now the official three-dimensional coordinate system.


Photo by Roland Wantens

British nautical charts sometimes use the Lowest Astronomical Tide (LAT) or the lowest tide level predicted under average meteorological conditions and under any combination of astronomical conditions. This very safe reference plane for nautical navigation is a rather pessimistic indication of the depth at sea. Therefore, we as divers, need another reference.

The sea level is the average height of the sea levels during a predefined, long period, after averaging out all the variations due to the tides. Therefore, determining our reference plane for the sea level (MSL or 'Mean Sea Level') will not be without difficulties. A sea level is the result from the volume of liquid water on earth and from the average temperature of that water as it affects the average density.

Changes in the absolute sea level (the so-called eustatic changes) occurred in the course of the geological timescale and even during our written history.

The changes in the absolute sea level are determined by the size of the polar icecaps and the temperature of the sea water. Both depend on the average climate on earth. When a climate change in the form of a temperature rise occurs, the icecaps may melt or the sea water gets warmer. In both cases,

Photo by M. Minderhoud

the absolute sea level rises. In the contrary case, a temperature drop may result in a lower sea level.

The relative sea level not only depends on the eustatic changes but also on the movement of the earth's crust and the supply of sediment to the seabed. If there is much sediment that remains on the bottom, the seabed rises and the relative sea level falls. If the earth's crust moves downwards, the relative sea level will increase. The sea level can therefore change locally while the absolute sea level remains the same.

Recently, the rising of the sea level has become a very hot topic because of the greenhouse effect and the much discussed climate change. Measurements of the absolute sea level over the last 130 years show a gradual increase of approximately 20cm in total. Scientists predict that the sea level will have risen to 1m by the year 2100 and will continue to rise at the same pace afterwards. This means that certain parts of the world will be flooded. Many human activities take place near the coast on pieces of land that are at or even below sea level. Low-laying archipelagos like Tuvalu may in the near future disappear below the sea.

But, let's return to the mean sea level. This is the measured level of a calm sea, i.e. one of which all movements, such as wind and tide are filtered out. This is done by taking the average of the results of hourly measurements over a period of 19 years. The measurement of the sea level is done in relation to a landmark. Therefore a change in MSL can be the result of a real change in sea level or a change in the height of the landmark.

That the sea level is not a constant given, is clear from the factors that have an impact on it. Think on things like heavy rainfall and the resulting feed of water by large rivers, differences in density by changes in water temperatures, 'el Niño', the wobble effect and the variation in the rotational speed of the earth, landslides, tsunamis, etc. The difference between MSL and the geoid is around 2m.

Now that we understand and know how to solve the problems of the reference plane, we can start determining depth. The water depth is partly calculated based on measurement data through the use of sonars, dipsticks and (recently) satellites. The depth depends on the composition of the bottom which muddles the distinction between water and soil. Differences in composition and the interpretation of it results in some incoherencies between the data coming from different sources. In a soft soiled bottom this becomes even more difficult because currents may really stir things up. Fortunately, there are guidelines. At a certain density of the water it counts as the soil, so normally there should be a clear boundary between the two.

We have defined the reference plane and we know where the bottom starts. With the definition of the metre at hand, we can now perfectly and accurately determine the depth. But what is our dive depth?

DIVE DEPTH

In fact, as divers we are only interested in the local, actual depth at our dive spot. As long as we can approach this properly, we are satisfied. During the dive we wear our depth gauge or dive computer telling us how deep we are. Although expressed in metres, we actually read the pressure surrounding our wrist. This pressure is the result of the weight of the water column above our head. And this pressure depends on the average heights of the waves, the temperature of the layers of water above us, the salinity (the concentration of salt) and the water. Therefore, my depth is not yours (and that is hard to verify).

The next time you hear the question, "how deep are we?", you now understand that the answer is more complex than you originally thought before the start of this article. But such a complicated answer to your buddy's question is most certainly not what he/she expects.


Photo by Torsade de Pointes


Photo by LimoWreck

YOUTH DIVING – LIFE IN SALTWATER

FEATURE **KIKI VLEESCHOUWERS** AND **PATRICK VAN HOESERLANDE**

Bobtail or Sepiola. Photo by Sven Van Langenhove.

Seaweed Pipefish. Photo by Gery Beeckmans.

In the last June issue of 'Divers for the Environment', Scrimpy, our nice little shrimp from our book 'Youth Diving for Youth Divers', took you on a tour to his fresh water friends. In this article, Scrimpy will guide you in the salty water of the 'Oosterschelde'. That is a branch from a big river in the Netherlands that gives out to the sea. Exciting!

Because it is in contact with the sea, the waters over there are not as quiet as one would expect in a slow flowing river. There are waves and strong currents. Nonetheless, many animals feel at home in that salty, sometimes violent world. So, eyes wide open and let's go diving!

Scrimpy now wants you to meet his salt water friends and match them up with their descriptions.

JANOLUS

What is this? Do you see that slow moving creature on top of a small beige coloured 'bush' over there? The 'bush' is a colony of moss animals, the popular food of this beautiful creature. Only a half-finger long, with transparent papillae (a difficult word for the organ that filters air out of the water, a bit like the gills of a fish) that end in blue coloured dots. This is the Janolus!

SOMETHING SPECIAL

This is a Nudibranch or naked slug, not because it has no clothes on, but because it is a slug that does not drag its house around.

Slugs lay eggs and not just in any way. The eggs are placed in a special design. Each type of nudibranch lays its eggs in a different way. That design tells you which species laid those eggs.

FACT

Salty waters house many different types of Nudibranchs, more than 50 different types. And they all have a special form or nice bright colours. This is a big difference with slugs you find in the garden; those are just brown or grey coloured and don't look special at all. And these slugs do not nibble on the vegetables in the garden either.

BOBTAIL OR SEPIOLA

What is this? There is a small creature in the sand the size of a Lego block. It moves with small arms and it constantly changes its colour. This is the Sepiola or Bobtail squid.

SOMETHING SPECIAL

This cute squid is small and it is afraid to be eaten, so he defends himself very courageously. If the situation is really dangerous, it sprays a small cloud of ink! Or he quickly hides in the sand.

FACT

There are more squid like animals in our salty waters which are quite nice and much bigger such as the Sepia, or the Cuttlefish. You know its skeleton. It is the flat, oval, white thing we sometimes give to singing birds to nibble on. You can also meet a real Squid, but these are very fast. He usually shoots away before you can even see him, just like an arrow and disappears into the dark.

MOON JELLY, COMMON JELLYFISH, OR SAUCER JELLY

What is this? There hovers a transparent hemisphere with some strings underneath. In the hemisphere you see 4 circles and the jelly like thing closes and opens again. This is how a Moon Jelly swims.

SOMETHING SPECIAL

Have a close look at the 4 circles in the hemisphere. Sometimes these circles are coloured violet, that is a female jellyfish. And if the circles are white, you have just found a male one.

FACT

You may observe the jellyfish very closely. This jellyfish will not sting you. That is, its stings are not toxic to humans and you feel nothing. Beware, this is not the case for all jellyfish. Some may sting you very badly!

NOW THE DIFFICULT SEARCH IN THE SEA

After the previous article, you have already proven that you know how to find the difficult species in fresh water. Are you as good in the sea? Sure and with Scrimpy as your experienced guide, you'll be surprised who and what you can meet in salty water. There are large animals, but also small and very tiny ones. Eyes wide open, torch in hand, camera ready and brains on maximum alert! Here you go!

SEA GOOSEBERRY

What is this? An oval sphere, approximately the size of a grape, floating past your mask. There are 2 long strings, tentacles, attached to it. Turn the light of your torch towards it! You see a lot of beautiful colours. You are dealing with the sea gooseberry.

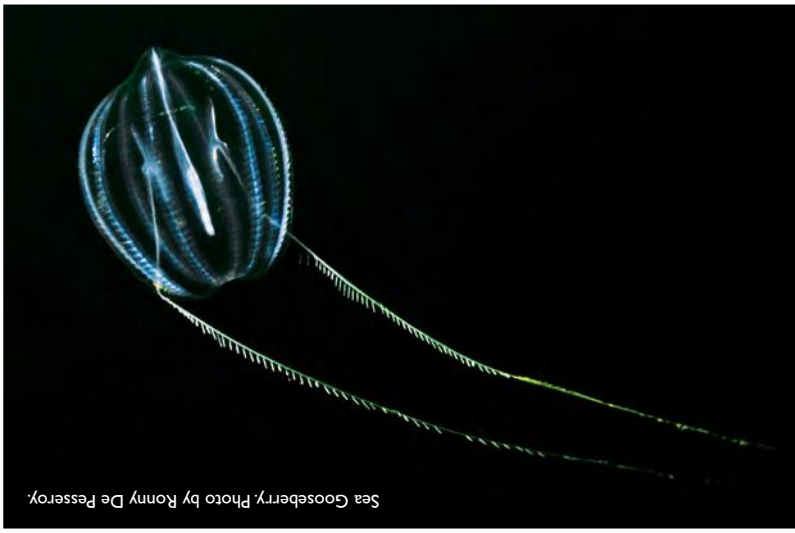
SOMETHING SPECIAL

A Sea Gooseberry is a Comb Jelly. No, this is not a 'real' jellyfish because Comb Jellies do not have stinging tentacles. Not so long ago biologists thought this was a kind of jellyfish (hence its name), but now we know better. So no pain when a Gooseberry slides along your cheeks with its tentacles. These tentacles have


Janolus. Photo by Ivo Madder.


Skeleton Shrimps. Photo by Ivo Madder.


Diadumene Anemone. Photo by Gery Beeckmans.


Sea Gooseberry. Photo by Ronny De Pesseroy.

glue cells that catch food such as plankton and it sticks to them. The tentacles transport that food to the mouth of the Gooseberry.

CIGAR COMB JELLY

FACT

The Sea Gooseberry is the favourite food of another Comb Jelly, the Cigar Comb Jelly. Nice, I thought families stuck together, not eat each other. The Lumpfish is also a lover of Sea Gooseberries. This is a very special fish that you can meet especially in the winter months in the salty waters of the Oosterschelde.

BRISTLE WORM

What is this? A fan-like thing that waves in the current. It has a nice colour of white with brown bands. Feathers? Are there birds living underwater? Get a little closer. Suddenly, the feathered fan withdraws quickly and the only thing you see is a brown chimney like tube. Scrimpy would like to introduce you to the Bristle Worm.

SOMETHING SPECIAL

The Bristle Worm is a worm that lives in salty water. To protect itself against all those hungry maritime predators, this worm creates his own little cottage that looks like a brownish tube wherein he can completely hide. Only a small part of this tube extends above the bottom and sometimes the worm comes out; these are those feathers. These feathers, or better known as tentacles, capture the food for the worm and help him to breathe.

FACT

Get your magnifying glass out! Try to approach the worm quietly, so quietly that he does not withdraw his feathers…I mean his tentacles. Very often you see very small and white creatures crawling around those tentacles. Small balls with 2 legs. These are Copepods that love to live together with the worm in close and cosy contact.

SKELETON SHRIMPS

What is this? On the hard surface there is a white-yellowish, treelike appearance, sometimes up to 50cm in size, but usually smaller. It really looks like a small tree but it is a sort of sponge, called *Haliclona oculata*.

SOMETHING SPECIAL

This is a sponge? Yes, not all sponges have the form of your bath sponge! Sponges are funny animals, you can find them in all sorts of shapes and colours. They are pretty primitive animals. This is another way to say that a sponge has no components. It has no lungs, no stomach and no brain…Sponges are very important animals in the sea because of their way of eating, they filter the water. They not only catch food, but they simultaneously filter all the small debris out of the water!

