Inspiring People to Care About our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | JUNE 2012 | VOLUME 9 | ISSUE 2

DIVING IN CYPRUS
WRECKS AND CAVES
DISCOVERING WHAT THE CYPRIOT MED HAS TO OFFER

Jumeirah

HOTELS & RESORTS

STAY DIFFERENT ™

The Big Jumeirah Sea Turtle Race

29th JUNE 2012 - 8.30am - get there early to avoid dissapointment

In celebration of World Sea Turtle Day, the Dubai Turtle Rehabilitation Project invite all EDA members to join us on the beach at Madinat Jumeirah where we will be releasing 6 satellite tagged sea turtles and over 100 rehabilitated juvenile hawksbill turtles.

COME AND EXPERIENCE REGIONAL SEA TURTLE CONSERVATION IN ACTION

join us on our facebook page to find out more about this event....
www.facebook.com/turtle.rehabilitation

EDA
جمعية الإمارات للغوص
Emirates Diving Association

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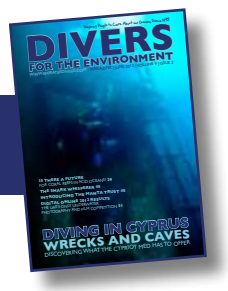
DIVERS FOR THE ENVIRONMENT

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 submit an article for the next issue of "Divers for the Environment" released in September 2012. Send all articles, feedback or comments to: **magazine@emiratesdiving.com**

EDA COVER
PHOTO BY SIMONE CAPRODOSSI



REDUCE REUSE RECYCLE

Please recycle this magazine after you have read it.

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THE ART OF DIVING

IBRAHIM N. AL-ZU'BI
EDA Executive Director

I would like to welcome you all to the June issue of "Divers for the Environment". Half of 2012 has already gone and we have been really busy in EDA. March 2012 saw the Dive Middle East Exhibition (DMEX), the region's only dive show, cover 365sqm with 26 exhibitors which is the biggest DMEX ever since the launch in 2007. A visitor survey conducted during the show stated that 83% that visited DMEX stated that is was good/excellent. We also had the pleasure this year to host PADI Project AWARE who rallied support for Sharks at EDA's booth in DMEX.

Again, I find myself lucky that I was not a member of the jury panel for our annual Digital Online Underwater Photography Competition. As a matter of fact, I felt sorry for the judges. This year's was one of the toughest to score with lots of underwater photography gurus participating and sending EDA amazing photos of the varied marine life from all the places our members have dived. If I were to describe in one word the 49 entries we received this year, it will simply be, 'Fascinating'. The Digital Online Award Ceremony at DUCTAC in Mall of the Emirates made a clear point that taking underwater photos is an ART. A photograph always has a story behind it. I want to congratulate all the participants for enriching EDA's photo library with amazing photos – I am sure you will all agree with me when you see the photos in this issue. I also want to congratulate Mr. Warren Baverstock for being the overall winner of the 2012 competition for the Professional Category, Mr. Jonathan Clayton for winning the Amateur category and Mr. Khaled Sultani for winning the Video Category. Also many thanks to the jury, the sponsors, the EDA team and EDA's Events Coordinator, Ally Landes for another successful EDA event towards promoting for diving not only in the UAE but in the whole region.

You will also find in this issue exclusive news and special offers to our members from our dive centers and clubs in the UAE. The diving industry are in for a busy 2012! We are also glad to see that our members and dive centers are leading environmental campaigns in the UAE. Al Mahara Dive center and EDA members joined efforts to clean up the Capital Ports. We are also glad to see that dive centers are sharing reviews on new equipment with our members.

As you all know, EDA is an official Training Reef Check Facility in the UAE, we have allocated in this issue a lot of space for our Reef Check News! With input given by Reef Check, and with EDA being one of the main Reef Check partners, we hope you will enjoy the updates and research about the condition of the coral reefs in our seas!

We know about horse and dog whisperers, but in this issue we have a special feature about the one and only Cristina Zenato whom I am sure most of you saw her fascinating video with sharks, as Chantal Boccaccia who wrote the feature described her, "Cristina Zenato is an enigma; a quiet symphony of fire and passion wrapped in a little girl's body." She is simply "The Shark Whisperer".

I also want to take this opportunity to thank our EDA members who continuously share their insightful diving experiences and underwater pictures with us. Your insights and articles are imperative in recommending when and where to go diving as well as what to look out for on your trip. You will read in the diving destinations in this issue, tips about diving in Phuket – Thailand and Cyprus. It is also so good to receive some diving stories from Canada from our long time member and friend Mr. Mark Anthony Viloria.

We hope your passion and enthusiasm continues and you send us news about your next diving adventures, and we look forward to seeing your next batch of waterworld snaps!

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

Happy reading and safe Eco Diving!

Ibrahim Al-Zu'bi

DMEX 13 – 17 MARCH **2012 AT A GLANCE**

Maintaining its unique position as the only international diving event in the Middle East, the 6th edition of the Dive Middle East Exhibition (DMEX) catered to both the professional diver and new enthusiasts offering a unique platform to showcase the latest in diving equipment, supplies, services and techniques, complimented by live diving demonstrations. The show hosted a series of presentations on the latest dive gear, training programmes and projects taking place around the region and further afield in international waters.

2012 saw DMEX cover 365sqm with 26 exhibitors which is the biggest DMEX ever since the launch in 2007!

A visitor's survey conducted during the show stated that 83% that visited DMEX said that it was good/excellent.

If you are interested in exhibiting in DMEX 2013, March 5-9, please contact Barbara on:

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EDA **ENVIRONMENTAL WORKSHOP**

The workshop that EDA offers to companies is based on the short film, 'The Story of Stuff', which has been watched online over 10 million times since its premier in 2007

EDA conducted an environmental workshop for 20 members of Majid Al Futtaim staff on the 29th of March 2012.

This workshop is an all hands on deck situation. Everybody's best efforts are needed. While organisation and governmental efforts matter, it is the people that have the highest potential to make the biggest impact. They are likely to be more open to changing behaviour patterns, and their energy, creativity, and optimism can be unstoppable. Supporting people in making changes early is one of the most effective and gratifying places to focus our efforts.

EDA, along with 'The Story of Stuff Project', have developed a six session workshop; each with its unique activity that seeks to ignite the participants' passion for life, help them understand the fundamental problems facing humankind and the planet, raise awareness of the changes needed, and empower them to enact and take action in their own lives. This one day workshop is engaging, informative, and very interactive. We hope to support them in developing environmentally sustainable patterns of consumption that honour Earth and deepen their spiritual lives.

This workshop is flexible and can be modified to suit the client's needs.

EDA is currently developing several other environmental workshops that cover several other subjects. We will be sending updates about this soon.

If your company or organisation is interested in these workshops, please contact:

REEMA AL ABBAS
Email: diving@emiratesdiving.com
Tel: +971 4 393 9390

MYTH-BUSTING THE PADI
ADVANCED OPEN WATER DIVER COURSE

If you're a relatively new diver you're probably thinking about where to take your diving next, and how to go about developing your new skills. As part of your open water diver training, you also learned the real truth about common scuba diving myths such as:

- You have to be an Olympic-class swimmer to dive
- Diving is only for people who live or have holidays in the tropics

Today we're going to bust some myths about the PADI Advanced Open Water Diver program which is the next step in taking your skills to the next level, and developing your confidence.

MYTH #1 I haven't been a diver very long; I'm not ready to become an "advanced" diver.
The PADI Advanced Open Water Diver course is for divers who want to gain more underwater experience while diving with a PADI Professional – or have fun learning new things. In addition to logging more dives, you'll fine-tune skills learned during your open water diver course, such as navigation and buoyancy.

MYTH #2 The advanced open water diver course is more challenging than the entry-level program.
The PADI Open Water Diver course covers a lot of material and can be intense. Your instructor brought you from being a non-diver to someone who can dive together with a buddy. Now that you're familiar with the basics of diving, it's time to start exploring and developing your confidence and skills – and that's what the PADI Advanced Open Water Diver course is all about.

The Advanced Open Water Diver program is basically five Adventure Dives – think of it as being a way to sample different types of diving. You can choose from more than twenty adventure dives including; wreck diving, underwater photography, enriched air nitrox, night diving, underwater naturalist, boat, deep, dry suit diving and many more.

In the Advanced Open Water Diver program, classroom time is kept to a minimum. There's even an online option via PADI eLearning where you can access the course whenever it suits you. Either way, the main goal of the program is to go diving. There aren't any tests and you can complete the program in as little as one weekend, or take it one dive at a time. Talk to your instructor about upcoming adventure dives in your area.

MYTH #3 I learned how to dive in my open water class.
Yes and no. The open water program teaches you the basics and how to dive safely. While many people are "naturals," perfect buoyancy and underwater navigation isn't easy for everyone. In the PADI Advanced Open Water Diver course, you can fine-tune these skills with tips and suggestions from your instructor. You can also learn to confidently explore wrecks, dive to deeper depths and even ride an underwater scooter under the helpful guidance of your PADI Instructor.

Underwater photography is another skill you can learn through trial and error, but this method can be time-consuming and frustrating. A PADI Professional will help you avoid common pitfalls and help you get shots you'll be proud to share.

For more information contact your local PADI Dive Centre or Resort. A list of your nearest PADI Dive Centres can be found at **padi.com**.


Deep Dive


Night Dive

PROJECT AWARE RALLIES SUPPORT FOR SHARKS AT DMEX

FEATURE **JENNIFER CONSTANT**
Regional Coordinator, Project AWARE Foundation

Project AWARE Foundation were honoured to work alongside Emirates Diving Association during the Dive Middle East Show in March 2012. We were delighted to meet our supporters and 100% AWARE partners exhibiting at the dive show; Al Mahara, Atlantis, Al Boom and Pavilion to name just a few who worked hard to help us spread the word that our ocean needs protection and that we, as divers, are in a very powerful position to directly and positively affect real, long-term change especially in regards to collecting marine debris data and supporting the protection of endangered sharks.

DMEX offered the perfect opportunity for us to interact with residents of Dubai as well as tourists, talking to them about sharks and encouraging them all to add their names to our Give Sharks a Fighting Chance petition. We secured a massive 850 signatures which contributed to hit the 100,000 landmark in April. During the coming months we'll take your voice to leaders and decision makers as we target the global power of the Convention on International Trade in Endangered Species (CITES) to protect threatened sharks. CITES is the largest, most effective wildlife conservation agreement in existence. With 175 member countries CITES provides an international framework for monitoring and controlling trade in species at risk and penalizing violations. Your voice and the success of the Give Sharks a Fighting Chance petition allow Project AWARE's global teams to make profound arguments for change – including diving-based economic benefits of living sharks and eco-tourism.

In addition to rallying support for sharks, we raised critical funds towards our Shark in Peril and Marine Debris campaigns. We are grateful for the generosity of the people who attended DMEX 2012 and bought our badges and necklaces collecting more than AED 4,150.

The overwhelming support and generous contributions will go a long way in helping us secure protection for the most vulnerable shark species and protect our oceans from harmful debris.

A big THANK YOU goes to EDA, all our supporters in the Middle East and petition signatories! We look forward to continuing our work to clean up the oceans and save vital yet endangered shark species from extinction!

THE NEW AWARE A YEAR ON

FEATURE **DOMINO ALBERT, PROJECT AWARE PR & COMMUNICATIONS COORDINATOR**

You could say Project AWARE is a year old this June. Even though Project AWARE Foundation has been around for many years – since 1992 as a registered non-profit – one year ago, on World Oceans Day 8th June 2011, Project AWARE refocused, relaunched and renewed its commitment to addressing the ocean challenges ahead. Here's a round up of what Project AWARE and its dedicated volunteers have been up to in the last year. Today we are:

1. 100,000 Shark Petition Signatures Stronger

In the last year, Project AWARE continued to call on the diving community to express outrage at the devastating results of the last CITES meetings where 8 vulnerable shark species were denied trade protections. Project AWARE has mobilized more than 100,000 people who added their names to the shark petition calling on governments to protect sharks from overexploitation – overfishing, finning and bycatch. We're setting our sights on CITES 2013 in Thailand with plans to secure listing for some of the shark species most deserving of CITES protections.

2. Ready to Tackle and Show the Underwater Perspective of the Marine Issues

It may seem like we've been talking debris for decades but last year we created "Dive Against Debris" a unique programme aimed at collecting underwater debris data. Something desperately needed but that no other organisation in the world is currently doing! Scuba divers are uniquely positioned to tackle the global marine debris issue, to take action every day and prevent debris from entering the ocean as well as remove it once there. Divers in all corners of the globe have embraced the new programme and the data from their day to day marine debris actions is helping provide information not only to AWARE leaders who are trying to find ways to improve local debris management and prevention but to world leaders to tackle the issue on a global scale.

3. Connecting the Dots

Part of our relaunch was forming and strengthening partnerships and alliances with experts in shark conservation and marine debris fields as well as targeting the countries and policies that matter most. In these new and ongoing partnerships we work on solutions both close to home and globally. Our policy work is propelling the change we need for the ocean. It's a giant, intricate, complicated and slow process but thanks to your support and generosity we are making giant steps in closing loopholes in shark finning regulations, keeping marine debris issues at the top of ocean policy agendas, and keeping the pressure on CITES representatives in the run up to CITES 2013.

4. Building a Strong Movement of Passionate Activists

In the last year, divers pulled off some of the most inspiring, inventive actions yet. There were motorcycle marathons, shark demonstrations, people shaving their heads all in the name of ocean protection. Everyday divers from all corners of the world are joining My Ocean, the Project AWARE online community network, to share their actions, inspire and mobilize other divers to get involved. Project AWARE has become the largest, most diverse movement of divers on earth – 700,000 strong and growing – who are sharing the same vision for a healthy and abundant ocean planet.

Thanks to your support we are showing a united front and pushing forward effective policies measures that will ensure the survival and health of the oceans and its inhabitants. We are taking the momentum of the AWARE movement and your actions to turn them into large-scale change. Join us in celebrating our one year anniversary, our shared passion for the protection of the ocean planet and the many conservation successes ahead at **projectaware.org**.

DISABLED DIVERS INSTRUCTORS COURSE

FEATURE **CLAIRE DONNELLY**

In mid April I had the privilege to attend a disabled divers instructors course arranged through Disabled Divers International, a training course to become a diving instructor for young adults and above with disabilities. And what a privilege it was!

Myself and five other PADI dive instructors/ dive masters took part in a two day course to learn more about specific disabilities and how we can adapt our scuba training to include people with these disabilities. An experience that we take for granted each time we put on our gear and giant stride into the ocean.

Our tutor was Fraser Bathgate, an amazing man who took time to teach us so much. Fraser was the first paraplegic diving professional within PADI. He started diving after his accident at the age of 23, and now he is a course director and PADI advisor. Fraser opened our eyes to so much that we had not considered as able bodied dive professionals. For example, did you know that diving is the only adventure sport that, if you are in a wheel chair, you can still buy the equipment off the peg? A major selling point and a dramatic cost reduction compared to other sports.

So what new skills did we learn?