FACT

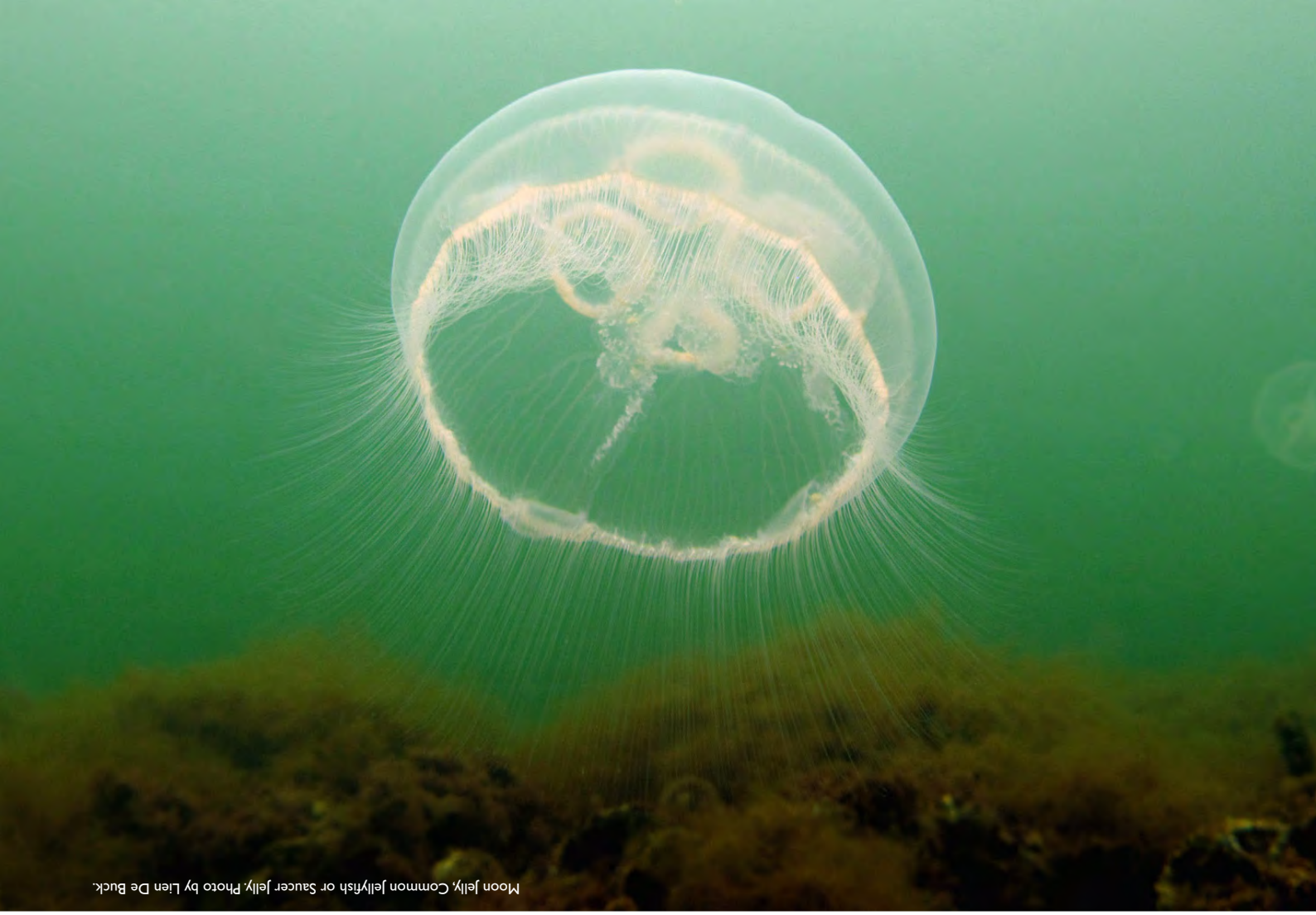
Take a very close look at this Halidona. Do you see this unbelievably thin, almost transparent creature no larger than a centimetre hanging? That is a skeleton shrimp. These are very small. They grasp the sponge with their rear feet so they can use these front legs equipped with miniature scissors to catch food. Really cute! And if you are lucky, you will see his greatest enemy on the sponge, the *Jorunna tomentosa* (what a name)! This beautiful Nudibranch (remember: the slug that does not drag its house around) has the same colour as the sponge and is not larger than 5 centimetres. Can such a little slug be someone's enemy? Yes, because this slug really loves to eat this kind of sponge.

DIADUMENE ANEMONE

What is this? An Ochre Red 'Flower' of only a few centimetres in size sits firmly on a stone or on wood. Even a shell or the back of a crab would be fine to hold on to. The 'flower' has a solid 'stem' with a halo of tentacles. The Diadumene Anemone.

SOMETHING SPECIAL

This 'flower' is definitively not a real flower, but a Sea Anemone and Sea Anemones are animals and not plants (we already encountered some animals disguised as plants. Do you remember them?). Don't worry if you thought they were plants, they really look like flowers. For this reason, they are also called flower animals and named after the anemone, a terrestrial flower. This little anemone has tentacles that sting. These trap and paralyze the food and bring it to the animal's mouth. But look, sometimes you see that this anemone has a couple of longer tentacles. These are 'fighting tentacles' to keep



Moon jelly, Common jellyfish or Saucer jelly. Photo by Lien De Buck.

other anemones at a safe distance. Therefore, if you find several anemones together, you can see that they keep a nice distance between them.

FACT

What did we say? That an anemone keeps other anemones at a safe distance with its fighting tentacles? Is an anemone not fixed? No, they can walk. Not at supersonic speed, but they move around!

SEAWEED PIPEFISH

What is this? Look between the weeds and you will see a long thin yellow-brown 'eel' swimming around. It has a cute little head that looks like one of a sea horse. Please, meet the Seaweed Pipefish.

SOMETHING SPECIAL

Pipefish are very special fish. They do not have scales or protective plates like a normal fish. And yes, they are part of the Seahorse family. You'll also find Seahorses in our salt waters, but they are not frequently spotted. You have more chances of spotting a Pipefish. For a diver with sharp vision, the snout of the little pipefish is shorter than half the length of its head. The large Seaweed Pipefish has a bump on the rear of its head. Its smaller 'brother', the Little Pipefish does not have this bump.

FACT

The mother Pipefish is an emancipated female. She gives her eggs to the daddy Pipefish and swims away cheerfully. The daddy Pipefish takes care of the eggs during five months and holds them in a fold under his tummy. He does this until the eggs hatch and the baby Pipefishes can swim away. What a caring dad!

Bristle Worm. Photo by Jef Driesen.

So, here stops the whirling tour through the sweet and salty waters with Scrimpy as your guide. There are many more plants and animals to discover, but it is up to you now. Scrimpy invites you to continue discovering every time you dive into the water. And who knows, you may discover something even Scrimpy doesn't know about. If you do, then you must email him and tell him your discovery.

Just let us know: **skubba_en_fred@nelos.be**!

FIRST TEST WITH A NIKON D3200 REFLEX
PAIRED WITH ITS NIMAR UNDERWATER HOUSING

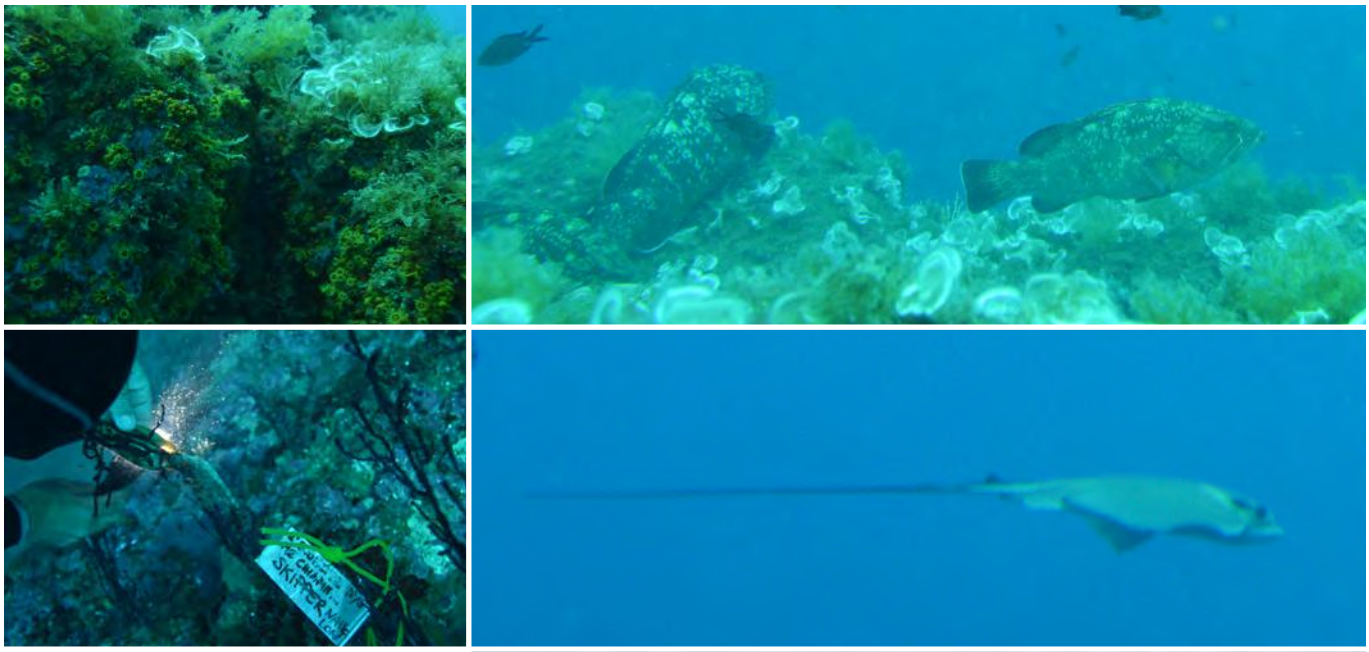
FEATURE AND PHOTOGRAPHY **NICOLA DE CORATO** – DUBAIBLOG, DIVER & HELI RESCUE SWIMMER

A knock at the door and here it was! The package I had been waiting for. It was larger than I had expected. The box contained a Nimar Underwater Housing for my Nikon D3200 camera. After several experiments with less prestigious equipment (which had allowed me to learn the basics of photography necessary for my activity of professional blogger and social media consultant), I decided to up my game and use a Nikon D3200.

I chose a reflex with a good price/quality relationship as I really do not need a more powerful camera for my job; yet, it's a solution that allows me to mount an external microphone.

Since I collaborate with a few scuba diving magazines and given my passion for diving, I have used this reflex, first, with a Canon model (the Powershot D20) which is waterproof up to 10 meters housing free, then with a Nikon Coolpix AW101 (waterproof to 18 meters with a built-in depth gauge). However, these cameras soon showed their limitations, especially when compared to the Nikon D3200. I decided to order the Nimar underwater housing to maximize the return on my media from my diving. I ordered the underwater housing for the Nikon D3200 with an AF-s Nikkor 18/55mm f/3.5-5.6G ED VR and eyepiece.

As soon as the package arrived, I spent some time studying my new purchase. Made of transparent polycarbonate, the Nimar 3D housing for the DSLR Nikon D3200 covers the camera perfectly. The new stainless steel fasteners with clip safety catches ensure



NIMAR Housing for the Nikon D3200 and Nikon Lens, 18-55, 70-200mm.

adequate waterproofing to a depth down to 60 meters. It is fairly easy to set up the camera for underwater use, but it's better to try it once before actually needing to use it. Now all that was missing was to test the housing in water, at the Banco di Santa Croce.

After some quick research on the internet and after crosschecking information with scuba diving friends living in the area, I identified the best diving site for my test at A.S.D. Bikini Diving. I contacted the President, Pasquale Manzi to express my need to organize a diving session to test my new equipment before leaving for Dubai. I also mentioned that we could take the opportunity to shoot some photographs for Emirates Diving Association's magazine (to which I contribute articles), presenting the Banco di Santa Croce as a possible diving destination for all scuba diving enthusiasts in the UAE. Pasquale made himself available and proposed a couple of dates in which I could join the association during its dives.

The Banco di Santa Croce, a biologically protected area established in 1993, consists of five tall rocky pinnacles.

The cliffs are more or less steep, depending on the side you are on and can be 50 meters deep. There was some tension as it happens any time you try something new (and in this case, there were several new elements: the location, the equipment, the diving buddies…); as well as the minimum number of photographs expected to be used.

The camera asset, lightly positive, wasn't uncomfortable with the diving suit and immediately revealed the usefulness of the safety latch. Red and yellow gorgonians and *Axinelle cannabina* peep out within 18 meters, giving me the chance to use the camera and take the first few pictures.

Deeper, we found a higher concentration of gorgonians, often covered with catshark eggs, a scenario that is almost unique in the Mediterranean. Below 30 meters, the scuba divers can see long branches of *Gerardia savaglia* and numerous ravines where catsharks and gronchi fish hide.

Circumnavigating the main pinnacle, we see a vertical rift that splits the rockface in two; the light filtering through from above goes through the weaving of gorgonian branches, treating us to a striking scenario and giving us the chance to try some backlit shots. We saw large groupers and we were lucky enough to see also (and photograph from afar) eagle rays hovering in the blue.

Occasionally, during decompression stops, it's possible to see amberjacks, palometa and lampuga speed by. The diving gave me a great mix of emotions. Although I still have a lot to learn in underwater photography (and not being or wanting to be a professional photographer), I am satisfied with the test and with the quality of these first few photos shot with the NIMAR housing. Maybe, after a few more tests when I return to Dubai, the next purchase will be a set of lights to couple with the housing.

I would like to again thank Pasquale Manzi and all the staff at Bikini Diving for their availability and all the assistance during the dives.

Ready to dive and shoot, Nico

We had the chance to dive at Banco di Santa Croce with the support of A.S.D. Bikini Diving, a team of international scuba diving instructors and professionals.

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LET'S GO TO LEMBEH

FEATURE **MOHAMED ABDULLA**
PHOTOGRAPHY **ABDULLA ALHMOUDI, AHMED AL ALI** AND **MOHAMED ABDULLA**

I realized that this place was not an ordinary Dive Resort, but one tailored especially for Underwater Photographers.

Photo by Abdulla Alhmoudi

Photo by Ahmed Al Ali

A week before the Eid holiday, I realized that I would have a lot of free time on my hands and I didn't have anything planned, so I started to call some friends to see what they were up to.

"Eid holiday is going to be for a whole week! So who's up for some action?" I asked.

"Ahhh, I can't man, I'm sorry. I promised my wife I'll take her to Atlantis", said one of my boring friends.

"YEAH! Man let's do this, where are we going again?", said my not boring friends Abdulla and Ahmed.

So I told them I had a free week's stay to use up in a place called Kungkungan Bay Resort in Indonesia that I had won in EDA's Digital Online 2014 Underwater Photography and Film Competition. We contacted KBR and upgraded my prize to the Owner Suite so we could all stay in one place and annoy each other with our snoring. That and talk about diving and exchange underwater photography knowledge and talk about what had happened underwater. I assume you understand the fun that is by the fact you are reading this magazine.

The week before Eid, our flights were booked, the Owner Suite was reserved for the week (inclusive of three meals/dives per day). We packed our cameras and we were ready to fly.

THE RESORT

We arrived at Manado Airport on the 1st of August and a car from the resort was waiting for us. The driver was very nice and spoke good English, but for some reason, he talked about hamburgers most of the journey, so we named him Mr. Hamburger. It took us about an hour and a half to get to the resort. On our arrival, one of the resort's managers, Mrs. Ais, (a very nice host with a name as sweet as ice-cream) was waiting for us with a bright smile and three ice-cold glasses of fresh watermelon juice. They gave us "mesh bags" and three name tags each, one tag for the mesh bag, another for the BCD and the third for the camera. The mesh bag was to put your dive gear in and keep by the door which is collected every morning and taken to the boat for you.

After that, we were escorted to the dive center where we met Paco, the dive manager who was a great Spanish guy with an amazing sense of humor. We found out later on that his name was Francisco Javier Santiago Lopez, and I thought Arabic names were long. Paco explained the system to us and showed us around. Briefings happen in the hanging hut (where they hang wet suits, not people) and after a dive, wet suits go in an allocated pool, cameras go in another two pools (I would always rinse my camera in the pool with the beautiful blue ring octopus mosaic for good luck). We got the run of the dive center and where to rent any equipment if needed and last but not least, the Camera Room. My favorite room in the resort. They have a dedicated camera room with lights at every station and power sources above each station for you to charge your batteries with 110v and 220v. There are also towels and an air tank to dry your camera with. At this point, I realized that this place was not an ordinary Dive Resort, but one tailored especially for Underwater Photographers.

Outside, there were two white boards. The first board was the diving schedule where you can see your next dive site and the Dive Guide assigned to you and the second board was the KBR's wish list, where each guest would write the names of the critters he/she wishes to see. When we saw that, we remembered that we had already made up our wish list on the plane. My wish was to see the Blue Ring Octopus, Ahmed's was the Pygmy Seahorse and Abdulla's was the Mandarin Fish. We had agreed that we would confirm this a successful trip only when our three species were found.

So after a few minutes of day dreaming, Paco explained the dive schedule; first dive at 8:00am, after that, cookies and hot chocolate are served up and you preorder lunch. Second dive at 11:00am and then lunch will be served and waiting. Finally, the third dive at 3:00pm to which after is the time to relax and unwind until dinner time.

LEMBEH

After the tour, we went to our suite located only a few meters away from the water with a breathtaking view starting with the glorious coconut trees, followed by the soft beach, taking your eyes towards the Lembeh Strait and a few seconds later, your eyes are seduced by the vivid green mountains of Lembeh Island. And there it was, the place that everyone is talking about, the magnificent strait of Lembeh, Critters Paradise, but unlike anything we could have imagined. This place was like Jumeirah Beach Road on a Saturday night! Boats of all shapes and sizes going back and forth, harbors and some factories on the coast, I thought this was supposed to be more like a protected area, a marine sanctuary. How can a place this crowded, have such a global reputation for being one of the best diving destinations in the world? At this point I started to have doubts that we would find anything here.

THE FUN PART – KAPAL INDAH

The next day started with an early breakfast because we needed time to unpack and setup our cameras and I will not start talking about the food because I know I might get carried

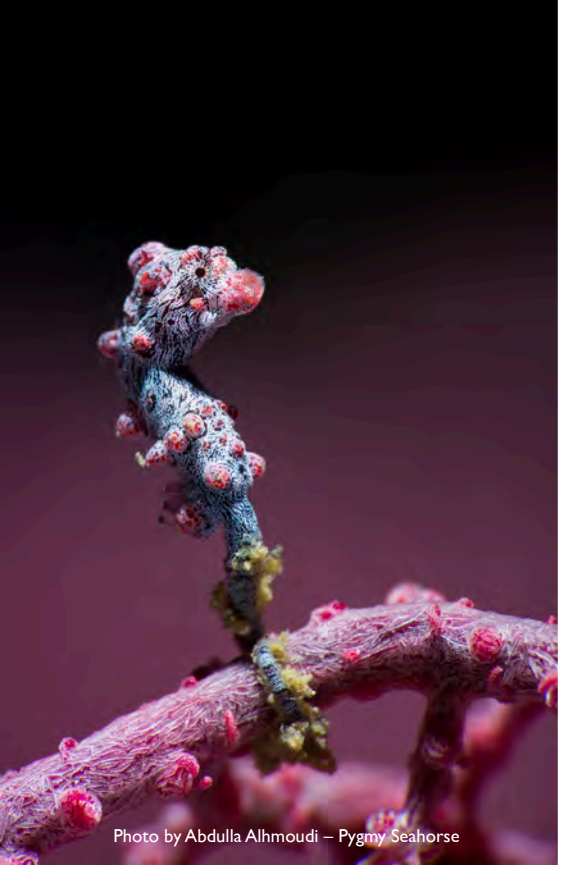


Photo by Abdulla Alhmoudi – Pygmy Seahorse

Photo by Mohamed Abdulla

away and forget that I was talking about diving. So after breakfast, we went to the hanging hut to hear the briefing about our dive.

Our first dive guide was Nofry Labage, aka Ungke, a very skilled dive guide who can find any critter you can imagine. He explained the dive site in a very professional manner, actually he explained it so accurately, I thought he was making it up. The dive site was called Kapal Indah. While Ungke took about five minutes to explain every inch of the dive site, our dive gear and our cameras were being transferred to the boat. I think it was a good idea to start with this particular dive site, it really was a tasty appetizer because it had a combination of coral, rubble and a wreck. This variety gives you a better chance of finding things. Worst case scenario, you find nothing on the wreck, nor the rubble, so you move on to the coral reef where the odds of not finding anything are similar to the odds of seeing a turtle do cartwheels.

Let me fast forward to the fun part, the dive. We jumped off, cameras locked and loaded, we started from the shallows, descending slowly to the wreck at 26 meters. We searched around randomly for critters, we didn't find much. I got attracted to a clownfish on a red rose anemone which created a beautiful background before I started to think I hadn't come all this way for a clownfish! We have plenty back home, so I started to move around the wreck looking for a more interesting subject. I moved to the shallower part of the wreck to buy more time where I found a nice green Nudibranch, *Nembrotha cristat*. I was begging that green goblin to look at me for a second so I could take a decent picture, but it completely ignored me. I saw the dive guide below me calling the other divers over to a purple sea fan and one by one, they made a queue to shoot whatever it was down there. I knew it was something good, but the wait was long with everyone else in line for their turn. They didn't know that I too was waiting my turn because I was above them all with my Nudibranch. Eventually time ran out and we all had to ascend.

Back on the boat, there I was frustrated on a dive wasted with that Nudibranch and its bad attitude and then I saw Ahmed and Abdulla talking with 3 foot long smiles on their faces. Then it hit me, "OMG! What did I miss?" Ahmed turned to me and asked, "Did you see the Pygmy Seahorse?". That question was like Mike Tyson's left hook to the side of my face. That purple sea fan was actually pink, but had looked purple to me because of the depth. How could I miss such a simple fact?!? I thought of several different ways to eliminate myself at that moment but the hot chocolate waiting for us back at the resort was calling.

LESSON LEARNED: Stick to the dive guide.

CALIFORNIA DREAMING

Another interesting dive site was California Dreaming, a catchy name indeed. It basically consists of two coral peaks with a bit of sand between them and the coral goes on to an infinite sharp slope that eventually turns into a wall beyond 30 meters. The huge variety of soft coral here gives this place the reputation of being Lembeh's most colorful dive site. We started the dive at the deepest part at about 35 meters, not much to see there but as we ascended to 10 meters, one of the dive guides called me over to a tiny, yet wonderful Tiger Shrimp, there just for me to capture. While busily shooting away, another guide signalled to us and guess what? A Boxer Crab was shadowboxing right there, only a couple of meters away from the Tiger! Less than a minute later, the guides found another Boxer Crab! It was like a critter festival down there, I didn't know what I was supposed to photograph first.

After dancing around with the tiger and the boxers for some time, we were coming up to the end of our dive when suddenly, we saw a guide rush over from the distance asking us to follow him. All the other divers were now out of the water, except for Abdulla, myself and a couple of guides. When we reached the spot, we saw a brown, yellowish sea fan. I couldn't see what it was, but Abdulla was busy shooting and after a couple of minutes he signalled to me to take a picture. They were a very tiny couple of Pontohi Pygmy Seahorses right next to each other. I was thrilled, but those creatures are incredibly small and to top their small size, they were moving so fast with the water brushing over them like little dead leaves in the wind, yet somehow, I managed to get one decent shot. After another couple of minutes, we headed over to the line and went up to the surface. Abdulla and I did over 90 minutes on that dive and asked the dive manager to do another dive at the same site on our last day. Ahmed loathed us for it. All the fun stuff happened after he had left the water.

MUCK DIVING TK3

Muck Diving is something Lembeh is really famous for, I know it does not sound so interesting at first, but trust me, you are not going to believe how fun a muck dive can be until you try one. Let me talk you through our mind-blowing muck dive at a site called TK3, short for Teluk Kembahu named after the village on the nearest coast. The dive starts at 5 meters and what do we see first? Nothing, just infinite waves of black sand. A very exciting first impression don't you think? As we descended, some Nudibranchs start to show up. I actually don't like shooting Nudies

Photo by Abdulla Alhmoudi

Photo by Ahmed Al Ali

Photo by Abdulla Alhmoudi

because they're not easy to photograph. Then Ungke suddenly comes over to me excitedly trying to talk through his regulator. He grabbed my hand and dragged me away from the Nudibranch I was trying to capture and about five meters away I saw Ahmed firing flashes like a machinegun, so I got closer to have a look to see a Blue-Ringed Octopus. I could not believe my eyes, I was so shocked/thrilled/excited that I turned to Abdulla and started talking through my own regulator as Ungke had, trying to tell him that this is a Blue-Ringed Octopus and he was like, "Yeah man I know what that is, I have eyes you know". The critter that I flew a total of 10 hours to see was right there less than a meter away from my lens, I was so happy that I wanted to give free hugs out to all the Nudibranchs.

After spending most of the dive with the Blue-Ring, we headed over to the shallower part of the site and saw this gorgeous hairy frogfish doing a cool, slow walk then abruptly stop and threw the lure in front if its mouth, it was amazing. Again out of nowhere, Ungke shows up and calls the three of us over to a Mimic Octopus. I was having so much fun I only took a few pictures as I just kept watching it, it was a beautiful sight.

We said goodbye to the Mimic Octopus and started to head back. Just before we gave each other the thumbs up to ascend, Ungke finds an adorable Wonderpus Octopus. We got the full house! What are the odds! We found three species of Octopus in one dive; I never thought I would ever use the plural version of the word Octopus; Octopuses or is it Octopi?

LESSON LEARNED: Muck diving, I love it.

GOODBYE LEMBEH

If you have not considered diving in Lembeh yet, I think you should. Not only with it being the best place in the world for macro photography, the fact that most dive sites are only 5 minutes away allowing you to get back to the resort and chill out or replace your batteries between dives is just amazing.