- How to put a wetsuit on a diver in 90 seconds flat. Extremely hard as I couldn't put my own suit on in that time!
- One of the biggest problems with divers with disabilities is holding them back, as they discover a world underwater where freedom of movement is realised.
- When in the water with a disabled student, engage with them at all times and not the people around them, or they will close down quickly.
- Don't push or pull the student, this type of behavior completely closes a diver with disabilities down.
- Our communication skills had to jump to a whole new level, as did our thinking through solutions to problems.
- The rate of conversion from "try dive" through to completing the course is 98%! The missing 2% is due to the student not being passed fit in their medical.
- The only disability not able to dive is epilepsy.

Amazing eh!

The two day training covered a day's class room training where we learnt more about the specific needs of different disabilities, the challenges that each group face daily and a new set of diving standards (PADI approved) that we need to follow.

We were taught the specific needs of a group of disabilities – amputees, those with cerebral palsy, muscular dystrophy, downs syndrome, sight impairment and spinal injuries.

The second day was spent in the pool practicing lifting techniques to help get the diver out of the water protecting them from possible incidents. The lifting skills we learned are based on technique rather than pure strength as demonstrated by Fraser, who without any power in his legs demonstrated the three lifting skills from the water with just the use of his arms. We also experienced a dive blind (with the aid of a blacked out mask), from equipment assembly through to disassembly after completing a pool dive – an experience all of us will remember. Finally we practiced our newly acquired skills with the help of a young Jumeirah guest who had hurt his knee on holiday and was in a wheelchair. We helped him take his first, and definitely not his last, judging by the smile on his face (his mask kept leaking due to a constant ear to ear grin!), scuba experience, and helped him lap the pool 4 times blowing bubbles – just an amazing training course.

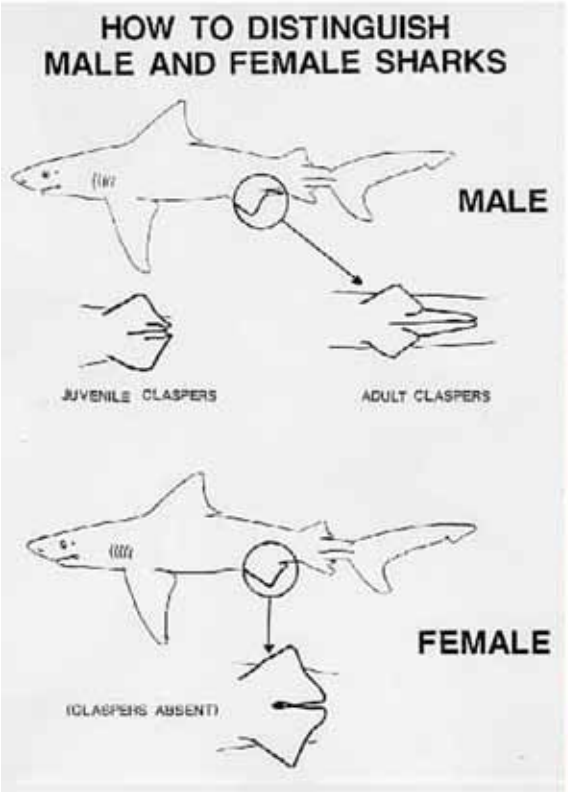
DISABLED DIVERS INTERNATIONAL

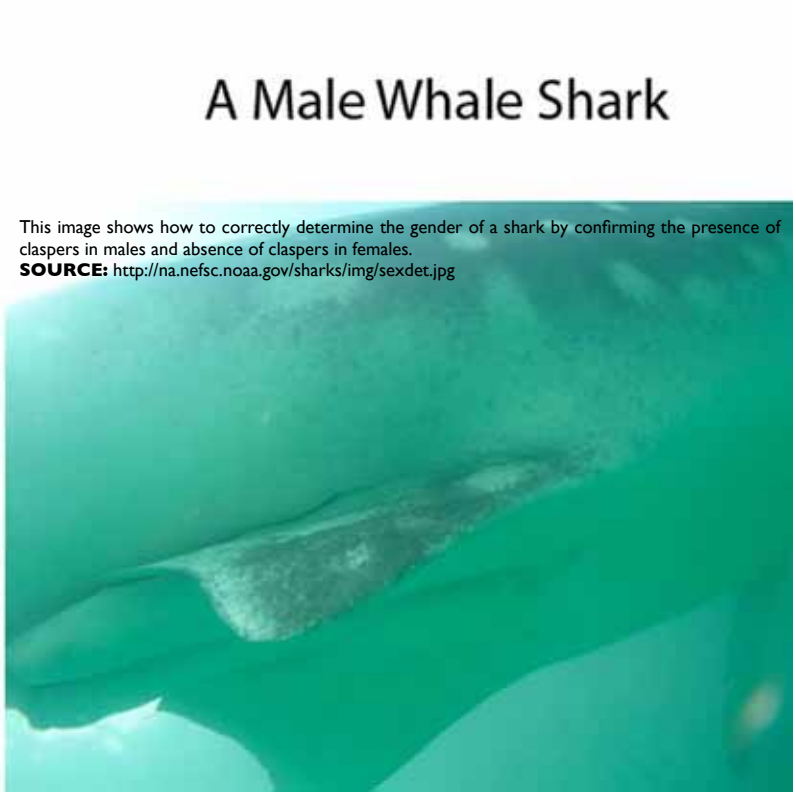
The training took place with the Pavilion diving centre, based at the Jumeirah Beach Hotel, Dubai. The Pavilion is the only DDI affiliated diving school in the UAE. At the Pavilion there is a growing group of DDI trained diving instructors and dive masters (30 trained to date) extremely keen to help people with disabilities from the local community to experience the world underwater. So if you know of someone who is keen to try, but has always been told "it's impossible", come and try, we are here to help to show you that "anything is possible", we want to see that first breath underwater and for you to feel the freedom of movement of flying through space.

Contact the Pavilion on email **divecentre@jumeirah.com** or call **04 406 8828** and ask for Shay or Elena.

SHARKWATCH ARABIA DATABASE UPDATE: THE SHARKS ARE BACK!

FEATURE **DAVID P. ROBINSON, JONATHAN ALI KHAN & WARREN BAVERSTOCK**





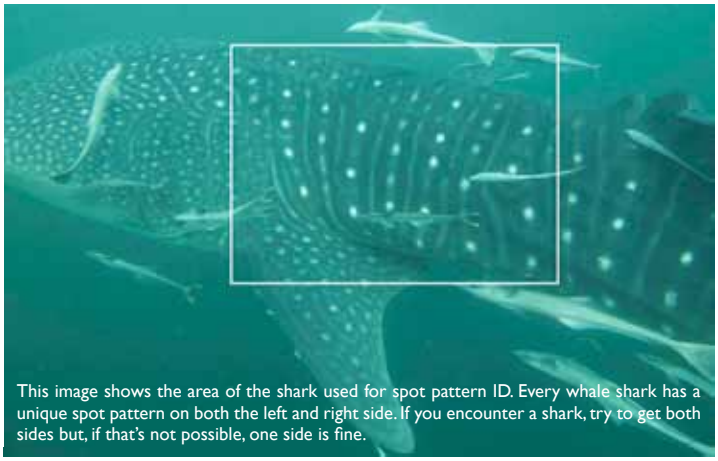
This image shows how to correctly determine the gender of a shark by confirming the presence of claspers in males and absence of claspers in females.
SOURCE: http://na.nefsc.noaa.gov/sharks/img/sexdet.jpg

Since the last update the whale sharks have started to return to the area. Sharks are now being reported in numbers both inside the Arabian Gulf and on the East Coast/ Musandam. The weekend of April 17th saw five individual sightings, three of which were in Fujairah and two in the Musandam. From researching whale shark occurrence since 2004, it has become clear that the whale sharks are seasonal to the region, appearing in April and disappearing in November. Sharks are spotted occasionally in the winter but encounters are few and far between.

Apart from the return of the sharks, April also saw our first 2012 Musandam field survey conducted. Armed with a satellite tag, we did three dive surveys but were not lucky enough to have a whale shark encounter. Although we didn't see any sharks on the day, we did collect some important plankton samples and environmental information. Many thanks go out to Nomad Ocean Adventures for supporting the survey and for their continuous support to the project.

This season, in a show of appreciation, we will also be giving away Sharkwatch Arabia window stickers to dive centres and individuals who have been supportive to the project over the last couple of years.

Watch out for the new SWA supporter sticker which will be given to dive centres and individuals which have shown support for the project.



This image shows the area of the shark used for spot pattern ID. Every whale shark has a unique spot pattern on both the left and right side. If you encounter a shark, try to get both sides but, if that's not possible, one side is fine.

Please remember to send in your sightings if you encounter a shark, even if you don't have a photo. If you do try to take an image, please make sure you photograph or video the flank of the animal behind the gills for spot ID analysis. Preferably both sides if possible, but if that's not possible then one side is fine. If you are diving with buddies (which we hope you are), try to make sure one of you takes a good look underneath the shark to see what sex it is.

We would like to take this opportunity to thank the following individuals for their support and for sending in sightings to Sharkwatch Arabia: Christophe Chellerpermal, Nomad Ocean Adventures, Rima Jabado, Divers Down, Sheesa Beach, Kirsty Kavanagh and Michael Etter.

If you encounter a whale shark in this region, please visit **www.sharkwatcharabia.com** and report your sighting.

MY DIVE

IN THE DUBAI AQUARIUM AND UNDER WATER ZOO

FEATURE **CAITLIN TOLLIDAY AGE 10**

My name is Caitlin Tolliday, I am 10 years old. I recently qualified as a PADI Scuba Diver and when I was asked to do a shark dive in the Dubai Mall Main Aquarium tank, I jumped at the opportunity.

On Thursday after school, I was on my way to have the best experience of my life! At the Aquarium I was met by my guide Ryan, he was very nice, kind and funny! Ryan took me to watch a movie about diving with sharks, the movie told me how to behave when diving with the sharks, and what to expect, so I was put at ease. After the movie had finished we went to assemble our gear, ready to dive. They had all the equipment I needed, including a wet suit and flippers (or should I say 'fins')! Soon after we were ready, I started to get a bit nervous, but Ryan made me feel very relaxed!

We made our way down the stairs to the diving platform. We did our final buddy checks, and dangled our feet into the Aquarium water. The beautiful, clear, saphire blue water felt cold at the start, but I wasn't going to let that spoil my experience, and to be truthful, I got used to it very soon and didn't feel cold again! As we were preparing to enter the Aquarium, a huge Sand Tiger Shark swam past where we were, almost touching my leg! Wow, this was going to be amazing.

We proceeded to enter the tank and started down the blue rope, we stopped to equalize and look around, before we carried on. We soon came to a rock just above the tunnel that goes through the Aquarium Tank, I was really surprised how small the people looked walking through the tunnel! I had a fish eye view, and it felt funny that I was finally seeing what the fish in the Aquarium see every day!

My breath was sending bubbles that floated up like little jelly fish to the surface. There were really big rays and fish swimming through the bubbles, they must love the feel of them. The rocks and corals were all around me, as were many different kinds of fish, Rays and Sharks, fish and eels, it was so beautiful!

After swimming at around 5m for a while, we finally descended to the bottom of the tank, which is about 10m according to my depth guage. There were as many fish at the bottom of the tank. I took lot's of photographs, especially of the Guitar and Zebra sharks lazily sleeping on the bottom of the tank.

We stayed at the bottom taking pictures for a while, I was surrounded by magnificent fish and sharks…I thought about how lucky I was to experience so many extraordinary marine animals, and all in one place! My favourite fish was called 'Bob' and he is a Giant Grouper from Australia.

Unfortunatley my air was running low so we had to return to the human world at the surface. So I said goodbye to my marine friends, and really hope I can dive again in the Aquarium tank to see them all again some day very soon!

I would really recommend this experience to anyone, it was truly an experience of a lifetime!

LEARNING THE ROPES OF THE IDC

AL BOOM PROFILES NEW INSTRUCTORS JOINING THE UAE'S DIVING COMMUNITY

FEATURE **SAM THOMAS**
(PADI MASTER INSTRUCTOR)

Al Boom takes the great pleasure in welcoming Bechir Chehab, Ranjith Punja, Daria Atrash, Houssam Mneimneh, Tom Crabbe and Necholy Mindajao into the prestigious world of scuba instruction. Congratulations to you all on becoming PADI Open Water Scuba Instructors! These six candidates attended the PADI Instructor Development Course with Al Boom Diving Club during March and April 2012, and successfully completed the Instructor Examination on April 18 and April 19 resulting in a 100% pass rate. The Instructor Examination was conducted at Jebel Ali Golf Resort and Spa, as well as Jumeirah Open Beach, by PADI Office Staff. They happen twice a year in Dubai.

All these candidates decided to continue their education up through the PADI System of diver education, realising that there is always something new to learn when it comes to diving. Starting from PADI Open Water Diver, continuing through to earn the Advanced Open Water Diver, Emergency First Response, Rescue Diver and Divemaster certifications.

Mr Bechir Chehab has an interesting case of not beginning his diving career with PADI. He has the NAUI (National Association of Underwater Instructors) equivalent certifications for the PADI Open Water, Advanced Open Water and Rescue Diver courses; demonstrating that even a non-PADI certified diver can become a PADI Open Water Scuba Instructor! His new certification allows him to conduct courses and programs independently ranging from Discover Scuba Diving all the way through to PADI Divemaster. From the onset of the course, Bechir maintained his sense of humour, dedication and always kept a positive attitude when tackling the dreaded topic of physics!

Conversely, Miss Daria Atrash, completed all of her PADI courses from Open Water Diver to Divemaster, nurturing her diving career with Al Boom Diving Club. Her mission now is to continue onto the Master Scuba Diver Trainer rating, which she is currently working on with our PADI Course Director Mohamed Helmy. Daria displayed a fierce determination and a great willingness to learn while keeping IDC staff on their toes with what seemed like a never ending supply of questions!

While Al Boom Diving Club would love to highlight all of the newly certified instructors, on a more personal note as one of the IDC Staff who personally witnessed the hard work, dedication, commitment to 'back to school' studying, I am both proud of – and pleased

to welcome these six outstanding new instructors to the UAE's diving community. Congratulations guys!

A NEW **PROFESSION**

FEATURE **DARIA ATRASH**

If someone had told me last May that in a years time I would become a diving instructor, I would have laughed. A year ago, I knew about scuba diving as much as about cybernetics. It exists, but what it is exactly – is a very difficult question.

Everything changed since I moved to Dubai from Moscow. My boyfriend, also from Russia, offered me to try scuba diving. He was already an assistant instructor at the time. I had a lot of free time and no friends so I thought, why not! It's better than to stay at home. I went to Al Boom Diving and signed up for my Open Water course. By the way, when I first came to the UAE, my English was quite poor and my first instructor, Sam Thomas, wondered if I understood anything he was saying because he heard only one answer from all his questions! "Yes". But he told me this much later, after we became friends.