Even though this was our first trip to Lembeh, we have learned a lot of things that we would like to share with you guys. 18 dives on this trip and not one of us thought to use a wideangle lens. The next time I go, the wideangle

Photo by Mohamed Abdulla – Blue-Ringed Octopus

Photo by Ahmed Al Ali

Photo Mohamed Abdulla – Pontohi Pygmy Seahorse

equipment is not coming with me, it will help cut down the weight a little. Always stick to the dive guides, no matter how skilled you are in finding critters, the dive guide knows their dive sites better than anyone else, stay close to them and you will not waste your bottom time looking for stuff.

Speaking of bottom time, for a little bit of extra cash you can get Nitrox tanks, we did that and it was totally worth it because there is always something to see, the longer you stay the more stuff you will find. Do not forget to try night diving, lots of critters are nocturnal and are easier to find at night. Mandarin fish are a definite must see on a dusk dive. Try different dive sites then repeat the ones you liked most at the end of your trip. Dive guides vary in skills, so try to identify the best and stick with them or you can hire them privately.

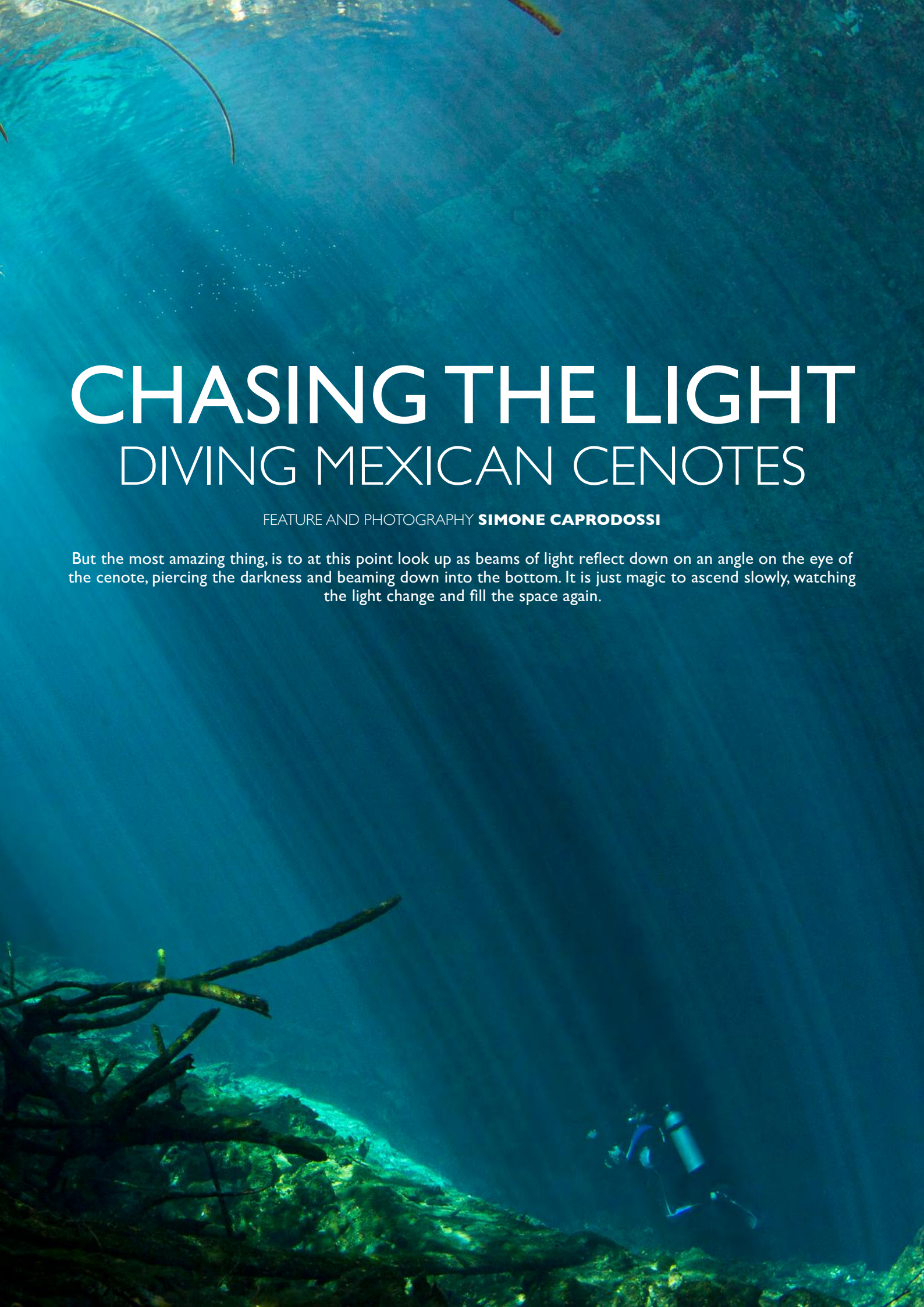
Muck diving is also a must, knowing that there is no coral around will make you feel safe to lay down on the sand to get a low angle, but you should always keep an eye out for camouflaged scorpion fish and other venomous species.

After six magical diving days with Kungkungan Bay Resort, it was time to say goodbye. I really miss that place and everyone in it. The people of Indonesia were so kind, the food was great and the weather was perfect. We found what we came for and we are definitely coming back.

KUNGKUNGAN BAY RESORT

Combining the world's best muck diving, with world class service for your dream vacation. Come and join the KBR family and let us put the "Discovery" into your next diving vacation. The Lembeh Strait and Kungkungan Bay Resort provide a variety of diving experiences, from muck dives on pure black volcanic sand to colourful coral reefs and enticing historic wrecks. Whatever your pleasure, Lembeh is always sure to offer fascinating and exciting underwater discoveries.

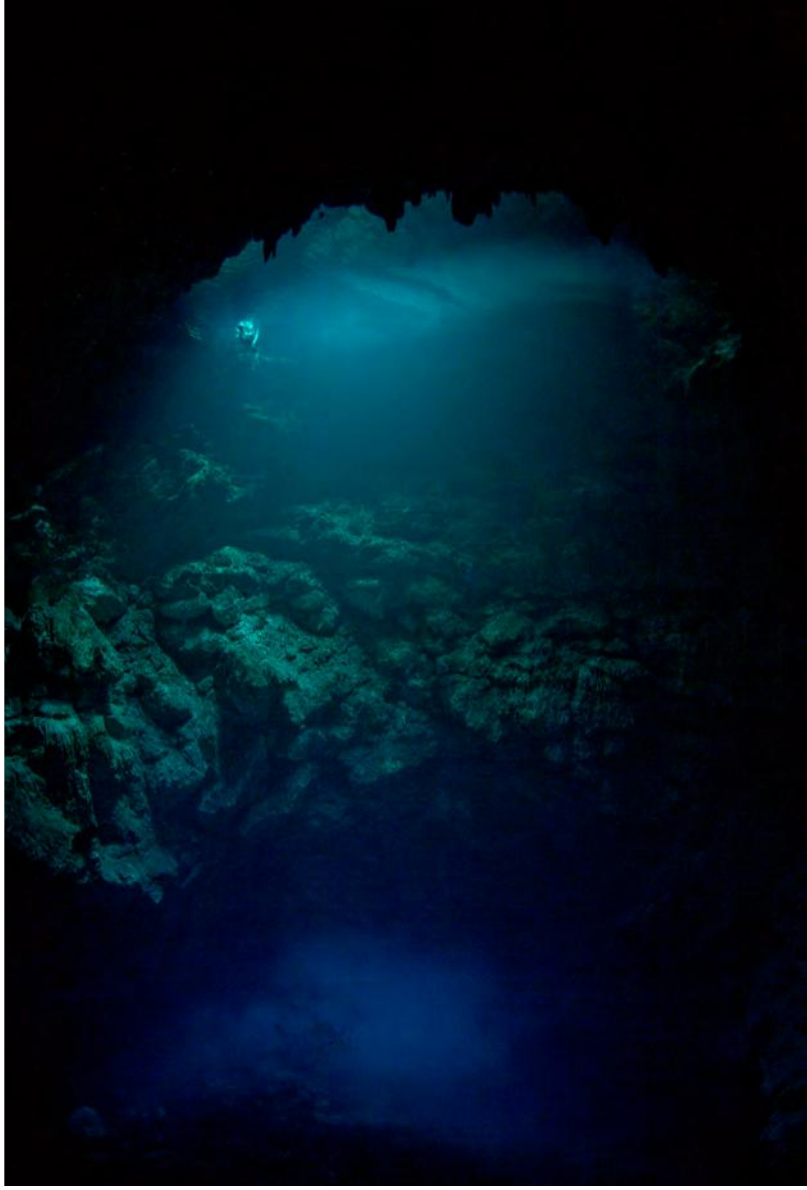
Email: info@divekbr.com
Website: www.divekbr.com



CHASING THE LIGHT
DIVING MEXICAN CENOTES

FEATURE AND PHOTOGRAPHY **SIMONE CAPRODOSSI**

But the most amazing thing, is to at this point look up as beams of light reflect down on an angle on the eye of the cenote, piercing the darkness and beaming down into the bottom. It is just magic to ascend slowly, watching the light change and fill the space again.



This year in February, we traveled to Mexico to explore some of the underwater highlights of the Yucatan Peninsula on the south eastern side of the country. The stretch of coast from Cancun, south to the Guatemalan border hosts some incredible underwater experiences from swimming with sailfish, chasing sardines, to manta and whale shark encounters, to diving in the cenotes! The cenotes are the experience I want to share.

Cenotes have surface openings within complex underwater cave systems which were created when a part of the ceiling of the underwater galleries crashed at some point in time, collapsing rocks and trees into the ground and giving way to the light, penetrating the underwater darkness.

With the highest concentration of cenotes and some of the most stunning cave systems in the world, the Riviera Maya that stretches from Cancun to Tulum is a world hotspot and an absolute heaven for cave divers from all around the world.

As we only had a limited time to split between the attractions, we had to be extremely selective as there really are plenty of options available. Luckily, a friend recommended that we contact Barna, owner of the newly found Encounters agency specialized in all possible activities of diving – and not – around Yucatan.

After a few emails back and forth with descriptions of the different cenote options and their unique features, we opted for the set of magic 4 cenotes that Barna recommended for us to experience the maximum variety: The Pit, Dos Ojos, Tajma Ha and Ponderosa.

Barna also booked us in with a private guide and planned for us to go a little off the standard diving hours so that – hopefully – we would have them mostly to ourselves. It is very critical to minimize moving silt from the bottom of the cenotes as once the particles are suspended, it can take hours for them to deposit again as the water is practically still, so if a diver in front fins a bit clumsily, the whole group risks a murky dive. He also got us sorted with a lovely accommodation in the charming Posada Mariposa in Playa del Carmen, a perfect spot to start your cenote adventures from.

After a few great days spent photographing sailfish in Cancun, we moved to the much nicer and quaint Playa del Carmen and found Barna waiting for us with a big smile and a busily planned agenda in the nice inner court of the Posada.

We confirmed the cenote program and also got to meet his lovely wife Elizabeth who runs the travel business with him and impeccably takes care of all the logistics and makes sure that all the guest's needs are met.

So now all we had to do, was set up the cameras with a good fisheye lens as cenotes are all about space and light and then we were good and ready to head off to our recommended Mexican food place for the evening, El Fogon. This place is an unmissable treat when in Playa. Highly recommended.

With full bellies, we headed off to get an early night's sleep to be up fresh and early in the morning to meet Barna at the dive center just down the street from our accomodation at 7am to hit the first cenote, "The Pit". Hopefully before anyone else.

Once in the dive centre, exchanging morning greetings and excited about our cenote experience we are about to embark on, we are introduced to Geraldine. A very experienced qualified cave diver who would be our private guide for all our cenote dives.

The Pit is an amazing sinkhole inside the deep jungle. At 110m depth, the Pit is the deepest cenote in the area. It has only been open since February of 2007 and still does not appear in the common dive guides.

With a short drive from Playa del Carmen, we arrive on the path to the entrance of the cenote and after driving through some lush forest full of birds and with the odd iguana on the roadside, we reached the access to the cenote.

As Barna had expected, we were luckily the first ones there, guaranteeing us no water stirs from others, but our own. Geraldine gave us a good long briefing on cavern diving to have us fully ready for this different environment. See the box for the cavern diving rules.

Geraldine took some time to set herself up with her rather complex cave diving gear, wearing two tanks to the side of the body that looked very heavy and messy out of water, but rather comfortable once inside.