So after my Open water course, I sighned up straight away for my Advanced, then Rescue, EFR…everything went so fast. From August 2011, I became an Al Boom Diving trainee, so I spent a lot of time in the dive center. My day began from a beach dive at 8 a.m. and finished at 6 p.m. after a usual pool session. Every day from morning till evening, I was in the water – it was difficult, but it was so useful, I watched how instructors worked, how they talked to students and how they handled problems underwater. I learnt so much from those 6 months. Then I started my Divemaster course. Now I felt like a professional. I was surprised that I liked to help people. For example, on the boat when we went to Fujairah, I ran my first refresher session, you can not imagine how nervous I was! Thank god my English had improved by that time.

Every time I was in Fujairah or the Musandam, a new world opened up for me. I was like a child pointing my finger at all the colorful fish or beautiful corals, but I suppose to be fair, I was already a professional guiding my own students.

Diving gave me a chance to learn something new myself, to open new borders of my personality. I meet new people everyday, some of them are good friends today.

If you ask me what was the best time of my diving career, I would answer without delay – the IDC. Why? Because I found a new family. For several weeks we studied non stop, through our weekends, sometimes till 12 p.m. The dive centre was already closed and we sat outside on branches scrutinizing over our papers under the dim light of lanterns. You can't imagine how much fun we had. I want to thank my instructor Sam Thomas and my Course Director Mohammed Helmy over and over again for all their patience and hard work. All my knowledge is what they passed on to me. During our IE, we were all very close friends that if one of us failed in an area of the IE we went through the emotions together and when we hit success, we all felt the pride. We all passed our exams! It was not easy, but we did it.

In a year, my life totally changed. I moved to another country, took on a new profession, met a lot of wonderful people and hopefully finally found myself.

WHAT MADE YOU CHOOSE SCUBA DIVING FOR A CAREER?

FEATURE **SAM THOMAS**
(IDC STAFF INSTRUCTOR AND EFR INSTRUCTOR TRAINER)

At a recent gathering I was asked a question that does seem to be coming up quite frequently when it comes to my incredible job. You'll be surprised how many people ask 'Have you ever been bitten by a shark?' Or 'Have you ever been down to 500 metres?' To answer these ridiculous questions, I simply say, 'Yes'!

Anyway, the question was: 'What made you choose scuba diving for a career?' And my answer was plainly, 'Not sure'. Let's keep things simple. But, of course, I know full well exactly why I chose a career where I get paid to do what I love doing! I'm pretty sure the majority of people can't say that.

Well, to be honest, I never had it in my mind to become a full time PADI instructor. I never even imagined I would try diving until I came to the nice, warm, tropical waters that Dubai has to offer – apart from now – freezing!

I COULDN'T RECOMMEND IT MORE

FEATURE **TOM CRABBE**

Let's start at the beginning of my career, because, after all, that's where we all begin. Of course, after working my way up through the Open Water Diver and Advanced Open Water Diver courses, I'm really starting to enjoy my new hobby and trying cool things like diving at night.

At the start of the summer 2009, I thought about how during every single summer I turn into the most useless and lazy slouch ever… which of course, has changed now – more or less. Time for a change! I called the owner of one of the local dive operators, who just happens to be a friend, and came to an arrangement that I could work for him during that summer whilst getting the Divemaster course in return. Woohoo – my first 'official' job! Well all I can tell you is that I got first class training and an astonishing tan by the end of it.

I think the Divemaster course is the 'NO U-TURNS' point for most people. Nearly everyone wants to continue their education onto the instructor level courses by attending an Instructor Development Course held at some dive centres. For me, regrettably I'm like a child, when I want something it has to be right this very second. So at the end of my Divemaster course I decided I couldn't wait for the next instructor examination, and off I flew to Thailand – awesome! Parties, women (I think) and diving! I met up with my Course Director and 14 days later – drum roll please – received my Open Water Scuba Instructor certification. I have to tell you, the first beer after that tastes good!

Time for a vacation I think – a proper one this time. All high and mighty with my new credential I went off to places like the Maldives and Mauritius, eagerly waiting for the operator to ask to see my diving license…

Now I'm back in the UAE, teaching my favorite hobby in the world, and still learning new things on a daily basis. I get to guide people who are new to diving, and can watch them experience the same range of emotions you felt yourself oh-so long ago.

Diving has taken me all over the world and into places no one has ever ventured before – just amazing really. Where I'm working now at Al Boom Diving, I have the opportunity to progress through all the instructor levels and assist with our Instructor Development Courses. I think if someone asks me again 'What made you choose scuba diving for a career?' I'll actually share my story this time.

Just recently, I have become an Instructor at Al Boom Diving. The role of Instructor has been a goal of mine for the past year since I started diving again, now making it my fourteenth year of diving with hundreds of dives under my belt. Now that it is a reality it has certainly proved worthwhile. Not only is there the added respect from fellow divers, not to say that Divemasters aren't respected, just that they fall into an obscure level of training that not all divers are familiar with. When you talk to someone outside of diving and mention that you can teach them how to dive as you are an instructor, your years of experience in diving is more apparent due to your title.

One of the most important aspects in my mind which makes an instructor better at their job is the confidence and fluidity in which they teach. Staying calm and collected is also a big plus seeing as the majority of problems in diving are stress related. Having worked closely with many instructors at Al Boom for the last year has helped instil this attitude in me. The best practice is slow and steady definitely wins the race.

Even so, with one of my first courses I have currently been teaching being the PADI Sealteam program, it has caused me to be a little anxious especially given my recent certification upgrade and the circumstances of the course. Teaching to adults is one thing, while teaching to a group of children is very daunting especially as for many of them it's their first experience in diving. Fortunately I planned everything meticulously in advance and had the assistance of fellow instructors, Daniel and Randy, working with me. After the introductory session and the first few skills, I can safely say that we had a near perfect lesson and the kids have had a great time. With more dives planned for them in the coming weeks, it should end up being a great course. I hope to make every course that I run just as memorable for both my students and myself so that I can end up being a role model for future divers.

The aspiration to become better has not ceased with me having reached Instructor. I always intended to go into professional diving and build on my knowledge and skills as well as getting together a good set of equipment for every occasion. Right now this means getting started with specialties and eventually having Master Scuba Diver Trainer as my title. I keep adjusting these goals raising the bar higher for myself and so can see myself doing this for many years to come. As a lot people told me when I first got into the industry the lifestyle is good and the pay is reasonable, but not extravagant, and so far everything stands true. The life of an Instructor is incredibly enjoyable if you make it interesting and fun, so for those looking to go into instructing I couldn't recommend it more.

AL BOOM DIVING: 04 342 2993
www.alboomdiving.com

FISH SPOTTING

FEATURE **ANDREW ROUGHTON**

I was recently sat on a long-haul flight scrolling through the movie channel when I stumbled across a comedy film called The Big Year. The synopsis described the film as the story of an annual, North American bird watching competition, which sounded a little lame. However, with Steve Martin, Jack Black, and Owen Wilson starring, I assumed that I would be in for a few laughs. And thankfully I was right. The Big Year is a gentle comedy with a pleasant plot, likeable characters, and some truly stunning North American scenery.
a
However, for me, the main success of the film is its celebration of wildlife and the wilderness, which lead me to draw parallels between bird-watching (or "birding" as the film insists is the correct terminology) and recreational diving.

Firstly, birding, just like pleasure diving, is an excuse to leave the city and enjoy pure, unadulterated nature. Secondly, isn't spotting birds, just like spotting fish? Isn't the main topic of post-dive conversation the different species you've spotted? And isn't the conversation always more exciting the rarer the fish you've spotted? And thirdly, the bonds built between the birders in The Big Year are just like the bonds built between divers on recreational dives. It's about unifying people in a celebration of nature in exactly the same way. Ok, birding is arguably much geekier. Binoculars, anoraks, and flasks of tea could never be considered as cool as BCDs, Masks, and Fins. Nonetheless, the similarities between the fundamental joys of birding and diving are undeniable.

Now this doesn't mean that I'll be trading in my BCD for a pair of Binoculars any time soon, but it does reiterate the joys of diving for me. Just as Steve Martin quits his high powered job to undertake a "Big Year," Jack Black walks miles to spot a Pink Footed Goose, and Owen Wilson misses New Year's celebrations to spot a Snowy Owl, I will continue to hammer my credit card, forget the dives in two meter visibility, and revel in the joys of spotting Lionfish, Yellowtail Barracuda, and Picasso Trigerfish.

A SUCCESSFUL **PADI IE**

The Wall of Fame keeps on growing at the Atlantis Dive Centre.

I am very proud to add two new photographs to the Instructors Wall of Fame; namely Talal and Ice. In April, both successfully completed their PADI Instructor Examinations. You guys did an incredible job, the whole team at the Atlantis Dive Centre are very proud of you.

With a 100% success rate in the PADI IE, the team are looking forward to the two remaining IDC/IE's for 2012.

A WEEK WITHOUT WALLS

April 22nd-26th saw the Atlantis Dive Centre open its doors to the GEMS World Academy who joined us as part of their, 'Week Without Walls' (WWW) program. The courses on offer for the week ranged from PADI Open Water, Advanced open water and specialty courses.

The week however was not just about diving. As the Atlantis Dive Centre is 100% AWARE, each student also took part in a Project AWARE course in Coral Conservation and as it was Shark month, some very lucky students completed the AWARE Shark Conservation Specialty course and enjoyed diving in the Shark Lagoon at Atlantis.

The week was action packed and loads of fun for both students and instructors. By the end of the week, a total of 103 certifications were completed but that was not the end…

Friday was underwater clean up day and as this was the weekend and technically after 'Week Without Walls' was completed, it was not mandatory for students to take part.

I was blown away by the turnout for the cleanup. The conditions were perfect; water temperatures were great and the visibility superb. The students collected a huge amount of debris and then spent the time after the dive counting the debris in order to submit to Project AWARE.

We look forward to continuing with all those students in the coming months and next years 'WWW' will be even more amazing.

SOME FEEDBACK FROM THE STUDENTS:

"From theory to wreck dives to shark tanks, we always had a great time. Not only did we have fun but we also learned. Everyone got along really great and the dives were awesome. The wrecks together with the fish we saw were fascinating. I'm really glad I went scuba diving for Week Without Walls."

NINA BERNHARDT

"I am absolutely in love with sharks now. Before the trip I was a bit worried about diving with sharks, but after all the training, buoyancy skill practices, I felt a lot more confident and soooo happy that I did the shark dive. Thank you for an amazing week."

ANNA POCS

"I really liked Week Without Walls this year, because there was a lot of interaction between the people in the course. We did a lot of fun activities over the week and used every day to it's maximum. I especially liked the under water photography specialty course because you got to record all the interesting things you get to see underwater. I will definitely continue extending my diving adventures next year at WWW.

MARVIN ARNOLD

FAMILY **FUN DAY**

Saturday, the 9th of June from 3pm to 5pm is 'Family Fun Day'.

For anyone aged 8 to 88…The Atlantis Dive Centre is hosting a fun family day where we invite all non-divers to come and experience what it's like to breath underwater. So please tell your non-diving friends and come along with them and jump in our dive pools.

RESCUE REFRESHER

Life in Dubai goes quickly, very quickly. Bet it seems like just the other day that you did your PADI Rescue and EFR course! Or was it…

Saturday June 16th the Atlantis Dive Centre is offering you a chance for FREE (don't tell the boss) to come to the dive centre and update your rescue skills and for those who's EFR has expired, (only valid for 2 years) we will also be running an EFR Update for you in the afternoon. The EFR update will cost AED 300.

Even if it hasn't not been 2 years since your EFR or Rescue, come up anyway and refresh your skills. Learn how to rescue divers on rebreathers and Tec gear, you never know when you might be able to make a difference to someone's life!

SHARK AWARENESS

Sharks are not only incredible to see underwater, but the highlight I think, of most peoples dives. Sharks are also crucial to the marine eco system, without them, our oceans are in even more trouble.

This is not one of those issues that does not affect us, its happening in our waters at an alarming rate. For many of you who have dived in the Musandam waters for many years, you will know what I am talking about. Go back to your logbooks from 10 years ago and see how many sharks you saw in one dive and then go to your log book from last weekend…say no more.

There are many issues that need to be addressed globally, but we can each do our bit today. If you have not yet signed the shark petition, please give a 'Shout out to the Sharks' by logging onto **www.projectware.org**.

At the Atlantis Dive Centre, we are running the AWARE Shark Conservation Diver Course. Not only is the course a huge amount of fun, but it will also contribute towards the conservation of sharks by building awareness of the issues and inspiring us all to speak up for them. The course culminates with a thrilling dive in the Hotel's shark lagoon.

If you would like to know more about what you can do for the sharks, turtles and whale sharks, join in on our monthly 'Dive Against Debris' and the 'AWARE Shark Conservation Diver Course'.

Please contact Jason at: **Jason@atlantisdivecentre.com**

GAP YEAR STUDENTS

So you're leaving school this summer! Finally no more school!!!

Well if you're one of many students who have decided not to go to University straight away and are thinking about taking a Gap Year, then read on.

This summer, the Atlantis Dive Centre is running a PADI Instructor Development Course for Gap Year students giving you the opportunity to become a PADI Professional, travel the world, work in some exotic locations and get paid at the same time!!!

LIVE THE DREAM

Throughout the summer you will not only be learning to become a PADI Professional, but gain valuable experience in the Dive Industry. You will learn what it takes to become an excellent PADI Instructor. We will be working with you to create your diving CV and assisting you with job placements.

To take part in this program, you must be 18 years of age and a currently certified diver.

To get more information about this incredible opportunity, please contact:
JASON SOCKETT | PADI Course Director
Jason@atlantisdivecentre.com

NORTH OR SOUTH?

FEATURE **PAUL SANT, OWNER – DIVERS DOWN**

When we look at buying retail items such as a microwave, we look at a few models and buy the one that suits our needs – maybe with an analogue timer or a pizza setting. Either way it is still a microwave.

The same can be said about diving the Gulf of Oman: each location offers great diving. There are differences in dive sites and dive operations, but basically you are diving the same waters.

For the last 12 years, I have dived the UAE East Coast southern sites between Dibba rock and Ras Quidfa Wall on a daily basis, and on a few occasions I have joined one of our dive centre Northern Musandam, two night trips.

When asked "where is it best to dive?" by our guests, I will in general say Fujairah and offer my main reasons:

- Practicality
- Marine life
- Dive site choice
- Logistics

Practically it makes sense. You drive over from Dubai or Abu Dhabi and go diving. If your family or friends are non-divers, they can relax on the beach or at the pool.

You can bring your lunch and as many bags as you like and they are kept safe in the shop while you are diving. Or you can buy lunch at one of the hotel's 3 food outlets.

If you don't have your own gear, or if you forgot something, there is no problem, everything is available right here, and you don't have to miss out on a dive.

A big plus is that there are NO border checkpoints so everyone can come here without the risk of being stopped!

Marine life is the same as further north, but the dive sites are smaller, which means that with the local knowledge of the dive sites and its critters, our dive staff can easily find what you wish to see.

A great example was when two staff members from a dive centre on the west coast recently came to us for some diving with the "request" to see seahorses and sharks! In one dive, both requests were met and much more as a bonus.

With more than 930 different species of fish, the underwater world at these sites is every bit as astonishing as further north.

Dive sites are numerous: 14 that we dive regularly, from Dibba to Ras Qidfa, including

wrecks, coral reefs and walls. We don't have to stick to a certain itinerary, so we are able to plan the dive sites according to the levels and wishes of our guests.

The sites are mostly close to shore and are great for the open water level divers as well as experienced divers, offering depths from 6-32m with minimal currents, and no down currents.

World class discover scuba sites are on our doorstep for those exploring the underwater world for the first time. Recently, two guests on their first ever dive saw a whale shark, black tip reef sharks and green turtles! On my first ever dive, I saw a park bench at Swanage pier.

Logistically it is a no brainer: less than two hours away and situated in a 5 star hotel, you can drive over for the first two dives and be back in Dubai for 4pm after a great day of diving.

Or you can sleep in, come for the 3pm dive and night dives, stay over and dive the next day. With summer nearly upon us, would you rather sit on a boat for the whole day or come back to an AC and a chilled pool between dives?

The Musandam is a fantastic dive destination, and has a lot to offer. Yet, it is by no means accessible to all divers, which is why we at Divers Down only offer the weekend dhow charter. It is more comfortable than a 2 hour boat journey each way for two dives, and inexperienced divers can even do their advanced course during the trip; thus enabling them to dive the more advanced sites.

It is definitely a worthwhile trip, made all the better by the fantastic dhows with AC cabins, en-suite bathrooms and great food.

The main reason I love the Musandam is not just the diving – it is the place itself, the high mountains and natural beauty. You do not experience that on a day trip; you will not see the bright stars at night or splash in the water for a dawn dive followed by a hearty breakfast.

So that is what I tell the guests looking for advice on where to dive. We recommend to divers who are coming on a holiday, to dive both destinations; mainly because the two night trip is special.

If you would like to know more about our local dive trips or a Dhow weekend, you can find the information on our home page.

www.diversdown-uae.com

CALLING ALL **RESCUE DIVERS!**

So I have your attention, but are you a rescue diver? Meaning: are you current in your primary and secondary care protocols? Have you updated your rescue diver skills in the last 6 months? If not, this should interest you…

Divers Down has been running rescue and first aid workshops every 3 months and as part of that workshop you get the chance to renew your EFR (Emergency First Response) certification at a very affordable rate. (EFR is only valid for 24 months).

So what do we do on our refresher day?
The day has a serious subject, but Paul Sant will still make it fun and add his unique twist to many of the scenarios and skill applications.

As a First Aid at Work (HSE) instructor and ex commando medic, Paul will ensure you are brought up-to-date with the latest ILCOR standards.

You will be shown all the latest protocols and have the opportunity to practice the skills prior to a few life-like scenarios (involving a lot of ketchup)!

Once the first aid is completed, it is time to get wet. We use the swim area in front of the hotel to practice skills that may have been forgotten or missed. Paul demonstrates techniques for various skills and gives you advice on how to deal with the various equipment types out there. (Such as twin sets, harness systems, integrated weights).

YOU WILL PRACTICE:

- Missing diver
- Search patterns
- Lifting unconscious divers from the bottom
- Mouth to mouth
- Pocket mask use
- Diver tow whilst providing rescue breathing
- Extraction onto a boat and shore

At the end, we run a scenario where you will have the chance to become a scene manager and an assistant, allowing you to bring all your refreshed skills together.

The day starts at 09.00hrs and finishes at 17.30hrs. The workshop is only AED 250 (excluding equipment) plus an additional AED 150 if you require your EFR certification to be renewed.

The next session will take place on the 30th of June 2012 – contact **info@diversdown-uae** to secure your space.

BREAKING **NEW GROUND**

FEATURE **NEIL MURPHY, OPERATIONS MANAGER AT SHEESA BEACH**

In our efforts to keep our divers coming back by varying our diving areas, we have over the last year gradually started pushing further north into the Musandam. In April it culminated in us putting together the Salamah/ Fanaku or Quion island trip. These islands are in the Straits of Hormuz and lie approximately over a 100 kms north of Dibba in Oman.

There are 3 islands located in this remote area namely, Salamah, Fanaku and Didemar (an Omani military base is located on Didemar and cannot be dived). It is a long haul by speedboat and the time taken to get there is roughly 2 hours and 30 minutes depending on the number of people on board and how much equipment is being carried. However, it is well worth it! The divers also need to be experienced in drift diving as well as surface marker buoy deployment and it is certainly not for the faint hearted.

The visibility was fantastic, the marine life is incredibly diverse and we had encounters with at least 6 or 7 leopard sharks, rays galore, turtles, great barracudas, massive snappers, the healthiest coral I have seen in the 2 years I have been here and a kaleidoscope of colour. The topography on Fanaku is impressive, you weave your way between huge coral heads that come up to the surface from between 5-10m underwater. Snorkeling between dives during our surface interval time, we saw black tip reef sharks and they were not that small either, huge schools of batfish and turtles.

It is by far the best diving the Oman/UAE area has on offer and we are familiar with the sites now and know how to navigate them. If you are looking for adventurous diving and have the relevant experience for the area, then this definitely is the new frontier for diving for you!

We had the privilege of seeing two leopard sharks mating, a ray we still do not know the name of and the biggest school of bat fish I have ever seen. During the winter months we do two dives on the islands and a third on the way back in the Leema area. However as temperatures sore in the summer, we only do two tank dives in consideration of our clients safety and the long drive back to either Abu Dhabi, Al Ain or Dubai.

Sheesa Beach Travel & Tourism was traditionally a dhow cruise company only and since the inception of the dive centre we have seen a tremendous growth in the company. It is thus that we are pleased to announce that our brand new dhow will be ready for action on the 25th of October this year and she will allow to push into new areas for our diving live-aboard safari trips. The dhow will be tailored to diving expectation and will encompass all the comforts and facilities that divers require. She will also be the only live aboard that will offer on-board Nitrox fills for those certified to dive Nitrox and run itineraries from 1-7 nights. This dhow will now increase our fleet size to 8 dhows.

A PERSONAL APPROACH TO DIVING
WITH EASY DIVERS EMIRATES DIVING CENTER

FEATURE **STEVE TRIBBLE**

We at Easy Divers Emirates are excited to have recently opened our latest PADI dive center in Dubai.

After phenomenal success with 4 co-owned dive centers in Sharm El Sheikh, the coasts of the UAE was an obvious best choice for opening a new center in the region. The waters here are perfect for year round diving.

What better way is there to beat the summer heat! Though it may be 45 or more degrees outside, the 28 degree waters off the east coast are a refreshing way to cool off. Water near the beaches in Dubai does get a bit warm during the summer and the waters can get a bit murky due to local construction, but a quick boat ride and nearby cities such as Sharjah offer great conditions for diving with numerous shipwrecks for both recreational and technical divers and a great training ground for new divers or those who wish to further develop their skills.

A short drive to the East Coast, fantastic dives are found. We are running weekly day trips to Fujairah and Musandam where waters of the Indian Ocean bring in a variety of sea life including spectacular coral reefs, an abundance of fish, rays eels and even the seasonal whale shark. Much to our amazement we even spotted a Mola Mola, also known as a sunfish or moonfish.

For the adventurous ones, we run overnight camping and diving trips (during the cooler months) with a delicious bbq under the stars on the shore of the Musandam Mountains. Live-aboard trips can be arranged anytime from both the east and west coast of the UAE.

UAE DIVING

Many do not realize the vast number of wonderful sites available to divers and snorkelers in the UAE. Keeping with our personal touch and passion for diving, we frequent many pristine sites and are continuously exploring new dive sites. We are fortunate to have on our team, Vyacheslav who has been diving and leading tours in the UAE for the past 12 years. From wreck sites to the best time and place to be for great underwater sightings, he has never let us down.

Our dives are based on both experience of the area and the desires of our clients. We customize our trips based on interest and maximum enjoyment of our clients.

TRAINING

Our location in The Lakes Club offers a first class experience for dive training or just freshening up you diving skills. All of our students have access to the club facilities which include not just the pool where we train from, but also the Jacuzzi, the playground with waterslide for the kids and a restaurant. Between lessons, students can relax and enjoy the facilities offered making a day of training relaxing and fun. We offer a comfortable and fully equipped classroom.

Students have a choice of doing their dives on the east or west coast from shore or by boat.

Our class schedules are based on our client's needs. Training can be arranged for groups or individuals but all classes are given a personal and private approach. Your instructor will be available based on your needs. Confined water dives are conducted in a temperature controlled pool anytime from 6am until 10pm.

Our staff is PADI certified with many years of experience in diving and teaching plus backgrounds in recreational and technical diving.

OTHER SERVICES

From our PADI centers in Sharm El Sheikh, we can provide excursions to the best of the Red Sea. New divers or those advancing their skills can choose to begin in the UAE and complete their training in one of our facilities in Sharm. The latest addition to the Easy Divers Group, opening in June is located in the luxurious Sharm Grand Plaza. This location offers one of the best house reefs in the area! The Red Sea provides some of the best diving in the world, from beautiful corals to a huge array of life. While teaching from Sharm, our Operations Manager Olga, has sighted many unusual and rare species including the reclusive whale shark and giant mantas. We also have affiliations with centers in many parts of Asia including Thailand, Malaysia and Indonesia where you can dive rarely dived, pristine waters and visit the majestic Komodo dragon between dives.

We can also provide private trips where you are welcome to hire a boat for a couple of hours or days for private excursions. From dive boats to luxury cruisers for diving, fishing, or private parties we can provide boats from 33 to 70 feet with all of the amenities and services of a 5 star service.

If required, transportation can be provided. Transport for regular dives is usually provided from one of our vehicles. For those wishing VIP transportation or to pick guests up for a company or private outing, Limousine pickup and drop off can be provided by a H2 Hummer or Chrysler/Lincoln Limo.

OUR PHILOSOPHY

Our objective is to ensure that all divers, from beginners to professionals, enjoy their underwater adventure. We are known for personal attention to all our guests.

Rather than making a dive trip feel impersonal and hectic, we keep the size of our groups small and employ multiple dive boats to ensure that the trip is comfortable and the experience is fun and relaxed.

Our day trips allow for 2 to 3 dives in a day and rest assured you will not go hungry. A full Arabic meal is provided onboard.

We provide a first class experience to all of our clients for diving, snorkeling or just a

pleasant cruise in the sea.

SOME OF THE PADI COURSES WE OFFER:
Discover Scuba Diving
Bubble Maker & SealTeam (8 years old and up)
Open Water Diver
Advanced Open Water
Rescue Diver and Emergency First Response
Master Scuba Diver
DiveMaster
Padi Specialty Certifications

OUR SERVICES:
Scuba training for beginners and experienced divers
Scuba and Snorkeling trips to Fujairah (Dibba), Musandam, Dubai, Sharjah and the Egyptian Red Sea
Boat rentals for pleasure trips and fishing
Scuba equipment rental, repair and service
And More…

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NEW WEBSITE, NEWSLETTER AND AN EXPEDITION

FEATURE **CHRIS CHELLAPERMAL, NOMAD OCEAN ADVENTURES**

We are busy as ever on the Musandam coast. We have finally managed to make time to organize some exciting things. First of all, in June we are launching a new website for Nomad, it will have blogs and video blogs but unlike any other dive centers, our site is putting forward social media. I think it is a fresh view on dive centers for the region and I think many will appreciate its features.

We are also launching a newsletter at the same time, it will come out once every trimester to begin with and it will not only feature news about Nomad but will also have articles submitted by other divers and sea lovers.

In terms of diving we are now offering some fun specialties for photographers like the self-reliant diver specialty. If you're an experienced diver and a photographer this was thought of with you in mind. If you ever thought of being able to get some space and some quality time away from the crowd, this is it!

Throughout the summer we will have northern trips every Friday for 3 dives, so don't miss out and come and explore the north of the Musandam, it is definitely worth it. The place is lush with life and corals are by far the best the region has to offer with still many unknown dive spots!

We are also organizing a trip to the Azores, Portugal; if you are looking for a getaway trip during Ramadan to beat the heat, why not join our group trip!

We are heading out between the 19th and the 26th of July to Portugal to the amazing island of the Azores. The dive sites over there are stunning and the program will have manta and shark dives scheduled! The visibility is incredible with deep lush blue and the fauna is rich!

We will be using a dive center named Nerus Dive Center that won many awards in Portugal for its professionalism. They are offering us a super price of 700 Euros per person for a 7 night accommodation in villas that can accommodate up to 4 people. There will be 5 very busy half days inclusive of 5 local dives, one manta dive, one shark dive and one night/deep dive on a wreck from WW2. The price does not include flight, meals or equipment rental. Meals in Portugal are quite cheap and delicious. We will take with us a maximum of 12 divers. The trip is booking up quickly so if you want to book now, please contact Nomad. Bookings close end of June!

Contact Chris at **chris@discovernomad.com** for more information.
Or call **+968 2683 6069**

DIVERS TAKE THE PLUNGE TO CLEANUP THE CAPITAL PORTS

As part of International Earth Day, over 150 volunteer divers and 50 land based volunteers from all over the emirates joined together and participated in the two day Abu Dhabi Ports Clean Up. The underwater clean up drive is part of Abu Dhabi Terminals' effort to keep the capital ports and oceans clean of marine debris and to conserve the delicate aquatic environment.

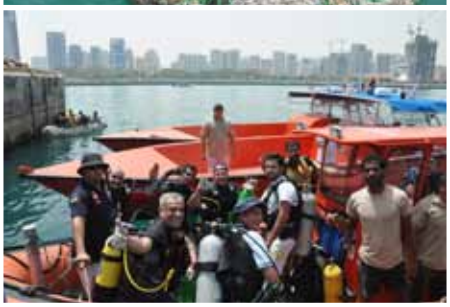
The event was supported by Environment Agency of Abu Dhabi, Center of Waste Management of Abu Dhabi, CNIA, Department of Economic Development, Takatof, RAK Police, Emirates Diving Association, ADMA, GASCO Diving Club, Borouge, ADGAS, UAE Armed Forces, Al Mahara Diving Center, Emirates Volunteer Association and Lavajet. Divers took the plunge into the five port areas including Mina Zayed, New Free Port, Municipal Port, Fishermen's Port and Mussafah Port and safely and methodically brought up an estimated 15 tons of marine debris including construction materials, old tires, plastics, glass, iron pipes and even a ship funnel. Commercial divers from ADMA also pitched in with surface supplied feeds to carefully rig up the large pieces of marine debris which was brought by a commercial crane.

The marine debris was then collected by the Center of Waste Management of Abu Dhabi and some of the items were sorted into the recycling units present at the cleanup.

Mr. Abdullah Al Muharrami, deputy CEO of Abu Dhabi Terminals enthused, "the initiative has been very successful and we are very excited at the level of participation as some volunteers came from far away emirates such as Ras Al Khaimah and Al Fujairah to take part."