We climbed down a steep stairway to get to the cavern access with our gear on. Up until fairly recently, the gear had had to be lowered into the hole and divers jumped in and geared up in the water.

Here we were, finally ready to jump in and experience our first cenote!

The Pit is a basically a gigantic cylinder and you descend and ascend making circles around its walls. On our slow descent along the wall following Geraldine's guidance, we first experience one of the unique features of several cenotes: the halocline.

The halocline is a surface layer between saltwater and freshwater. You can clearly see it as light diffracts through it and as you cross it into the saltwater, everything suddenly becomes blurred until you cross back into the freshwater. Very much like having your mask removed.

Another magical element of this cenote, is a hydrogen sulphide cloud that fills the bottom of the Pit at around 30 meters. It is absolutely stunning as you seem suspended above this fluffy white cloud. In the center, an old dead tree still stands emerging from out of the cloud with its dead branches creeping out. It's a really ghostly view. But the most amazing thing, is to at this point look up as beams of light reflect down on an angle on the eye of the cenote, piercing the darkness and beaming down into the bottom. It is just magic to ascend slowly, watching the light change and fill the space again.

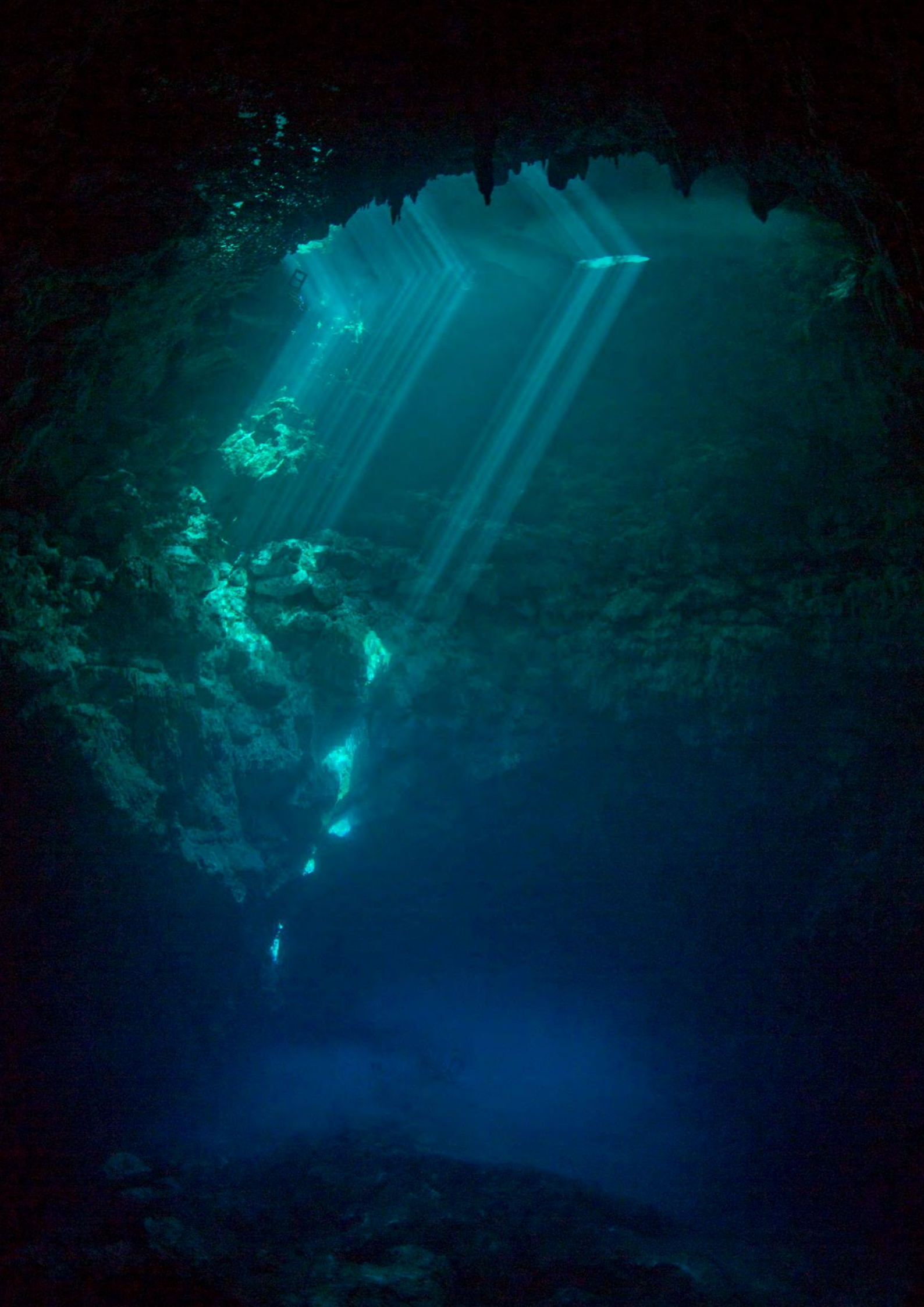
What an incredible place!

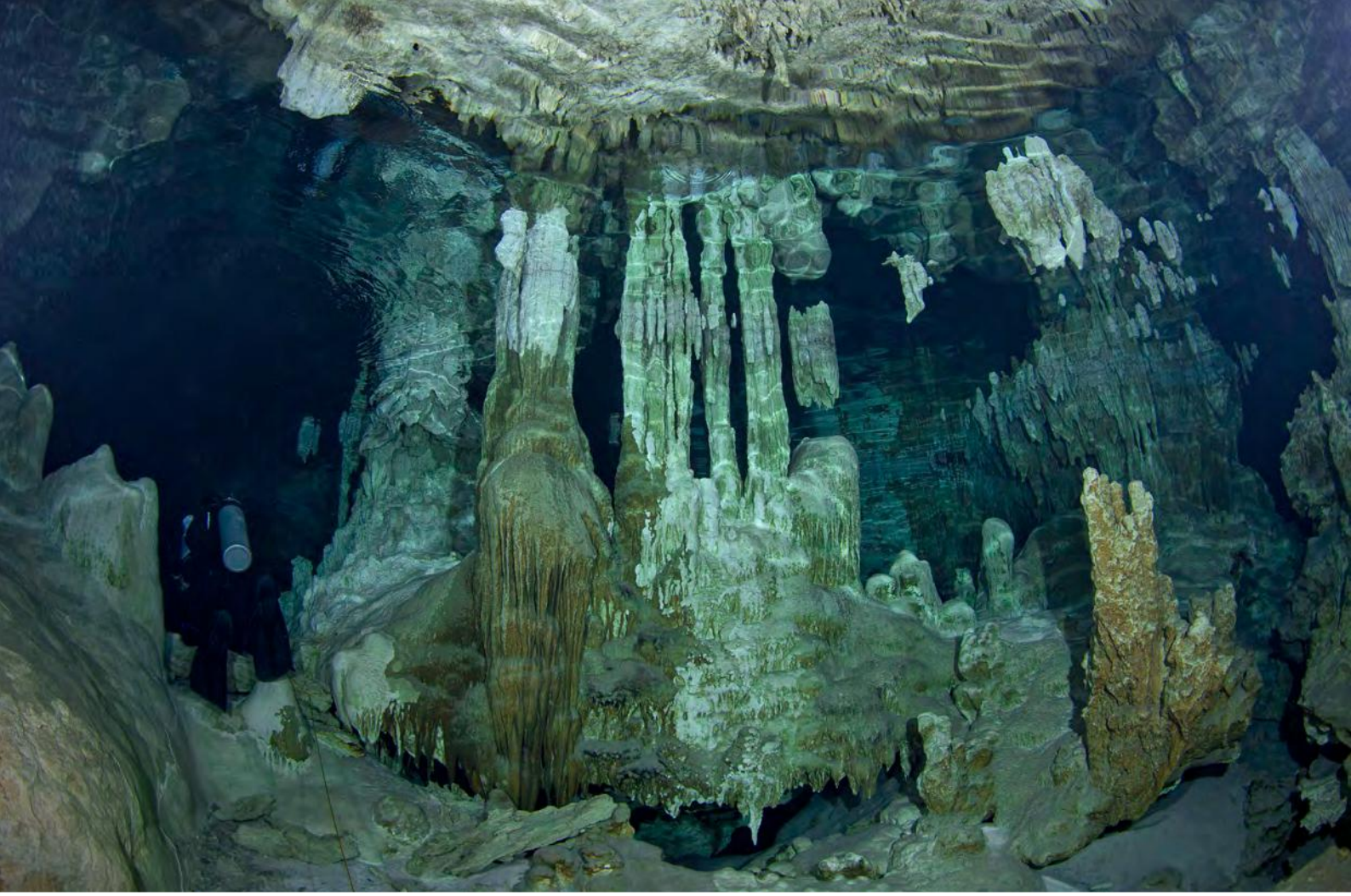
We emerged absolutely amazed from the Pit and very eager to go and experience our next cenote.

Next in line was one of the most famous cenotes, called Dos Ojos ('two eyes' in Spanish) as two round openings look like two eyes in the undeground. This cenote actually gives access to one of the biggest underwater systems in the world, with several diveable caves and even the Pit connects at its depth into the same water system. Dos Ojos has different paths that can be taken for cavern divers such as ourselves and there is even a path that can be taken by snorkelers. For this reason and because the entrance to the cenote is a stunning large grotto with crystal clear turquoise water, as we arrived, we found quite a crowd of tourists.

Fortunately, most of them were snorkelers and again we were well timed not to overlap with other divers. So we entered the water and headed into a dark corner where our path was to start.

This cenote is totally different from the Pit as it is a very shallow dive reaching a maximum of 9 meters and you basically swim right under the surface. This cenote fulfils more of the imaginary expectation that people may have as it goes nearly totally dark and you swim in line through an incredible architecture of stalactites and stalagmites, forming stunning underwater sculptures. There are also fossils of ancient shells on the way and the odd dark turn with





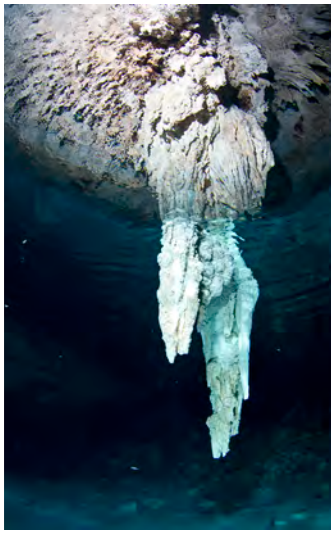
a big "peligro" (danger) sign indicating that on that route, you are enterering the deeper cave system which only trained experts can do.

Moving though the underwater geology, you eventually reach a point where you can surface again into an underground dome where it is possible to breathe. Bats fly around the top having come in from a small opening in the ceiling where a bit of light comes through. Eventually, continuing to swim through, you magically arrive back to the entrance grotto from the opposite side. Another absolutely incredible and totally different experience.

Next cenote on the list was the Tajma Ha and it contends with the Pit for being my favourite. This one is also in a secluded jungle and is only for divers, so once again we managed to be the firsts to arrive and be the only ones in the water. Access is through a small grotto with beautiful vegetation flowing off the upper part. This dive developes along multiple cenote openings and has a very up and down profile. Right after moving through quite a dark area, you open up into a really large space. Again you cut through a halocline and as soon as your view is clear again past the saltwater layer, you can marvel at an incredible light show.

Light filters through a long cenote opening with lots of vegetation above and the beams flash through at a perfect angle toward the surface. It is a stunning light show and I stayed behind to capture my buddy and the guide's silhouettes against the rays of light. The dive then continues along this opening, moving up close to the surface where the light continues to filter through the vegetation such as that seen through the stained glass of an old cathedral. As we keep moving along the bottom, it goes deeper again and we descend still under the beams of light that illuminate the roots of all the jungle plants growing along the edges of the cenote opening. It's simply captivating to see the sheer beauty of light and vegetation.

The last of our cenote experience was another classic at Ponderosa. This cenote is



very different from the others as it is actually very large, like a big lake surrounded by lush vegetation. It's no wonder that this cenote is also called cenote Eden. The place is rather busy as non divers come here to enjoy the day swimming in the crystal waters at the top.

The entrance to the Cavern of Ponderosa is huge and the permanent gold Cavern Line begins a little way in so Geraldine runs a primary reel from the open water to the start of the permanent line and we follow that in. Once at the start of the line, you are able to clearly see light ahead as another cenote, Cenote Corral, is only 90m away showing us just how good the visibility is in the caverns of the Riviera Maya.