Abu Dhabi Terminals plans to launch this as an annual event to continue its initiative to protecting and preserving "Abu Dhabi's key assets" and "encourage companies and individuals alike to work together to protect them."

These clean up dives highlight the involvement of the community from the private and public sectors and the unified collaboration to help safeguard and conserve the underwater environment for this and future generations to enjoy.



PADI SWIM SCHOOL ARRIVES IN THE UAE

FEATURE **CASSIE CHRISTMAN, STARFISH AQUATIC INSTITUTE SWIM INSTRUCTOR TRAINER AND LIFEGUARD TRAINER**

Al Mahara Diving Center is pleased to announce the arrival of the PADI Swim School. PADI has partnered with the US based Starfish Aquatic Institute© to create a swim school. The PADI Swim School curriculum is designed for students ages 6-months to adult. Students participate in learning activities that allow them to explore the water in a creative and comfortable environment. Correct swimming techniques are taught from the very beginning!

The PADI Swim School curriculum is made up of several courses that are taught by trained and certified swimming instructors who work under the direct supervision of our course director. The swim school is comprised of three programs. The StarBabies and StarTots course introduces core competencies by providing instruction to the parent or caregiver about how to help develop aquatic readiness. The purpose of this course is to develop in very young children a high comfort level in the water while at the same time training parents in water safety and drowning prevention.

The Swim School course is designed for students from 5 years old up to adult. The course is designed to improve comfort and skill in the water, regardless of past swimming experience. The classes are organized according to age and skill level. Our instructors are experienced and qualified to assess each student to determine the appropiate level for the student to be placed in.

The final course is the Starfish Stroke School. This course is designed to be taught to refine freestyle and learn stroke technique for backstroke, butterfly, breaststroke, and more!

Students progress at their own pace in a small group setting. The Starfish curriculm of the PADI Swim School specializes in integrating water safety into the program and communicate important safety concepts to students and parents. Experiental activities and a holistic approach to swim instruction proves to a positive, fun, and successful learning experience for students. Al Mahara Diving Center is proud to be the first authorized training center for the PADI Swim School in this region.

If you would like more information about the PADI Swim School or details about the program, please email Ms Cassie at: **swim@divemahara.com**.

KINDERGARTENS PLEDGE TO BE FRIENDS OF THE SEA

FEATURE **KATHLEEN RUSSELL, EDA ABU DHABI COMMITTEE COORDINATOR**

Another way to celebrate Earth Day this year was to take a visit to the local kindergarten class and talk about all the local cool marine life we can see as divers in the local UAE waters. I had brought a friend with me, "Mr. Sharky" who was the king of the sea and wanted to spread the message to the aged 4 and 5 year olds. Our presentation included colorful images of the beautiful sea and its inhabitants, the negative impacts such as pollution and a question and answer session on how we can positively impact the marine environment.

The school age audience also made a pledge to spread the message about protecting the apex predator like the sharks as well as committing themselves to be eco-warriors and becoming "friends of the sea." They all agreed not to use plastic bags anymore and to tell their parents to use a reusable shopping bag like the Carrefour eco friendly-reusable bags when they go shopping.

Throughout the Canadian International School, students celebrated Earth Day by reducing the amount of class waste during lunch and participating in a poster contest to highlight Earth Day and its natural resources.

We were proud of the school's initiative to build awareness about the impacts of reducing waste and the students' actions to protect and conserve the environment by reducing, reusing and recycling.

BEACH AND UNDERWATER CLEANUP – A COLLABORATIVE EFFORT

Johnson Controls (JCI), a global leader in automotive experience, building efficiency and power solutions, through its Dubai manufacturing facility, partnered with the Filipino Scuba Divers Club UAE (FSDC) in a beach and underwater cleanup program in early May. This was held as part of the Blue Sky Involve initiative, Johnson Controls' Global Social Responsibility Program.

Johnson Controls' "Blue Sky Involve" is an employee-driven volunteer program which encourages employees to form volunteer groups and contribute to the local community by supporting environmental stewardship and leadership development projects. Earlier this year, personnel from Johnson Controls Dubai manufacturing facility approached FSDC to propose a CSR activity in line with the"Blue Sky Involve" initiative. FSDC responded with a plan for a Beach and Underwater Cleanup that would engage Johnson Controls employees in improving the environment and spreading awareness about the marine environment. The plan was supported by the Emirates Diving Association in its mission to conserve, protect and restore the UAE's marine resources.

Subsequent to approval from Johnson Controls US based head quarters and detailed analysis of safety concerns, the teams started working on the project immediately, and the first step was a permit from Dubai municipality. The open beach at Jumeirah was chosen as the venue.

On the morning of May 4th, Cleanup Day, 42 Johnson Controls employees and their families and FSDC divers got together to collect the rubbish that littered the beautiful Jumeirah beach and its underwater environment. Magdy Mekky, Johnson Controls Vice President and Managing Director – Middle East, led the Johnson Controls team with example, motivating them to exceed expectations.

The beach cleanup was manned by 27 volunteers. Close to 4,000 cigarette butts were collected and disposed in an environmentally responsible manner. The underwater cleanup with 15 divers resulted in the collection of several hundred kilograms of plastic bags and other trash. Plastic bags which take thousands of years to degrade constitute the single largest threat to the underwater environment resulting in the death of fish and turtles due to choking and ingestion. The information recorded was summarized and sent to the Ocean Conservancy through EDA to be used in educating the public, business, industry and government officials about problems arising from marine debris.

For this Cleanup Day, participants who gathered the most amount of debris were given special gifts courtesy of Johnson Controls. Mr. Mekky likewise recognized the contributions of FSDC, led by Tina Vitug (Chairman) and of EDA, represented by Reema Al Abbas (Project Manager).

FAILSAFE DIVING WITH THE **NEW POSEIDON TECH REBREATHER**
"TWO REBREATHERS IN ONE" ENHANCES SAFETY IN THE SILENT WORLD

Poseidon introduces its new family member, the Poseidon Tech at Rebreather Forum 3 in Orlando, Florida. The world's first rebreather to have a fully automatic bailout system, the Poseidon Tech features a redundant back-up rebreather with fully automatic switching. In brief, you can say it's two rebreathers in one.

In the event of a malfunction, the Poseidon Tech's safety system switches from the primary to secondary rebreather without missing a breath – or you missing a beat. With a secondary dive computer, nothing gets lost in the switch. This gives the diver time to evaluate the situation, enabling them to make better decisions. The diver can then make manual additions to the system, or leave the system in automatic mode.

Peter Swartling, CEO of Poseidon Diving Systems, says that Poseidon Tech takes diving to a whole new dimension:

"Poseidon Tech means we can offer divers greatly enhanced safety for technical diving. Poseidon's aim is to increase the level of automation by using smart systems that monitor every breath, make adjustments accordingly and interact with the user only when they need to know what's going on. The introduction of Poseidon Tech is a giant step towards the perfect diving experience."

Poseidon Tech brings the diver all the benefits of rebreather diving; getting closer to marine life, much more time underwater, silent, bubble-free operation along with this new and enhanced level of Poseidon's patented safety technology. Poseidon Tech is designed and built for one purpose: the less a diver has to think about the equipment, the better their dive will be.

Poseidon Tech will be available for sale from November 2012. Pricing will be announced at that time.

More detailed information is available at: **www.poseidon.com**

If you have further questions, please contact:
MARCUS BENÉR | Marketing Executive, Poseidon Diving Systems
E-mail: marcus.bener@poseidon.com
Tel: +46 708 776 688

Poseidon Diving Systems AB Poseidon was founded by divers, for divers. When Ingvar Elfström launched the world's first series manufactured single hose regulator in 1958 it became an immediate sensation. The company currently has over 2,000 sales agents worldwide. Its headquarters and manufacturing are located in Gothenburg, Sweden.

FEATURE CREATURE
ACROPORA DOWNINGI

FEATURE **IUCN RED LIST 2011 BY IUCN** PHOTOGRAPHY **PHILIPPE LECOMTE**

Local Species in the IUCN Red List 2011

RED LIST CATEGORY & CRITERIA: LEAST CONCERN

Scientific Name: *Acropora downingi*

Justification: This species has a relatively restricted distribution and is common. It is particularly susceptible to disease, crown-of-thorns starfish predation and extensive reduction of coral reef habitat due to a combination of threats. However, its distribution is in areas where reefs have not suffered as serious declines as in other regions. Specific population trends are unknown but population reduction can be inferred from declines in habitat quality based on the combined estimates of both destroyed reefs and reefs at the critical stage of degradation within its range. Its threat susceptibility increases the likelihood of being lost within one generation in the future from reefs at a critical stage. The estimated habitat degradation and loss of 19% over three generation lengths (30 years) is the best inference of population reduction and does not meet the threshold any threatened category and therefore is listed as Least Concern. It will be important to reassess this species in 10 years time because of predicted threats from climate change and ocean acidification.

Geographic Range: This species occurs in the Red Sea and the Gulf of Aden, the north-west Indian Ocean and the Arabian/Iranian Gulf.

The northern Red Sea from Rabigh to the Sinai Peninsula escaped most of the bleaching and the mortality of the last couple of decades. Destroyed and critical reefs are only 6% of the total because of its high latitude and very deep water extending close to shore, and wind induced upwelling. If these factors continue they are likely to contribute to survival of northern Red Sea species into the future. The southern Red Sea did not escape recent bleaching events and the Gulf of Aqaba and the Hurghada regions are affected by numerous direct impacts from coastal development and industry.

Genetics studies have, however, demonstrated the wide degree of differentiation of Red Sea populations from other Indian Ocean and Indo-West Pacific populations, consistent with a low level of gene exchange between the Red Sea and elsewhere. This relative isolation means that recovery following regional scale disturbance that decimates populations in the Red Sea may be compromised. For Red Sea endemics such disturbances would prove catastrophic.

Native: Bahrain; Djibouti; Egypt; Eritrea; Iran, Islamic Republic of; Iraq; Israel; Jordan; Kuwait; Oman; Qatar; Saudi Arabia; Somalia; Sudan; United Arab Emirates; Yemen

Population Trend: Decreasing

This is a common species.

There is no species specific population information available for this species. However, there is evidence that overall coral reef habitat has declined, and this is used as a proxy for

population decline for this species. This species is particularly susceptible to bleaching, disease, and other threats and therefore population decline is based on both the percentage of destroyed reefs and critical reefs that are likely to be destroyed within 20 years. We assume that most, if not all, mature individuals will be removed from a destroyed reef and that on average, the number of individuals on reefs are equal across its range and proportional to the percentage destroyed reefs. Reef losses throughout the species' range have been estimated over three generations, two in the past and one projected into the future.

The age of first maturity of most reef building corals is typically three to eight years and therefore we assume that average age of mature individuals is greater than eight years. Furthermore, based on average sizes and growth rates, we assume that average generation length is 10 years, unless otherwise stated. Total longevity is not known, but likely to be more than ten years. Therefore any population decline rates for the Red List assessment are measured over at least 30 years.

Habitat and Ecology: This species occurs in shallow, tropical reef environments. It occurs on shallow margins of fringing reefs and submerged reef patches. This species is found from 1-10 m.

Major Threat(s): Members of this genus have a low resistance and low tolerance to bleaching and disease, and are slow to recover.

Acanthaster planci, the crown-of-thorns starfish, has been observed preferentially preying upon corals of the genus Acropora. Crown-of-thorns starfish (COTS) (*Acanthaster planci*) are found throughout the Pacific and Indian Oceans, and the Red Sea. These starfish voracious predators of reef-building corals, with a preference for branching and tabular corals such as Acropora species. Populations of the crown-of-thorns starfish have greatly increased since the 1970s and have been known to wipe out large areas of coral reef habitat. Increased breakouts of COTS has become a major threat to some species, and have contributed to the overall decline and reef destruction in the Indo-Pacific region. The effects of such an outbreak include the reduction of abundance and surface cover of living coral, reduction of species diversity and composition, and overall reduction in habitat area.

In general, the major threat to corals is global climate change, in particular, temperature extremes leading to bleaching and increased susceptibility to disease, increased severity of ENSO events and storms, and ocean acidification.

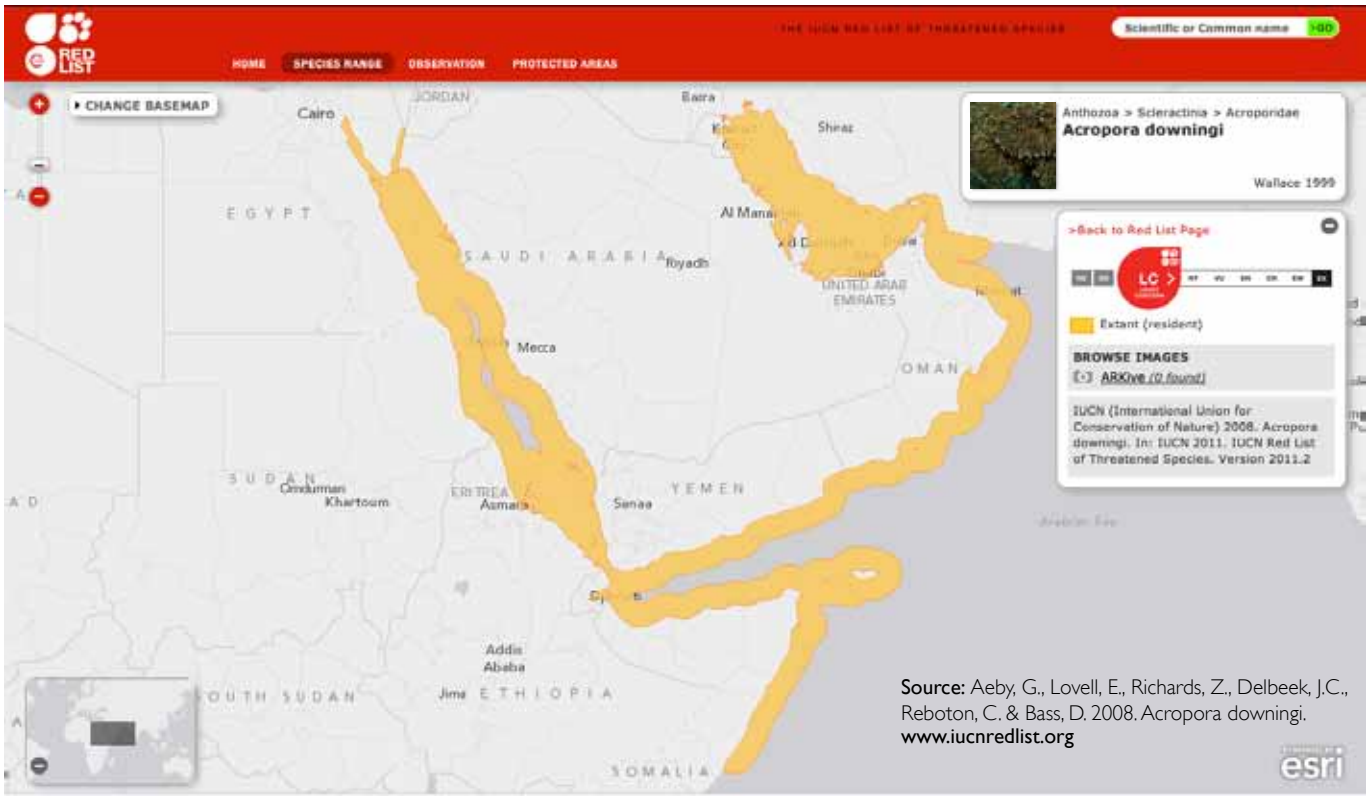
Coral disease has emerged as a serious threat to coral reefs worldwide and a major cause of reef deterioration. The numbers of diseases and coral species affected, as well as the distribution of diseases have all increased dramatically within the last decade. Coral disease epizootics have resulted in significant losses of coral cover and were implicated in the dramatic decline of acroporids in the Florida Keys. In the Indo-Pacific, disease is also on the rise with disease outbreaks recently reported from the Great Barrier Reef, Marshall Islands and the northwestern Hawaiian Islands. Increased coral disease levels on the GBR were correlated with increased ocean temperatures supporting the prediction that disease levels will be increasing with higher sea surface temperatures. Escalating anthropogenic stressors combined with the threats associated with global climate change of increases in coral disease, frequency and duration of coral bleaching and ocean acidification place coral reefs in the Indo-Pacific at high risk of collapse.

Localized threats to corals include fisheries, human development (industry, settlement, tourism, and transportation), changes in native species dynamics (competitors, predators, pathogens and parasites), invasive species (competitors, predators, pathogens and parasites), dynamite fishing, chemical fishing, pollution from agriculture and industry, domestic pollution, sedimentation, and human recreation and tourism activities.

The severity of these combined threats to the global population of each individual species is not known.

Conservation Actions: All corals are listed on CITES Appendix II. Parts of the species' range fall within Marine Protected Areas.

Recommended measures for conserving this species include research in taxonomy, population, abundance and trends, ecology and habitat status, threats and resilience to threats, restoration action; identification, establishment and management of new protected areas; expansion of protected areas; recovery management; and disease, pathogen and parasite management. Artificial propagation and techniques such as cryo-preservation of gametes may become important for conserving coral biodiversity.



Source: Aeby, G., Lovell, E., Richards, Z., Delbeek, J.C., Reboton, C. & Bass, D. 2008. Acropora downingi. **www.iucnredlist.org**

CAN NOISY REEFS ATTRACT MORE FISH AND CRUSTACEANS?

FEATURE **JULIUS PIERCY, UNIVERSITY OF ESSEX** AND **DR STEPHEN SIMPSON, UNIVERSITY OF BRISTOL**

The sounds of coral reefs can be recorded in the field using an underwater microphone known as a hydrophone. Apart from the hydrophone, the rest of the recording equipment is far from waterproof. Recording off Hoga Island (2007), by Dr Stephen Simpson.

A study on sound recordings of reef noise from different habitats has revealed that the highest quality reefs are also the noisiest, potentially attracting more larval recruits using sound to orient towards reefs.

Nearly all fish and decapod crustaceans associated with reefs spend their larval stage in the open ocean after being broadcast from the reefs as eggs or hatchlings. They soon develop strong swimming abilities which allow them to counter the effect of sea currents and choose the direction in which to swim and eventually return to the reef.

The precise reason why the larval stage is spent in the open ocean is still under debate, but generally it is agreed that this strategy ensures that the larvae are far from the many reef associated predators during this vulnerable stage.

However, this strategy can only be beneficial if some of the larvae are able to return to the reef – not an easy task in the vast expanse of the ocean. Over recent years it has become clear that larvae use their sensory abilities to home in on a reef and two senses in particular have emerged as the most likely candidates.

Experiments have shown that larvae can be attracted to the odour and the sound of a reef, both of which have the potential to be detected over distances up to 20 kilometres. Despite the importance of this phenomenon in determining population dynamics across reefs, there is still very little known about the sensory cues produced at the reefs, how they propagate through the environment and the actual sensory abilities of the larvae.

THE SOUND OF A REEF

Like cities, reefs concentrate a lot of life in a small area and this, again like cities, makes them very noisy places

Each reef also has its own signature sound and our recent work using recordings of reefs of similar size in the Philippines has found that the reefs within three different well managed Marine Protected Area (MPA) for the previous 10 years had significantly higher sound levels at the source (average sound intensity of 133.1 ± 2.2 dB re 1 µPa) compared to three overfished macroalgal and urchin dominated reefs (average sound intensity 122.0 ± 1.2 dB re 1 µPa).

The clear difference between recordings from different habitats may empower the fish and crustacean larvae not only to detect the location of the reef but to discriminate between good and bad reefs.

This finding is important for the way we manage Marine Protected Areas (MPAs), underlining how the acoustic signature of the reef will also need to be considered if we want to improve the efficacy of an MPA. It also opens up the possibility of surveying and monitoring reef quality rapidly and cost effectively in the future.

Our future work on Hoga Island aims to identify if the difference in sound levels with habitat quality can be detected on smaller spatial scales to refine reef quality assessment surveys.

This will form part of a larger project which aims to develop a detailed map of the soundscape around Hoga Island up to 5km away from the reefs, combined with behavioural experiments on fish larvae to determine how they respond to different reef sounds and over what distance they can detect reef noise.

Original Publishers – Biodiversity Science
www.biodiversityscience.com

IS THERE A FUTURE FOR **CORAL REEFS IN ACID OCEANS?**

FEATURE **DR DAVID SUGGETT**
SENIOR LECTURER IN MARINE & FRESHWATER BIOGEOCHEMISTRY, ASSISTANT DIRECTOR OF THE CORAL REEF RESEARCH UNIT, UNIVERSITY OF ESSEX

Ocean acidification microcosms incubating corals at the University of Essex

Some coral species can still successfully compete under ocean acidification conditions

Research into the multiple environmental factors affecting coral reefs and how these factors interact is bringing a greater understanding as to how these fragile ecosystems are likely to fare under increasingly acid ocean conditions.

Until recently, global warming was seen as the greatest threat from climate change to coral reefs; however, another related phenomenon termed 'ocean acidification' (OA) has since stolen the headlines.

OA is derived from excess atmospheric CO_2 dissolving into the oceans to form a very weak acid. Ocean pH has already decreased from ~8.2 at the start of the Industrial Revolution to a present day value of ~8.1; however, models predict this will further fall to ~7.6 by the year 2100.

This potentially presents a big problem to coral reefs, which are effectively built from chalk (which is highly soluble in acid). In fact, the first signs of OA are now beginning to be seen in long term 'climate records' hidden within the skeletons of some of the largest coral colonies on earth, which have been growing since before the Industrial Revolution.

OA will substantially limit the ability of fish to use their sense of smell to detect predators and locate the best sites for larval development
Replicating conditions

In order to predict how OA will impact coral reefs, researchers have performed experiments in which key organisms are incubated under conditions that replicate elevated CO_2 (reduced pH) conditions expected for 50-100 years' time. This effort has proved extremely fruitful in terms of identifying responses with significant ecological or geochemical consequences. For example, coral calcification consistently declines under OA, while, simultaneously, productivity and growth of macroalgae and seagrasses is enhanced.

Together these analyses predict a future shift in how reef habitats are structured, and in turn in the 'ecosystem services' that are provided. Not only corals and plants will be affected; OA will substantially limit the ability of fish to use their sense of smell to detect predators and locate the best sites for larval development. Therefore, OA will likely affect how reef habitats appear as well as their inhabitants.

MULTIPLE FACTORS

Whilst experiments have hugely improved our understanding of how OA will affect reefs, they share several common weaknesses. Most OA experiments do not 'replicate' climate change well; they only operate over relatively short timescales (weeks), and they typically only examine changes of CO_2/pH in isolation.

We know, however, that climate change affects multiple environmental factors alongside pH. Many coastal reefs will experience warmer waters, more intense El Niño events, and changing precipitation patterns, which affect river run off and therefore light availability and nutrient loading.

Understanding how all these changes act together to govern the OA response is now a priority. Experiments led by the University of Essex are now demonstrating that interactions of light, temperature and choice of coral species affect the rate at which coral calcification declines with OA.

NATURAL EXPERIMENTS

Fortunately, nature has also provided researchers with an array of 'natural experiments' which provide glimpses of how OA could affect reefs. Volcanic activity produces natural CO_2 seeps creating reef sites with naturally elevated CO_2/lower pH – for example the cool water CO_2 seeps that fringe the D'Entrecastraux Islands, Papua New Guinea. Observations here have shown that hard coral cover is the same as for neighbouring sites at ambient CO_2, but diversity is lower at the high CO_2 sites. Thus, some coral species can still successfully compete under OA conditions.

It is not just volcanic activity that naturally produces extreme pH conditions; even intertidal reef flats can exhibit large daily/weekly changes in pH as a result of tidal and biological activity. Coral reef diversity/abundance is very different in intertidal reef flats compared to subtidal reef complexes but again it is clear that some coral species are already adapted to environments with some of the characteristics of future environments.

Research in these more 'extreme' reef environments based at Operation Wallacea's Hoga facility has demonstrated the tolerance of corals to many stressors (although the additional role of pH has yet to be examined).

Management of such reefs already adapted to extreme environmental conditions against more immediate stressors, eg pollution and over-harvesting, is thus an obvious priority to give reefs their best chance against our rapidly changing climate.

Original Publishers – Biodiversity Science **www.biodiversityscience.com**

RED SEA BUTTERFLYFISH RESPONDS TO CHANGING CORAL COVER

FEATURE **PHILIPP GASSNER, DENNIS SPRENGER AND NILS ANTHES**
INSTITUTE OF EVOLUTION AND ECOLOGY, FACULTY OF SCIENCES, UNIVERSITY OF TUEBINGEN


Chaetodon austriacus by Dennis Sprenger

A new study into changing Red Sea coral and its effects on the butterflyfish shows a significant variation in behaviour. The research found increased feeding rates, aggressive encounters and territory sizes where there was lower coral cover, which could be an informative bio-indicator.

Red Sea coral reefs exhibit substantial ecological, economic, and cultural functions. The stability of coral reef ecosystems, however, has been challenged in the last decades by anthropogenic impacts through tourism, nitrification, elevated atmospheric CO_2 input, and globally rising water temperatures. These threats have generated rising awareness that substantial management efforts are required to maintain coral reef ecosystems worldwide.

While knowledge about anthropogenic impacts on coral communities such as the coverage of living coral and other substrate is rife, indirect impacts via coral growth on species at higher trophic levels within the community remain much less understood. Corallivorous butterflyfish (Chaetodontidae) directly rely on the availability of live coral food and may thus be strongly affected by changes in coral reef condition. Their abundance is known to tightly correlate with the spatial distribution of specific coral species.

THE BLACKTAIL BUTTERFLYFISH

This study supplements current knowledge on the effects of changes in coral cover on butterflyfish using the Blacktail Butterflyfish *Chaetodon austriacus* as a study system. The species is highly abundant throughout its range, strictly corallivorous, and shows diurnal activity, pronounced site fidelity, and strong territoriality.

We specifically investigated the link between small scale field-variation in live coral coverage and three target variables: feeding activity, territory size, and intra-specific aggression.

Field observations were conducted at the fringing reefs at Mangrove Bay (Sharm Fugani, Egypt). Data were collected at 0.3 to 5m depth while snorkelling along the reef-flat, reef-crest, and reef-slope. Territories in deeper water were not taken into account since depth is assumed not to alter the behaviour of *C. austriacus*.

Corallivorous butterflyfish directly rely on the availability of live coral food and may thus be strongly affected by changes in coral reef conditions.

Analogous to other studies, the behaviour of a single focal individual within each pair was recorded, assuming that the behaviour of one individual is representative of both. Each focal was recorded for 30 minutes while maintaining a minimum and apparently non-disturbing distance of 2m. Feeding rate was recorded as the total number of feeding bites per individual on living coral. Aggressive encounters were defined as rapid and directional movement towards conspecifics. The total number of aggressive encounters per individual during 30 minutes was used to quantify the level of agonistic aggression. Territory size of each pair was assessed based on hand-drawn territory boundaries, defined as the polygon joining the outermost locational observations within a one-hour period as localised using prominent features of the reef landscape. The fish typically patrolled their almost circular territories whilst foraging, with pairs moving along their territory border and completing several 'territory circuits'.

Proportional coral cover was quantified using the Quadrat Grid Transect method. For each recorded focal fish, the two by two metre grid was placed at a single spot within the territory that appeared representative for the overall occurrence of the three differentiated substrate categories. At each of 121 grid intersections, the reef surface was then categorized in living coral versus dead coral (bleached and/or covered by algae) and other biogenic substrate. This enabled the proportion of live coral cover to be calculated.

Data was normally distributed and regression analysis used to define the relationship between coral cover and behavioural response variables.

RESULTS AND DISCUSSION

Field observations revealed a negative relationship between live coral cover and feeding rate (Fig a). Moreover, as predicted, both territory size (Fig b) and the number of agonistic encounters (Fig c) decreased when living coral cover increased.

Our study documented feeding rates and aggressive encounters in unmanipulated environments, where fish had time to adapt their behaviour to the given set of conditions.

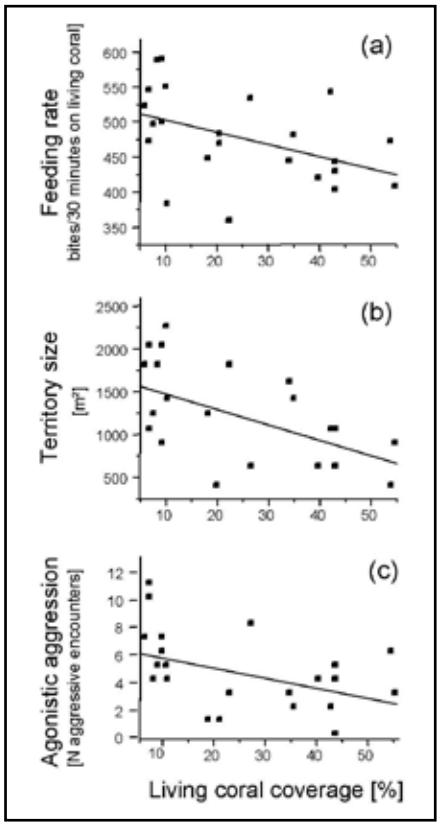
The observed intensified competition for space is likely to be affected by the need to enlarge territory size. We presume that low coral cover drove fish to cross the determined territory boundaries more often to compensate for the decreased food availability within their own territories. Since all observed territories were directly adjacent, this behaviour resulted in a greater territory overlap and thus in more aggressive interactions.

INDICATOR SPECIES

Combined, our findings show that feeding rate, territorial behaviour, and territory size of *C. austriacus* substantially vary with live coral cover. Our study thus exemplifies the indirect impact of variation in coral cover on higher trophic levels in coral reef communities. Moreover, linking the behaviour of *C. austriacus* to coral cover, the reported findings validate the earlier proposition that this species renders as an informative indicator species for monitoring schemes in Red Sea coral reef ecosystems. Specifically, longitudinal studies that find increasing feeding rates, territory sizes, and agonistic interactions in *C. austriacus* would strongly indicate gradual degradation of the coral reef community.