A very large impressive tunnel leads from Ponderosa over to Corral, so big infact, you could fly a 747 through it. Once we reached cenote Corral, an impressive view opened up showing both the cavern below and the jungle above with very impressive light shows. Continuing on through, we again reached a space were it was possible to surface and breathe under an air dome and small holes in the ceiling gave way to very sharp beams of what looked like disco lights.

The cenote is beautiful, but my favorite thing in Ponderosa was actually the end of the dive when coming back out into the big open shallow lake. Here we could spend time photographing the beautiful Sailfin Mullies actively courting and fighting which showed off the very colourful dorsal fin that gives them their name.

This was the last cenote of our trip and the end of an amazing experience that has left us eager to come back and explore many more without a doubt.

Between a cenote and another, you also have the opportunity to get a bit of history in with the visit to the Mayan City of Tulum with its impressive ruins in a gorgeous setting over a cliff. You can also take a break hanging out with the resident turtles of the Akumal Beach, a great spot with a shallow grassy bottom, great for green turtles to feed.

CENOTE CAVERN DIVING RULES:

- No snorkel, gloves, or knives.
- Max 4 divers per guide.
- No decompression diving.
- Max distance to open water: 67m/140ft.
- Keep light on during the entire dive.
- Never pass under the guide line.
- No restrictions, area must be big enough for 2 divers to pass side by side.
- Always maintain continuous guideline to the surface.
- Follow the guide in a single line.
- Keep your position and stay at least 1.5m/5ft from the diver in front of you.
- Dive in a horizontal position.
- Bend your knees and use frog-kick finning technique to prevent damaging stalactites and stalagmites, but also from stirring up the sediment which would affect visibility.

ENCOUNTERS
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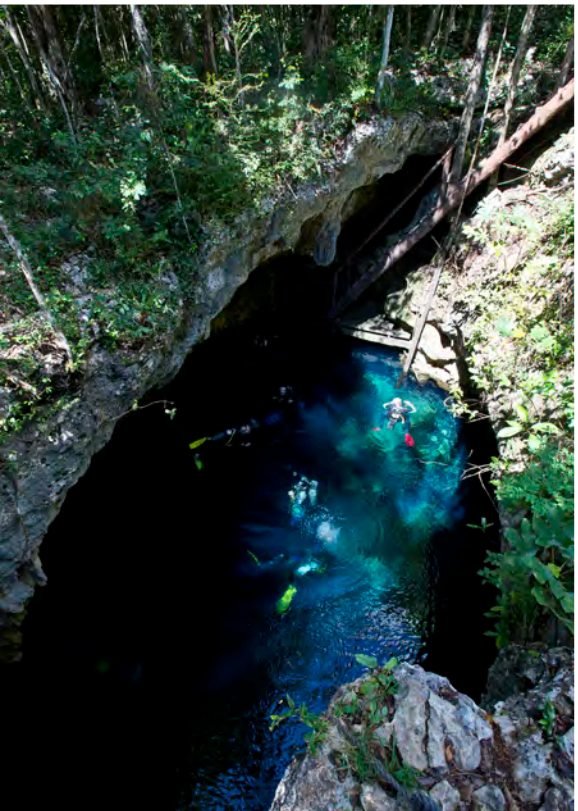

GROTTA GIUSTI

FEATURE AND PHOTOGRAPHY **MASSIMO ZIINO**

Every time I come back home to Italy and more specifically, to Tuscany, I get the urge to visit my friends at Grotta Giusti. This extraordinary place, which is totally unique among its kind, is located in Monsummano Terme in the province of Pistoia.

Grotta Giusti is an underground karst cave, which intersects with a thermal aquifer a few metres from the surface and takes its name from the Giusti family, owners of the limestone quarry which once stood here. The cave itself was discovered by pure chance in the spring of 1849, when some quarry workers broke through the roof of the cavity; by throwing stones into the void they quickly realised they had stumbled upon an important discovery, an impressively vast underground cavity with the presence of water. I often imagine those first wide-eyed excursions into this hot and humid underground world; lamp-lit explorations which slowly revealed the mysterious 300m cavity in all its natural glory, with lakes, winding corridors, stalactites and stalagmites. The elevated internal air and water temperatures, the humidity level and the impressive size of the cave led the owner Domenico Giusti, to consider the possibility of its therapeutic potential and infact an initial spa complex was built around the entrance to the cave just a few years later.

The waters at 34°C, were indeed beneficial and Grotta Giusti's fame quickly spread throughout Italy and abroad.

For many years it was a meeting place for intellectuals, politicians, artists and poets – the national and European élite. In fact Giuseppe Giusti, the son of the owners, became an important poet during the 19th Century's Italian Risorgimento. Many distinguished guests enjoyed the therapeutic benefits of the waters, including Giuseppe Garibaldi who visited in 1867, while composer Giuseppe Verdi later defined Grotta Giusti as the "eighth wonder of the world".

Over the years it has been developed into what is now a modern and technologically advanced spa complex, with a hotel, fitness centre, beauty salon, convention centre and an avant-garde open-air thermal swimming pool.

Despite all this business development and activity, the current owners also allow diving in the underground lake, which makes this place totally unique. The group of dive guides led by Luciano Tanini, make this experience possible, accompanying divers in the exploration of the flooded fracture. The depth is not excessive, never more than 18 metres and the equipment needed is similar to that used in cave diving.

The organisation of the dives is impeccable, and the guides are highly experienced; divers are given a substantial and thorough briefing, after which they can proceed into the water. The dive starts in the lake known as "Limbo", which is reached via a vertical ladder a few metres high, after passing through a cavity lined with impressive rock formations.

The cave is accessed directly from the spa structure and in my experience it's the only place in the world where the entrance to a cave dive is so comfortable and luxurious!

Forget your wetsuit; swimwear, T-shirt and sports shoes is the only attire needed for these warm waters. In some parts, the underwater corridors are just wide enough to pass through and occasionally you ascend to air pockets where you can immediately share the sensations of this incredible dive with your buddies.

Buoyancy is important; the dive route through the cave includes frequent changes in depth, which may only be a few metres each time, but these small ascents and descents require good buoyancy skills.

I could stay here for hours, but given the water temperature it's best not to overdo it; in fact, when you come out, you will immediately feel the physical benefits of the thermal waters, but you may also feel a little 'cooked'.

The photographic opportunities are stunning and endless, but professional equipment is necessary to get good results; in particular, powerful lighting is crucial. The clear and limpid water is perfect for good shots, just be sure to move carefully, without kicking up the sediment.

I don't think there's anywhere like this in the world and I've certainly never found anything that compares. Diving in Grotta Giusti is an experience that I recommend to all divers with a strong exploratory spirit, in search of new and unique sensations and experiences. Happy diving!

For more information, please visit:
www.grottagiustispa.com

EXPLORING BANCO DI SANTA CROCE

A BIOLOGICALLY PROTECTED AREA ESTABLISHED IN 1993

FEATURE **NICOLA DE CORATO** PHOTOGRAPHY **SERGIO RICCARDO**

The Banco di Santa Croce is a Marine Protected Area established in 1993. It is made up of five tall rocky pinnacles. We planned a diving day there before heading back to Dubai in order to test out my new Nimar underwater housing.

The famous Banco di Santa Croce is one of the most beautiful diving sites in the Mediterranean. You will see all that this small natural paradise has to offer from within the first few meters and admire its rich colors and the life that inhabits it.

It is situated about 300m from the coast, between Castellammare and Vico Ekvense. There are many kinds of flora and fauna here and the diversity makes this underwater world one of the most interesting and one of the most beautiful places in the Mediterranean. The 5 large rocky elevations begin at a depth of 10m in the form of a dome and reaches to a total depth of about 50m.

The descent begins directly from the top of one of the largest elevations.

After reaching 7-8 meters, you are met with beautiful scenery that is hard to imagine is in a stretch of sea so close to the mouth of the Sarno River. It's actually the provision of nutrients carried by the river and the darkness (due to the surface layer of turbid water) that creates this perfect environment for the development of a rich life of sciafili organisms.

Proceeding towards the south-west at a depth of 18 meters, we first come across Paramuricee (gorgonians) which are quite large, with thick branches that accompany us down to 40 meters. The concentration of gorgonians is really impressive, as well as a sufficient number of Gerardia Savaglia (false black corals). Flocks of millions of Antias (red carp) swim between the branches of the gorgonians and the cat-shark eggs decorate them. Continuing to dive, bending around the dome, we find a large vertical cleft which cuts through the wall into two parts and forms a truly fantastic backdrop. The light that makes its way from the top, intertwines between the large branches of red gorgonians, located on both sides of the wall opposite each other.

We had the pleasure of meeting, Eleonora de Sabata, a journalist and marine photographer who has been disseminating sea information for over 20 years for Television (BBC, Discovery Channel, Rai and Mediaset) and for major Italian and foreign magazines and newspapers, including National Geographic and the Financial Times. She is also devoted to scientific research, environmental education and writing (she has already published a series of children's books for De Agostini, in addition to scuba diving tourism books).

Eleonora has also been studying sharks that she has brought up in documentaries,

books (as in the children's book published by De Agostini "Cosa fanno gli squali tutto il giorno nel mare?"), articles, TV transmissions, conferences and photography exhibitions.

In 2001, she devised the MedSharks project for the study of gray sharks in Turkey, of the elephant shark in Sardinia, of the sixgill in Sicily, as well as the spiny dogfish and leopard shark. In particular, in the Banco di Santa Croce area, catshark eggs are closely monitored which was the reason Elena was diving on that particular day. The Banco is one of the very few sites in the Mediterranean Sea where the catshark and the leopard shark still lay hundreds of eggs. During our dive, you could see these eggs on the red gorgonians as a testimony to the miracles of nature.

Many volunteers support this project and take the opportunity during the diving sessions, to tag the eggs and monitor their evolution.

A big thank you to Pasquale Manzi, all the staff at Bikini Diving for all the support provided before, during and after our dives. A big thank you to Eleonora de Sabata for the interesting and useful information she gave me on the nature that surrounded us and also to Sergio Riccardo for the amazing photographs.

We had the chance to dive at Banco di Santa Croce with the support of A.S.D. Bikini Diving, a team of international scuba diving instructors and professionals.

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DAMANIYAT ISLANDS, OMAN – AN OASIS OF LIFE

FEATURE AND PHOTOGRAPHY **PAUL WARWICK**

How many EDA magazine readers have been to or even know about the Damaniyat Islands in Oman? The Oman Dive Centre (OMD) is probably better known to many for its location close to Muscat, its rustic but quaint accommodations in traditional "Barasti Huts", haunting and romantic views of the incredible coastline and the peace and quiet. But, if you are a diver, water enthusiast or a marine conservationist and you have not yet visited the Damaniyat Islands, then you have truly missed out on the opportunity to visit one of the "jewels" in Oman's many crowns.

THE ISLANDS

The Damaniyat Islands are a small group of uninhabited islands lying about 15kms off the east coast of Oman in the Batinah region approximately 100(+)kms north of Muscat. They are part of a multiple chain of islands along the coast, the nearest to the coast being the Al Sawadi Islands which were part of Oman's historic coastal defence network sporting watch towers and small forts. The Damaniyat Islands are roughly split up into three separate groups, strangely enough called "Western, Central and Eastern Damaniyat". Each group of islands is unique and provides differing diving experiences as well as different marine environments and homes to differing species of marine life.

The Damaniyat Islands have been designated as a Marine Nature Reserve since 1996 when His Majesty Sultan Qaboos Bin Said issued a Royal Decree that a Reserve be established to protect Oman's natural beauty and marine heritage. Since then, it has been a protected site where fishing is severely restricted and at certain times banned in entirety and all visits have to be approved in advance, although some dive operators and tourist operators have pre-approved authorities to visit. All trips, whether they be for diving, snorkeling, dolphin and shark watching or swimming carry a mandatory visitors fee of OMR4 which will be included (as a separate charge) in the cost of your trip. This is paid directly to the Ministry of Tourism and Culture to fund the maintenance and policing of the Reserve. The islands are a haven for a huge number of different marine birds and provide a home for all varieties and classifications of marine life including large pelagic species which often transit the islands on their way from the Indian Ocean to the Straits of Hormuz or visit to feed from the plankton rich waters.

GETTING THERE

Getting to Al Sawadi from anywhere in the UAE could not be easier. For those in Abu Dhabi or Dubai, the best border crossing to use is the Al Buraimi crossing just outside of Al Ain. Crossing times can vary depending on the volume of traffic, but it is the biggest crossing into Oman, well laid out and very efficient so waiting is kept to an absolute minimum. The normal exit fee for a UAE Resident is AED35 per person which is payable only in cash. Having passed through the UAE crossing, you then have an 8km drive through the border country which is remarkably like a "moonscape or marscape" (but with more Toyotas!), until you reach the Omani Border Control. Here you will have to park up, go into the Immigration Building, fill out the Visa Application and wait in the queue. Processing is quite quick and there is a charge per person for the visa depending on your status, whether you are a UAE Resident, Visitor etc. The visa fee for a UAE Resident is currently OMR5 (About AED50) per person. They may also ask to see the insurance policy for your vehicle to ensure that you are covered to drive in Oman.