ACKNOWLEDGEMENTS

We wish to thank David Righton for suggestions on an earlier version of this manuscript. M Herberich, R Ratzbor, and C Zell supported coral cover surveys. We are further grateful to Ducks Dive Centre at Mangrove Bay Resort for logistic support.



3RD PUNTA SAYULITA SURF CONTEST
A WINNER FOR REEF CHECK

The 3rd Annual Punta Sayulita Longboard & Stand-Up Paddle Classic took place March 9 – 11 in Sayulita, Mexico with a terrific turnout and lots of fun as well as another great series of competitions and races featuring professional and amateur surfers from around the world. Some of the world's leading surfers and surfing legends were there to participate. The contest is designed as a charity event to raise funds for a local school and Reef Check Mexico, and the generous sponsors helped make that happen. Reef Check thanks Kevin Roberts and his team for being amazing hosts as always, and for supporting the Reef Check education and survey program in the waters of Bahia Banderas and offshore islands.

Please visit **http://puntasayulitasurfclassic.com/** for complete results, photos and videos from the Classic.

HAITI ECODIVERS LEARN TO DIVE

FEATURE **NIKOLE ORDWAY**
REEF CHECK ECODIVER COURSE DIRECTOR, FT LAUDERDALE, FLORIDA

During the first week of April, my position as a Reef Check Course Director led me from Florida to Haiti to teach 13 students the PADI Open Water Diver course. These students are comprised of Haitian school teachers and university students studying diverse subjects such as agronomy, architecture, medicine and business. Each student was selected from 70 original applicants to become part of Haiti's first Reef Check EcoDiver team.

The Reef Check EcoDiver course includes both classroom and field sessions and is designed to train non-scientists to become certified to conduct scientific Reef Check surveys. The team from Haiti will run Reef Check surveys to track corals, invertebrates and fish. In Haiti, the main reason coral reefs are suffering is due to overfishing. All the big fish are gone and the local fishermen are now taking and wiping out smaller fish populations, like parrotfish and grunts, in order to make a living.

Before I went to Haiti, the students had already learned to swim and snorkel with Reef Check last summer. With their skills getting better, it was time to introduce them to scuba…and boy did their eyes open! In Haiti, most divers are foreigners, so what an opportunity this was for locals to learn to scuba dive.

For the pool training we were based in downtown Port au Prince. Carrying the scuba cylinders and equipment around was quite a spectacle for locals walking by because most had never seen these items before.

With the help of Reef Check's Director, Dr. Gregor Hodgson, Research Assistant EJ Beucler, and RC Haiti Coordinator Erika Pierre-Louis, the class and pool trainings went very well. Communication was a challenge because, while most of the students understand some English, they speak French or Creole a whole lot better. What did surprise me was their confidence with their water skills. They enjoyed learning about the equipment, clearing regulators and masks, and controlling their buoyancy…it seemed easy for them. I was excited to get these students into the ocean and to open up their eyes to the creatures that live underneath the water. But first, my students wanted to open my eyes up to what the city of Port au Prince had to offer and how the people of Haiti live and socialize.

One of my students, Alexandra, took me into town to check out the local markets. Women carry fruits and veggies on their heads from the high mountains every morning to sell on the street. People also sell clothes and everyday items. Bargaining is expected so I learned to bargain for purchases. After navigating the street markets, we rejoined the group to get ready for the ocean dives, an hour's drive away.

We headed out to a lovely beach house located at Trou Baguette, where we had easy access to the water. Just in front, there are some patch reefs with plenty of coral life to

dive on. One thing I noticed is that all the fish were small because the fishermen have fished out the reef using nets, spears, and traps. We did see banded coral shrimp, a spotted moray eel, puffer fish, lots of grunts and we found big patches of coral rocks with large sea fans. The visibility was unlimited when the wind was right. We had one day when the waves picked up and visibility was reduced to about 40 feet. I noticed that the wave action stirred up the ocean, and plastic trash from the town was in the water and washing up on shore.

The students' first dives were exciting because they wanted to swim all over the reef to check it out…so I really had to work hard to keep them with me. For the second dive I reminded them about the importance of the buddy team system, and they were great students after that! The second day of training dives went very well – the students were very good at getting themselves ready for the dives, helping each other, and some would even set up my gear too! Their buoyancy skills also became much better. We discussed evaluating ocean conditions, and the need to make good judgments about the ocean, the equipment, and who they are diving with because the closest hospital is over an hour away and the nearest decompression chamber is in the Dominican Republic.

On the last day the students took their final exam, and all 13 students passed! What a rewarding experience for a dive instructor and I only hope that I can do this in other places. I look forward to returning to Haiti to see how this Reef Check Haiti team is doing!

Do you want to learn to dive or become a Reef Check EcoDiver? Contact Nikole in Ft. Lauderdale at Force-E Dive Centers. Her next EcoDiver training is set for May 2012! Reef Check would like to thank our hosts in Haiti Josiane, John and Chantel for use of her beach house.

NEW TRAINERS CERTIFIED IN THE BAHAMAS

On February 1, 2012 a group of marine scientists from The Nature Conservancy (TNC), The Bahamas National Trust (BNT) and The Bahamas Department of Marine Resources (BMR) performed the first of what is hoped to be a series of Reef Check survey dives on Mike's Reef off southwestern New Providence, Bahamas. The survey group members were Frederick Arnett and Jared Dillet of DMR, Ancilleno Davis of TNC, and Lakeshia Anderson, Lindy Knowles and Krista Sherman of BNT. With the exception of Mr. Knowles, the group had been previously trained in Reef Check methodologies and was participating in a Training of Trainers workshop with Reef Check Dominican Republic's Dr. Ruben Torres.

Mike's Reef is located 3.2 km off the southwestern coast of New Providence. The reef was chosen because it is a popular, well used site for recreational divers and receives daily visitors almost year-round. The site is also used for recreational and small scale commercial fishing. Mike's Reef is located within the proposed Western New Providence Managed Marine Area and is an ideal site for comparison to other, less used reefs (e.g. marine reserves) within The Bahamas. Two surveys were completed using the Reef Check methodology.

Fish surveys showed that commercially important species (groupers, snappers and grunts) were in lower abundances when compared to non-target fish species (parrotfish and butterflyfish). These results are consistent with the current protection level of this area, which is non-existent.

Gorgonians were the most abundant Reef Check indicator invertebrate observed at Mike's Reef along the transects. This may be due to high water flow-through in the area and the location of the transects on Mike's Reef. Lobster abundance could be low due to subsistence or recreational fishing pressure. The low Diadema abundance observed during this study is typical of the region following the 1980s epidemic from which only shallow areas are beginning to recover. The other Reef Check indicator species are currently not of economic importance.

Even though 76% of the surveyed portion of Mike's Reef consisted of non-living components, the low macroalgal coverage (due to grazing pressure by high parrotfish densities) could mean that there is suitable area for coral recruitment. However, live hard coral cover was 10% suggesting that there may be other factors preventing coral recruitment to the area not related to substrate type.

Impacts related to coral bleaching and disease were low (<5%). Anthropogenic impacts were also low (<1 on the 0-3 perceived impact scale) despite the fact that the area is heavily used by recreational divers. This may be indicative of local dive tour operator management

(e.g. active trash removal and mooring buoys) of the area.

This was the first complete Reef Check survey to be conducted within the proposed boundaries of the South West Marine Managed Area in New Providence, Bahamas. The data presented in this report provide baseline information on the status of coral reef health in the area surveyed on Mike's Reef. Additional surveys are required to document changes in the area and obtain a more detailed understanding of coral reef health.

In addition to completing the surveys, a coral reef monitoring plan was drafted, indicating the minimum number of Reef Check surveys to be conducted throughout The Bahamas after Reef Check teams have been established in each location. Reef Check is intended to supplement ongoing coral reef monitoring in The Bahamas and it is recommended that detailed coral reef monitoring using a modified version of Reef Check or the AGRRA protocol be conducted in key areas every 3-5 years.

REEF CHECK PARTICIPATES IN BOSTON INTERNATIONAL SEAFOOD SHOW

FEATURE **MARY LUNA**, REEF CHECK'S PROGRAM MANAGER, MEXICO

"It's no fish ye're buying, it's men's lives" reads a quote from The Perfect Storm, a fishing story based off the coast of Boston. I presented our work on sustainable seafood in Mexico at the 2012 International Boston Seafood Show (IBSS) with Santa Monica Seafood (SMSF) and their Responsible Vendor Program. During the presentation, I talked about our partnership in Magdalena Bay, on the Pacific side of the Baja California Peninsula, in Mexico. The Magdalena Bay Cooperative, one of the oldest in the area, closed part of their fishing concession to all types of fishing in 2009 to rebuild the stocks of commercial species such as abalone and lobster. SMSF's funds are partially funding the salary of the son of a local fisherman to go out with fishers on their boats and collect fisheries-dependant data that will serve to estimate fishing quotas. The presentation was an opportunity to introduce the efforts of the Baja fishers and organizations like Comunidad and Biodiversidad (COBI) to an international audience.

I also attended the "Development of a Regional Seafood Marketing Coalition, the Gulf of Mexico Experience" presentation, and found many similarities between the needs and goals of Gulf fisheries with those of Baja. Presenters talked extensively of preserving local jobs and creating a brand to represent and increase awareness of Gulf seafood, garner support, and affect purchasing. Job and identity preservation is a shared goal among fishing communities in Alaska, the Gulf of Mexico, and Baja.

Small-scale fishing employs over 90% of fishers worldwide. In Baja, the level of organization of small-scale fishers varies from one community to the other; most or all of their income, however, comes from the sea. Baja products are overall wild, and include spiny and blue lobster, shrimp, abalone, octopus, giant lion's paw scallops, snail, yellowtail jack, sea bass, halibut, among many others. Many of these fishers are already working with non-profit organizations such as COBI to get their products evaluated under the sustainability criteria of the Monterey Bay Aquarium.

A great need still remains to improve product handling and basic infrastructure, so that the high quality of the Baja marine products can be preserved until they reach the supermarket shelf. Groups such as SMSF, Central Seafood Coast and FishWise are already assisting these fishers in bringing their products to international standards; their efforts will no doubt generate a supply of high quality, sustainable seafood from Baja. We continue to work on improving the supply chain, and I hope next year we can return to the IBSS with a group of our Baja fishers and samples of their products, so that seafood companies can see the quality of their products, and hear the stories behind them.

KIDS GET WET TO LEARN ABOUT CORAL REEFS IN INDONESIA

FEATURE **JENNY WILLIS**, REEF CHECK INDONESIA

A group of children from Bali's Green School are some of Indonesia's newest Reef Checkers, thanks to an adventurous education program. Run by Indonesia's learning adventure company, Odyssey Institute, the program was designed to complement the school's curriculum, which has a conservation theme.

Odyssey's Program director Brad Korpalski said the kids learned about the Reef Check survey method during their stay in West Bali National Park.

"We held a discussion about coral reefs and the type of information we were looking to collect, and what that information means," Brad said.

"We had the students practice on the beach by using Reef Check's indicator species marine cards, and in the shallow water, before attempting to survey a pre-determined transect."

Brad said the reef monitoring was challenging for the kids – especially the substrate survey, but they really seemed to enjoy the learning.

"I think students are the perfect people to get involved in this type of effort. They can easily involve monitoring in school clubs or weekend adventures, and tend to have time and energy to contribute. I think it [the program] was a success. So much so, that we are getting our Reef Check EcoDiver certification to continue the program and establish the site as an official monitoring location. The school group in the film will be the first to make an official

submission to the database in May."

Odyssey Institute is one of the only experiential education organizations in Bali and Brad says they are firm believers that the best education results from direct experience, and the best experiences are those in which we are holistically (spiritually, mentally, physically, socially, and emotionally) involved.

"Spending time in the ocean in remote corners of Bali is a great way to get connected with a world outside the one we've created. In the end, you simply hope someone's going to be impacted enough to make future decisions that take into account a world bigger than ourselves. Also, the reef monitoring provides a tangible action to the thought of, 'I want to make a difference.'"

"We always challenge students creatively with our projects. So while we did a beach clean up, we also provided them the space to use the garbage to make art and create and deliver a message about conservation. I think they did a skit using all the flip-flops and Red Bull bottles they found!"

Brad says part of their mission is to support local NGOs and communities through the provision of resources to enable specific projects and create sustainable livelihoods. Reef Check Foundation Indonesia is one of those NGOs.

REEF CHECK PARTNERS WITH **ONE WORLD ONE OCEAN CAMPAIGN**

FEATURE **TED RECKAS**, ONE WORLD ONE OCEAN

Reef Check recently became a partner organization in the One World One Ocean campaign, a multi-year, for-purpose media campaign that is harnessing the power of film, TV and new media to generate greater global awareness of the ocean's importance to society.

The campaign was started by twice Oscar-nominated Greg MacGillivray, who has been making documentary IMAX Theater films for the past thirty years in far-off places like the top of Mt. Everest, the ice caves of Greenland, the Nile River, and the deep-ocean reefs of the South Pacific. Reef Check worked with MacGillivray Freeman Films on Coral Reef Adventure which they showed at Rio+10, the World Summit for Sustainable Development in Johannesburg, South Africa in 2001. Greg was also honored at Reef Check's 2008 gala event with the Spirit of the Reef Award.

MacGillivray's team is now focused on being the ocean's storyteller. As such, One World One Ocean will inspire and connect millions of people to restore and protect the world's oceans by sharing the undersea environment with the world in a way they've never seen it. We are making three IMAX 3D movies, a 9-part TV Series, tons of videos, field reports, stories, and photo galleries. We are highlighting the incredible creatures that live in the ocean as well as the amazing people who are working hard to save them. Based on guidance from a team of top-notch ocean scientists, including Dr. Gregor Hodgson, Executive Director of Reef Check, we are focused on the most important stories in the ocean that have the highest conservation value and most inspirational material.

Our science advisor and National Geographic Explorer In Residence Sylvia Earle, Her Deepness, said what we do in the next 10 years will determine what happens to the ocean in the next 10,000.

The time is now. Visit **OneWorldOneOcean.org** and join our effort.

RECENT STUDY IN DR SHOWS BENEFITS OF MPA MANAGEMENT IN LA CALETA

FORCE (Future of Reefs in a Changing Environment) recently released a preliminary report on their 2011 survey of reefs in the Dominican Republic. Their study showed that reefs in the Dominican Republic may improve if regulations are set similar to La Caleta, an area protected from fishing and anchoring, and co-managed by Reef Check Dominican Republic since 2007.

The FORCE project uses an ecosystem approach that links the health of the ecosystem with the livelihoods of dependent communities, and identifies the governance structures needed to implement sustainable development. The overall aim of FORCE is to provide coral reef managers with a toolbox of sustainable management practices that minimize the loss of coral reef health and biodiversity.