KEY TIPS

Payment for your Omani Visa(s) can only be paid by credit or debit card – NO CASH!

Make sure that you have the appropriate stamp signed and dated in your passport before leaving the Omani Crossing, otherwise it can cause real problems on your return trip. On leaving the Al Buraimi Crossing Point, follow signs for Sohar (Route 7) which takes you onto the coast road (Route 1). At this major roundabout, turn right and follow South towards Muscat. This road is littered with roundabouts every 7-10kms. After 110kms you will see the signs for Al Sawadi Beach Resort on your left side before the actual turning which is at a roundabout – miss it and you will have to drive 10kms in order to turn around. Follow the single track road through a series of small hamlets towards the coast. When you reach the coast, follow towards the headland and you will reach the Resort on your left side. There are a couple supermarkets on this road if you need to "stock up" on goodies or essentials at any point during your visit.

AL SAWADI BEACH RESORT

Al Sawadi is the closest mainland point to the Damaniyat Islands and is home to the Al Sawadi Beach Resort and Extra Divers (Dive Centre) and the start of your diving adventure on Damaniyat Islands. The Resort is quite large, very well laid out in a series "locally named areas" each housing villa type constructions of no more than two floors, each with a number of self contained spacious ensuite bedrooms. Some of the villas enjoy a beach front view, whilst others offer a quieter and greener resort view. Accommodation is provided on a half board basis so you do not have to worry about either breakfast or dinner and lunch is available through a couple of outlets in the Resort or you can arrange your own. The Resort boasts a number of facilities available to residents and of course the Dive Centre which is an integral part of the Resort and just a short walk down past the pool onto the beachfront. For further information check out the resort on: **www.alsawadibeach.info**

Driving time to Al Sawadi Beach Resort varies depending on where you are travelling from in the UAE, but it should take no longer than an

equivalent trip to Dibba, it being well short of both Seeb and Muscat. It is easily a weekend trip if you can get away at a reasonable time on Thursday afternoon, but watch out for Eids when the Resort prices go up and booking can be difficult as it is very popular with Emirati and Omani guests, so make the decision and book early.

DIVING CENTRE

The Dive Centre was run by Extra Divers, but has now been taken over by Euro Divers who also run a number of other Dive Centres at resorts in Oman including the Oman Dive Centre. They have a full range of rental equipment for those that do not have their own and a small retail outlet for those who forget to bring "everything". That said, being a reasonable driving distance away, there is no reason why you cannot bring everything and the "kitchen sink" in your car. The Dive Centre has a number of boats and experienced dive guides and normally run several trips a day to different dive sites.

It is a busy Dive Centre with many local divers from the expat community, so getting a place on the boat can sometimes be difficult, so book early and check-in the night before if you can – even by phone to confirm that you are registered. Single divers are easy to accommodate, but if you are a group and you can fill a boat, then I strongly recommend that you arrange this well ahead of time. You may even be able to arrange discounted rates, although Euro Divers do operate their own membership discount card which you can apply for on arrival and which they will honour when you settle your first bill.

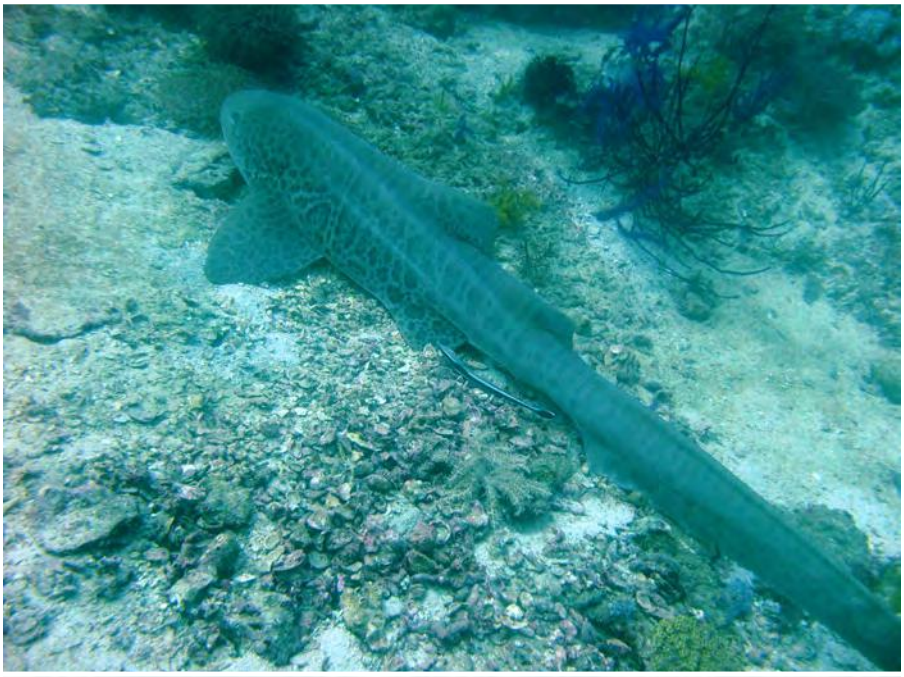
Make sure that you have evidence of your qualifications with your affiliated Scuba Diving Organisation and valid Diving Insurance. They do offer larger cylinders up to 15L and NITROX at an extra cost as well as SSI and PADI Courses, but these should be booked well ahead of time to ensure that they are available. Check up before you arrive by logging onto their website at **www.euro-divers.com**

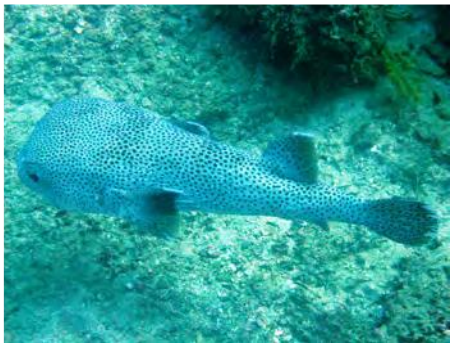
DIVING

Well, what can I say about the diving and what there is to see – far too much to adequately put into enough words in this article. I can only recommend that you try it for yourselves. Well, perhaps just a "little taster" to "whet your appetite".

The Damaniyat Islands are about a 45 minute boat ride from the Resort, with boats leaving from the beach immediately adjoining the Dive Centre – make sure that you get on the right boat or your gear could be on one of the other ones and you will miss out!

We were diving over an Eid and so had the benefit of being able to dive and relax without needing to hurry back to Abu Dhabi. Our first few dives went as follows:





DAY ONE – DIVE ONE

Well, Dive One was on "The Mousetrap" and dropping down through the clear water with 20+ metres of visibility along the edge of the reef, to about 14 metres, we almost landed straight on top of a 2 metre Leopard Shark. She was totally unfazed at the arrival of 6 divers, all with a variety of cameras who then proceeded to shoot pictures and video from every conceivable angle for about 5 minutes, even allowing us to get within a few feet – how do you beat that? It only got better after that as we came across a number of Bamboo Sharks, huge Cow-tailed Rays, Triggerfish, Batfish, Barracuda, massive shoals of large fish almost forming bait balls and our Leopard Shark freely swimming around us as if playing – or checking us out – or looking at lunch – for at least three or four minutes.

DAY ONE – DIVE TWO

The "buzz" of Dive One had hardly subsided when we dropped back into the water at "Little Junn" on what was also to be a memorable dive, albeit quite quick as the current picked up, turning it into a drift dive. Turning the corner on part of the wall, we ran straight into three Hawksbill Turtles rising from the deep to feed and making straight for the coral gardens to feed on algae and scrape marine mosses. They, like the Leopard Shark, seemed totally oblivious to our presence, allowing us to interact with them at close quarters for quite some time before becoming "bored" with their visitors. Slowly moving up the wall towards the shallows for our safety stop, we came across what I can only describe as a "cuttlefish orgy", 10's if not 100's of mating pairs dancing in the swell and current, chasing one another and changing colour, not with the backdrop but with the excitement of procreation.

Two dives completed and it was time to head back to Al Sawadi for a "spot of lunch" and break before an afternoon single dive. What would this afternoon have in store for us?

DAY ONE – DIVE THREE

Having had two outstanding dives, how could we possibly "top" either one of them? Well the dive on "Walid Junn" started off reasonably well as our guide pointed out some of the macro life on this particular dive site. We saw some beautifully coloured nudibranches, seahorses dancing in amongst old fishing nets which has become part of the wall and sea stars waving in the current. Then we almost missed it as a dark shadow came over the group, looking up, there it was, the "holy grail" for all divers – a Whale Shark, big beautiful, graceful and ever so slightly overwhelming. This particular specimen must have been about 10 metres long and the gaping maw must have been at least 1+ metre across. Being careful not to frighten it off, we slowly began to rise with our backs to the wall to a point when we were just below and level with it. What a fantastic experience to share this "inner space" with such a gentle, elegant, magnificent creature – the largest fish in the world. Most of us were just so overwhelmed

we forgot to take pictures we just hovered in mid water and looked on in awe taking in every detail. We were lucky enough to spend what seemed like an age, but was probably only 3 or 4 minutes in the company of this majestic creature. For most of us, our photo is locked in our memories not in a camera or hard drive.

Returning to Al Sawadi Resort after the dive, you can guess what the conversation was about! Day One complete, a number of personal objectives and aspirations achieved, some great experiences and memories, some equally exciting photos and video to review and the possibility of even more to come. You lucky "so and so's" I hear you say, perhaps you are right, but on our subsequent multiple trips to the Damaniyats, we have never been disappointed. There is always something to take your breath away.

I am not going to spoil it for all you intrepid adventurers. Go try diving or snorkeling in the Damaniyat Islands for yourselves and really see the marine wonders of Oman's only Marine Nature Reserve. It will really open your eyes to what our oceans and seas should look like – colourful, healthy, vibrant, diverse and full of life and not what we are turning them into.

DIVING TIPS

The currents around some of the dive sites can be "harsh". If you have never carried out a drift dive, I strongly recommend that you do a course with your affiliated Scuba Diving Organisation or experience one first in slightly milder conditions.

As a protected site, the marine life is not used to interacting with humans, be careful and be alert. Your Dive Guides from Euro Divers will help you with this.

Although the boat crews are excellent, know the tides and currents and follow the divers. Make sure that you have a DSMB and Reel and know how to use it in case you become separated from the main group.

CONCLUSION

My enthusiasm for the Damaniyat Islands, what they hold in terms of marine diversity and what they represent, as you can tell is unbounded and I could "wax lyrical" for many more pages. Were we lucky with our sightings? Probably yes, but there will always, always be something to see at the Damaniyats, whatever your diving or marine life interests are.

My message to you is; if you haven't yet tried it, please do. Not only will you have the experience of a lifetime and see what a healthy ocean and sea should look like, but you will also help to preserve this fantastic marine wonderland for future generations. You never know, you may well end up becoming an avid amateur marine conservationist as well as a scuba diver!

"Keeping the Fun in Diving"

COULD BREATH-HOLD DIVING AFTER SCUBA CAUSE DECOMPRESSION SICKNESS?

FEATURE **PETAR DENOBLE**

ALERTDIVER.EU, 2012;49

Recreational divers sometimes practice scuba and breath-hold diving on the same day. Some are concerned that breath-hold diving after scuba may increase their risk of decompression sickness (DCS). Their worry is that repeated descents and ascents might change the ultimate destination of venous gas emboli (VGE) – or bubbles – possibly present in their blood after scuba diving and make them more likely to suffer DCS. Another reason for their concern is the possibility that breath-hold dives build up dissolved inert gas in addition to what remained in the body after scuba and thus may create conditions for DCS. But is DCS feasible in breath-hold diving at all?

Modeling the risk of DCS after freediving in humans provided a hypothetical scenario in which DCS could occur after a single extreme dive, but the mechanisms that cause DCS seem unlikely in breath-hold diving. Cumulative effects of many repeated dives with short surface intervals could theoretically produce conditions for the occurrence of VGE, but so far there have been very few reports of bubbles observed in breath-hold divers. Some argue that DCS in breath-hold diving may be different than in scuba diving and that it may occur independent of VGE.

DCS-like symptoms in breath-hold divers have been reported. Symptoms of brain affliction have been observed in extreme diving done by harvesters, spearfishermen using scooters and in freedivers repeatedly doing very deep dives. DCS is one possible cause of these symptoms, but other causes include oxygen depletion, brain bleeding (due to extreme changes in blood pressure observed in breath-hold diving), arterial gas emboli caused by lung damage at depth, repeated micro-injuries to the brain and other factors. Pre-existing medical conditions like small vessel disease could also be involved.

Regardless of whether breath-hold diving produces VGE by itself, the concern that breath-hold diving after scuba may cause the redistribution of VGE seems rational, but the risk remains very small. Despite uncertainties about their causes, neurological accidents in extreme breath-hold diving have been observed and cannot be dismissed.

Is the occurrence of DCS in breath-hold diving a real risk?

WONG: DCS seems to be a real risk but only in extreme breath-hold diving. Clinical signs and symptoms have been observed in competitive divers, commercial sea harvesters of Japan (ama divers), recreational spear-fishermen of Australia and Spain and in the pearl divers of the Tuamotu Archipelago. Symptoms never appear on the first day of the diving week for the ama divers and symptoms occur only after diving for at least 3.5 to 4 hours to depths in excess of 66 feet when the surface interval is shorter than the dive time, suggesting nitrogen accumulation as a contributing factor.

Venous gas bubbles have been detected in Japanese ama divers (K. Kolshi 2010, pers. comm.) as well as in a breathhold diver who performed a series of dives to depths of 154 feet despite breathing oxygen for decompression (K. Huggins 2006, pers. comm.). Obviously, detection of bubbles per se does not imply occurrence of DCS, but the possibility exists. A patent foramen ovale (PFO) may have been a contributing factor in the case of a diver who made between 10 and 12 dives to depths of 33 to 60 feet, each lasting 60 to 120 seconds with surface intervals of five to six minutes. Two hours after the last dive, he experienced dizziness, visual disturbance, chest tightness and numbness in the right side of his face. It appears that the dives he made were sufficient to produce VGE, which then may have caused symptoms because of the PFO.[1.]

POLLOCK: There are anecdotal and retrospective data in the literature that are consistent with a diagnosis of DCS. A recent attempt to model the risk found that it was negligible for dives to depths of less than 330 feet, then rising as a function of exposure depth until the depth was sufficient for airway collapse to limit gas uptake from the lung, possibly in the range of 755 feet.[2] The magnitude of the hazard is unclear, but the absolute risk is probably very low for most freedivers, particularly when conservative surface times between dives are maintained.

Does breath-hold diving after scuba diving increase the risk of DCS?

WONG: Breath-hold diving after scuba may increase the risk of DCS, but the evidence is scarce. The classic case was reported by Paulev, who experienced nausea, dizziness, belching, hip and knee pain, weakness, paresthesia and blurred vision after performing repetitive breath-hold dives to 66 feet for five hours. His breath-hold dives were preceded by a hyperbaric exposure as a chamber attendant for eight minutes at 66 feet.[3] Three similar cases of DCS have been reported after divers were exposed to pressure in a hyperbaric chamber prior to breath-hold diving.

POLLOCK: Compressed-gas diving prior to freediving certainly increases the theoretical risk. High tissue concentrations of inert gas after compressed-gas dives could make the impact of the freediving important. While no experimental evidence exists, bubbles produced following the compressed-gas dive could migrate to more sensitive tissue when transiently compressed by the freedive. Similarly, the physiological stress of freediving could enhance pulmonary shunting, potentially increasing the risk or frequency of bubbles entering arterial circulation. The hazard might be greatest in the first part of the freedive when both bubble size and physical effort would be relatively high or at the end of the freedive if augmented shunting continued. Again though, there is no evidence of these factors causing injury. Studying a relatively rare event like DCS is difficult; studying a second rare event on top of the first is much more difficult.

What is the nature of neurological symptoms reported in breath-hold divers?

WONG: Symptoms after breath-hold dives appear to affect the central nervous system more frequently than symptoms that follow scuba dives. The most common are vertigo, nausea, vomiting, paresthesia, muscular weakness and paralysis. Others include impaired concentration, lethargy, speech disturbance and altered level of consciousness. Musculoskeletal or joint pain appears uncommon.

POLLOCK: A key feature of the neurological symptoms reported by freedivers is the transient nature. This could be consistent with the lower gas loads associated with freediving exposures and the faster compression and decompression rates freedivers experience. It is tempting to think that we understand decompression hazards based on the wealth of compressed-gas data, but this includes relatively little at the high descent and ascent rates – on the order of 6 feet per second – commonly employed by freedivers.

What is the risk of neurological accidents in breath-hold diving and how could it be mitigated?

WONG: The common factors causing neurological symptoms include breath-hold dives in excess of 66 feet, repetitive dives over the course of three hours or more and short surface intervals. If time spent at depth is more than double the time on the surface, even a series of repetitive dives lasting less than three hours would risk DCS. To avoid an increased risk of DCS, breath-hold divers should limit the number of repetitive dives and keep the surface interval time greater than the dive time.

POLLOCK: Neurological compromise in freediving may result from hypoxic loss of consciousness, decompression induced insult or other problems. A battery of strategies should be employed to reduce the hazard.[4] First, freedivers must understand and limit predive hyperventilation; it works to extend breath-hold time but can completely remove normal protections against loss of consciousness. Freedivers should also employ defensive weighting, establishing empty lung neutral buoyancy at 16 feet, or deeper with deeper dives.

Adequate supervision to address incidents immediately is also critical. Direct supervision by a partner or partners should be maintained throughout a breath-hold dive and for 30 seconds postdive to ensure stable consciousness. The complexity of the support network increases with dive depth and other complications such as low visibility. Automatic surfacing devices have the potential to reduce the life risk under a range of conditions. The risk of DCS is reduced by separating freediving and compressed-gas diving and by maintaining a minimum surface interval between dives. The surface interval should start at twice the duration of the dive time and increase as a function of the exposure depth.

ABOUT THE AUTHOR

As Senior Research Director of DAN America, Dr. Petar Denoble, M.D., D.Sc., helps develop new studies about dive safety, oversees ongoing studies and monitors their progress. He currently leads Project Dive Exploration, the DAN fatality, incident and injury database and the patent foramen ovale (PFO) study.

MEET THE EXPERTS

Neal W. Pollock, Ph.D., is a research director at DAN and a research associate at the Center for Hyperbaric Medicine and Environmental Physiology, Duke University Medical Center, in Durham, N.C.

Robert M. Wong, M.D., FANZCA, was an anaesthesiologist at the Royal Perth Hospital and a medical director in the department of diving and hyperbaric medicine at Fremantle Hospital in Australia. He is a diving medicine consultant to the Australian pearling industry.

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OUT OF CONTROL

DAN REVIEWS BUOYANCY-RELATED INCIDENTS AND ACCIDENTS

FEATURE **RICK LAYTON**

ALERTDIVER.EU, 2011;46

Buoyancy control, perhaps one of the more confounding aspects of safe diving, is the subject here. Regulating buoyancy is not always easy, especially for beginners and even experienced divers can lose control of it from time to time. Unfortunately, when buoyancy becomes a problem, peril may follow.

DIVER 1

That's what happened a few years ago to a 24-year old open-water certified diver. According to the DAN Report on Decompression Illness, Diving Fatalities and Project Dive Exploration (the 2004 edition based on 2002 data), this diver had received her certification seven months before the accident. In that time she had completed 15 dives. The trouble started when she was diving with a buddy at a depth of 60 feet (18 meters). The buddy experienced difficulty with his weight belt and while trying to assist him, she dropped her regulator from her mouth. Her buddy tried to help her, but his own situation wasn't improving. He lost his weight belt and had to surface. On the way he lost a fin and his cylinder became detached from the tank harness.

It's unclear what exactly transpired next, but about 15 minutes later, she was found unconscious on the bottom with her regulator out of her mouth. She had made her final dive. We don't know the experience level of the surviving buddy or why he had such difficulties on this dive. Neither do we know what caused the diver to lose her regulator and be unable to recover it. It appears that the pivotal problem around which the tragedy unfolded was the surviving buddy's difficulty with his weight belt. Once you've lost or dropped a weight belt, there's no turning back. The beltless diver is positively buoyant and will most likely end up at the surface sooner rather than later.

As this accident illustrates, dealing with any other problems can become impossible when buoyancy control is lost. Problems with weight belts can take many forms. The first stems from the simple fact that as a diver descends, the wetsuit compresses and unless it is adjusted, the belt becomes loose. In some cases, a loose belt can rotate around the diver's waist, positioning the buckle behind the diver's back. When that happens, it's nearly impossible to make further adjustments or to ditch the belt. At other times, divers slip up and accidentally drop their belts while attempting to make those needed adjustments.

DIVER 2

A completely different problem comes when a weight belt (or weight) is suddenly and unintentionally dropped during a dive. While the problem can arise from a diver's failure to make careful and timely adjustments to belt tension during the dive, it can also arise as the result of an equipment malfunction or failure. Consider the diver who had purchased a new pocket belt and had just made his second dive with it. At the conclusion, he noticed that the stitching on one of the pockets had failed and the two-pound weight was dangling precariously from what remained of the pocket. It was a close call, indeed.

Had the failure occurred any sooner or progressed any further, a serious accident could have happened. While it's easy to assume that the diver's belt was faulty, we shouldn't overlook the possibility that a close examination of the belt before the second dive might have given the diver a clue that the belt was literally coming apart at the seams. Certainly any new weight belt should be durable enough to survive two dives, but we should never assume that because a piece of equipment is practically new that it is in good working order.

DIVER 3

Another case involves a diver who was wearing a borrowed weight belt. While attempting to ascend from a depth of about 35 feet (10 meters), the diver realized that he was unable to kick hard enough. Rather than ditching the weight belt – and risk losing it –

the diver used the auto inflator to help himself ascend. Such incidents point out a common malady among divers – they worry more about the equipment they are wearing than about their own safety. While nobody wants to lose a perfectly good piece of dive gear, we would do well to remember that the whole purpose of our dive gear is to keep us alive. If that means we lose the gear in the process of staying alive, then so be it! Over-weighting is another oft-ignored issue. When divers carry more weight than necessary, they also carry more air in their buoyancy compensation devices (BCDs) than needed.

As the diver changes depth, the resulting change in buoyancy is greater. For example, consider a diver who is overweighted by 3 pounds (43.75 oz.) and offsets that with enough air to generate 3 extra pounds of buoyancy at depth. When that diver ascends, this extra air expands, making him more buoyant than he would be if he had been properly weighted to begin with. If he descends, that air compresses and more air must be added to remain neutrally buoyant. As a result, it is more difficult to control buoyancy throughout the course of a dive and the potential of overcontrolling or losing control is heightened. Weight belts are not the only problem when it comes to buoyancy control. Buoyancy problems can also develop as a result of a BCD failure or malfunction. The underlying cause may be a manufacturing defect, design flaw or maintenance oversight as in the following case.

DIVER 4

The 35-year-old open-water certified diver with more than 100 logged dives experienced a "near miss" while on a training dive that was part of a program in advanced-diver certification. It was the second dive of the day and the diver had begun ascending from a depth of 83 fsw (25 msw) when he realized his buoyancy was improperly adjusted. As he tried to inflate his BCD with the auto-inflator, bubbles gushed from an open port on the device. About that time, the instructor approached the diver with a spring-valve seat and screw-on cover for the BCD overpressure relief system in his hand. Apparently, the relief valve cover had been loose and fell off during the dive. Fortunately, the diver was able to continue his ascent and reassembled his BCD after he left the water. It's common for divers to give themselves "mental head-slaps" when situations such as this occur, but in reality, such situations can be much more serious than we like to admit. Perhaps the only thing separating this final incident from the fatal injury of our first report's victim is dumb luck and that's nothing to trust your life to. By looking at these accidents and incidents, we can fine tune our procedures and attitudes and enjoy safe diving.

ABOUT THE AUTHOR

Rick Layton is a veteran diver and a DAN Member.

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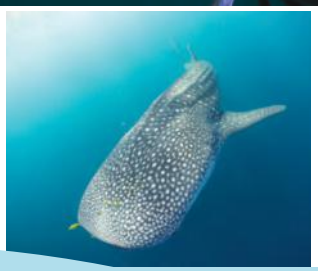
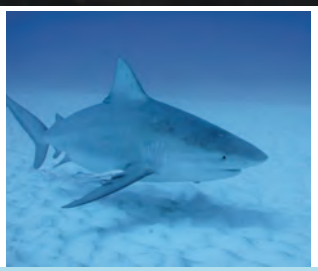

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Photographs taken underwater need to show the whole body of the animal. The best photos for identification are side images of sharks and top views of rays or guitarfish. Photo by Simone Caprodossi.

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