Reef communities were surveyed at 10-15m depth in 15 locations during June 2011. The highest mean coral cover per site was found at La Caleta (43%) while the lowest coral cover was observed at Sosua (10%). La Caleta also had the highest number (46) and density (8.2 individuals per m2) of coral recruits.

Over 4 kilometers of reef were surveyed for fish. Cayo Arena had the highest fish abundance, while Sosua had the lowest. However, the mean fish species richness was highest in La Caleta (average of 29 species per transect), with the lowest again in Sosua (9 species per transect).

Overall, fish communities were healthiest in protected areas such as La Caleta or remote areas such as Cayo Arena. La Caleta also had the healthiest bottom communities, with high coral cover and high sponge diversity. The only lobster and conch counted in the Dominican Republic were also within La Caleta Reserve.

SCIGIRLS EPISODE WINS AN EMMY AWARD

FEATURE **COLLEEN WISNIEWSKI**
REEF CHECK CALIFORNIA
SOUTHERN CALIFORNIA MANAGER

Reef Check California (RCCA) wins an Emmy Award! That's probably not what you expected to hear, but it's true (well actually I won the Emmy Award, but it wouldn't have been possible without RCCA). We were part of the inaugural season of "SciGirls", a series where viewers follow teams of middle school girls and their mentors as they create their own inquiry-based investigations of the environment, technology, engineering, animal behavior and health.

We filmed our episode during August 2009 with two sisters from Southern California named Meg and Elle, who are both snorkelers and scuba divers and have extensive experience on our local rocky reefs. The location for the shoot was Catalina Island Marine Institute at Toyon Bay (CIMI) where we spent three days exploring their laboratories and snorkeling and diving at various locations around the island, collecting data inside and outside a marine reserve. We developed a modified protocol to allow the girls to collect data while snorkeling from the surface. Our focus was on 7 indicator species instead of our usual 76 and the girls discovered that changes in the populations of indicator species are interconnected through predator/prey relationships on the reefs.

Our Emmy Award is in the "New Approaches Daytime Children's" category and was noted for its unique merging of television and the web. Episodes of SciGirls are still being broadcast on PBS stations around the United States. In addition, our episode (number 109: Ocean Ecosystems) is also available online at the SciGirls website in case you haven't gotten a chance to see it. I recently received an official Emmy Award certificate from the National Academy of Arts and Sciences and it's very exciting, but I'm still holding out for a golden mini-Emmy statuette for my desk!

SciGirls

REEF CHECK SPOTLIGHT: SHARK CONSERVATION IN THE BAHAMAS

FEATURE **KRISTA SHERMAN**
GEF FSP COORDINATOR, BAHAMAS NATIONAL TRUST

Sharks are an extremely diverse group of marine animals that can be found in various habitats worldwide. Sharks belong to the class Chondrichthyes, subclass Elasmobranchii that contains 12 orders of which three are extinct and 1100 species have been described. Chondrichthyes are cartilaginous fish characterized by the presence of five or more gill slits, paired fins, a true jaw and nostrils. There are approximately 500 shark species ranging in size from the 27cm pygmy sharkEuprotomicrus bispinatus to the 21m whale shark Rhincodon typus. Collectively, sharks have played an instrumental role in marine ecosystems for over 400 million years as evidenced by fossil records of the Devonian and possibly lower Silurian. However, because of their K-selected life history strategy (i.e. slow maturation and reproduction, producing few viable offspring) and increasing anthropogenic pressures they are extremely vulnerable and susceptible to overexploitation. Some estimates report that global shark populations have declined by as much as 80% within the last 20 years. Additionally, the International Union for Conservation of Nature (IUCN) Shark Specialist Group (SSG) lists 30% of shark and ray species as threatened or near threatened with extinction.

Increased awareness about the impact of global shark fisheries, habitat destruction and the combined effects this will have on the marine environment and economy has improved collaborations between scientists, conservationists and government officials. The Bahamas National Trust (BNT), established in 1959, is mandated with conserving both natural and historic resources in The Bahamas and is the only non-governmental organization in the world mandated to manage a country's entire national park system. BNT's vision is to create a comprehensive system of national parks and protected areas, with every Bahamian embracing environmental stewardship. This vision has driven and continues to drive the organization to establish new parks, engage in community outreach and promote conservation, education and research in The Bahamas.

Bahamian shark populations are relatively healthy when compared to other parts of the world, which is due in part to the 1990s longline commercial fishing ban. However, to ensure that shark populations within The Bahamas remain healthy, in 2010 BNT partnered with the PEW Environment Group to launch a national "Protect the Sharks of The Bahamas" campaign to ban the commercial sale and trading of sharks and shark products within the country's exclusive economic zone.

The campaign launched in May 2010 with participants including government officials, representatives from NGOs, scientists, dive tour operators, conservationists, media and other key stakeholders. The benefits of maintaining diverse and abundant shark populations to sustain healthy ecosystems and the associated economic benefits through dive-related tourism (valued at approximately $78 million per annum to the Bahamian economy) were highlighted. BNT partnered with PEW and local NGOs to raise public awareness on the global status of sharks through education and outreach programmes. A series of presentations, public meetings, community walk-throughs and outreach through social network forums and the media occurred during 2010-2011. More than 5,600 Bahamians signed handwritten petitions asking the government to "prohibit commercial fishing and selling of any shark or shark related products within the Commonwealth of The Bahamas". In July 2011, the Bahamian Government created an amendment to the Fisheries Resources (Jurisdiction and Conservation) Act (Chapter 244) to prohibit commercial shark fishing along with the sale, importation and export of shark products within 630,000 km^2 (243,244 mi^2) of its waters. This marked another huge accomplishment for The Bahamas, which now protects over 40 known shark species. Shelley Cant, BNT shark campaign manager stated, "This new legislation has established The Bahamas as the regional leader for shark conservation".

Decades of scientific research on sharks in The Bahamas has been used to assess their diversity and abundance and address deficiencies pertaining to their life history characteristics, diet, behaviour and distribution. Continued advancements in research combined with local capacity building, fisheries regulation enforcement and improved public awareness will lead to better conservation management. An ecosystem based approach will undoubtedly be most effective to sustain the diversity and function of sharks within marine ecosystems.

REEF CHECK SPOTLIGHT: WHY IS DIVER MONITORING SO IMPORTANT TO MANAGE REEF FISHERIES?

FEATURE **DR. JAN FREIWALD**, REEF CHECK CALIFORNIA DIRECTOR

Many species of fish gather together in one area to spawn and reproduce. Smart fishers can target these areas and times and reap a high catch rate. Unfortunately, this can lead to rapid over-exploitation of these fisheries due to the large number of mature (reproductive fish) removed from the population before they have a chance to reproduce. In addition, if only data from fish catch is used by managers – it is possible for a decline in population size to be hidden from the managers for some time. Therefore it is important for fisheries managers to have access to what is called "fisheries independent" data such as the monitoring results carried out by Reef Check divers. Reef Check data is fisheries independent because the actual number of fish on rocky reefs are counted – in comparison to "fisheries dependent" data such as total catch.

A recent study by Brad Erisman et al., (2011) documented this problem in two southern California fisheries – the barred sandbass (*Paralabrax nebulifer*) and the kelp bass (*P. clahtratus*). Both these species aggregate during spawning, and the commercial fisheries were closed in 1953 because of concerns of potential overfishing. But the annual catch from recreational fishing remained stable or increased over a 30 year period through the 1990s, apparently indicating no problems. In fact, the actual population sizes of these two species declined dramatically by about 80% during this period based on diver surveys of actual numbers of fish on reefs.

The fact that the catch remained the same for such a long time period is due to the fish being targeted at high density aggregations

and therefore being caught in high numbers even if overall population density is declining. Since the majority of the annual catch of these species is landed during these spawning aggregations it creates the impression of a sustainable fishery. This effect is termed hyperstability, meaning that the fishery seems to be stable while in reality the populations are declining. The data based on the fishing effort and annual catch did not reflect the true signal of population decline. The authors state that fisheries dependent data "created the illusion that harvest levels for both species were sustainable and stock abundances were stable". Based on this information, resource managers maintained the same catch levels and have not adjusted their management strategy because the true decline of the populations was hidden from their 'view'.

This study demonstrates the importance of fisheries independent data collection to gain insights into the population dynamics of exploited species. Without diver surveys or other independent measures of population density or biomass, the decline of these two species in southern California would not have been detected. Reef Check is monitoring both of these species in southern California and is working with fishers in Baja to develop sustainable fisheries for other aggregating species, such as groupers found along the Baja peninsula. Unfortunately, many open-water fisheries are very difficult to directly monitor. The lack of fisheries independent data is one reason why 85% of the world's fisheries are considered overfished or have collapsed.

VOLCANO POSES UNIQUE THREAT TO MONTSERRAT'S CORAL REEFS

FEATURE **JAMES HEWLETT**, REEF CHECK MONTSERRAT COORDINATOR AND ECODIVER COURSE DIRECTOR

On January 6, 2012, a group from Finger Lakes Community College (FLCC) in New York arrived in the Caribbean nation of Montserrat to continue their work on a reef research project as part of the ongoing Research Integrating Molecular and Environmental Science (RIMES) program. The group was led by Professor James Hewlett, a Reef Check Course Director and Coordinator. Accompanying Hewlett as a Teaching Assistant was Ashli Roberts, a certified EcoDiver. Rounding out the team were students Courtney Stein and Barb Dagata, and Troy Depperman, Dwayne Daley, Oswald West, and Raphael White of Montserrat's Green Monkey Dive Shop.

A rare streak of winter calm provided ideal conditions for conducting research and provided an opportunity for the team to organize a Reef Check survey. The team was able to add three new reef sites to the Montserrat survey program. The Reef Check data collected on Montserrat has been a valuable asset to the RIMES program and has been used in publications, consultant reports, and management recommendations submitted to the local government. It appears that the decline in hard coral cover measured over the past 10 years has stabilized and remains in the 8-15% range. Heavy fishing pressure, including pot fishing, continues to be a threat to the nearshore reef system on the leeward side of Montserrat. Of particular note was the addition of Montserrat to the growing list of Caribbean islands impacted by the invasion of Pterois volitans (Red Lionfish).

Montserrat's reefs face an unusual threat due to its active volcano in the Soufriere Hills. Volcanic activity began in 1995 and continues to this day. A January and February 2010 collapse of the volcanic dome dropped more than 70 million cubic meters of hot ash and rock onto the landscape and out into the ocean on both the leeward and windward side of the island. Direct deposition of ash, increased erosion, and increased redevelopment activity has contributed to a substantial sedimentation load on Montserrat's reefs. One of the primary objectives of the research program is to establish a monitoring protocol for all sources of sedimentation and ash deposition for each study site. While sedimentation and siltation sources are diverse and varied from site to site, sources of volcanic ash deposition can be

categorized as either direct (pyroclastic flows and atmospheric deposition) or indirect (run-off/erosion, resuspension and redeposition). The Soufriere Hills volcano has been "quiet" with minimal dome growth since the 2010 collapses. This period of calm has contributed to a significant reduction in deposition of ash on Montserrat's reefs.

Overall siltation and sedimentation rates on Montserrat's reefs are believed to be very high due to the combined effects of intermittent deposition of volcanic ash following dome collapses and an above average sediment load due to erosion. Erosion in areas impacted by volcanic activity can be attributed to extensive deforestation, defoliation, and loss of vegetative cover. It is believed that sedimentation due to erosion has increased over the last five to seven years north of the exclusion zone due to the alteration of the landscape for development, road construction, and mining. This increased threat is exacerbated in northern areas of the island where there are regions of steep relief and soils that are erosive in nature. Using data from a variety of sources (sediment traps, rainfall and turbidity data, ash cloud data) the FLCC team has developed a six point estimate to assess frequency and load integrated over all sources of sedimentation. This data is then added to other measured sources of stress on Montserrat's reefs in an attempt to quantify the effects of stress on the reef ecosystem. Utilizing the sedimentation data, the FLCC team is currently trending the robust Reef Check database from Montserrat in an effort to establish correlates of reef stress.

WORKING FOR BETTER REEFS AND A BETTER FUTURE

IN AMED, NORTH BALI, INDONESIA

FEATURE **JENNIFER WILLIS**, REEF CHECK INDONESIA

Amed is renowned as one of Bali's popular tourist locations, especially because of its great diving and snorkeling. Thousands of tourists visit the area each year seeking a relaxed holiday away from the busier Bali destinations of Kuta, Nusa Dua and Sanur.

But Amed's popularity as a tourism location is also one of its threats.

Field officer Riyan Heri says that's the reason Reef Check Foundation Indonesia and Coral Reef Alliance (CORAL) have been working with the community in Amed.

"One of the biggest threats to the coral reefs in the Amed region is rubbish," Riyan said.

"Amed is a dry area of Bali, so during the dry season rubbish accumulates in the dry river bed. When the flooding rains come in the wet season, this rubbish is all washed into the bay. This rubbish then chokes the coral, harms fish and other marine animals and has negative impacts on tourism too."

Thanks to a micro-grant from CORAL, Riyan worked with local community members to install a solid waste (rubbish) trap on the river.

"Using common materials, we worked with the community to construct a trap made from thick bamboo uprights, netting and ropes. We put it slightly upstream of the river mouth and used it to catch the rubbish before it entered the ocean. Each time it rains, the local residents must empty the trap, which they have taken responsibility for."

While the rubbish trap is far from a permanent solution to the problem, it is an important community awareness tool. This activity provides direct experience and understanding to the community about the problems they face with rubbish.

By actively engaging the community and sharing responsibility for the problem, it is hoped that members of the community will better understand the sources and kinds of rubbish threatening their reefs. By making a connection between the rubbish and impacts on reefs, and subsequently their livelihoods, Reef Check and CORAL aim to help the community adopt more sustainable behaviors.

Apart from reducing the impact of rubbish on the reefs, other initiatives in Amed are helping protect the reef.

Aside from fishing, many of the boats operated in Amed are used to transport snorkelers and divers.

"We have engaged and worked with local fishermen to install two mooring buoys, with another one soon to be added," Riyan said.

The boat operators were consulted and the buoys were put in locations most convenient for both purposes, encouraging people to stop anchoring in the coral.

Riyan said that informational signs and flyers are another important part of the work underway at Amed.

"It's important that we help the local community and tourists learn more about how they can protect coral reefs. We've installed illustrated signs in Indonesian, English and French about our snorkeling and diving code of conduct. It is simple advice that tourists can follow to make sure they are being responsible and not damaging the coral reef while they are enjoying it."

Riyan said that through good collaborations great outcomes can be achieved.

"We want to keep working together in Amed so that the community and the coral reefs have a better future."

For more information on work underway to protect coral reefs in Indonesia visit: **www.reefcheck.or.id**.

NATURE WILL FIND A WAY

FEATURE **WARREN R. BAVERSTOCK & DAVID P. ROBINSON**

'Nimr' the first daughter of Zebedee is now nearly four years old and as big as her mum

In 2007, our female zebra shark, *Stegostoma fasciatum*, 'Zebedee' started to lay eggs in the Al Mahara aquarium located in the Burj Al Arab. Zebedee was introduced to the aquarium in 2001 as a juvenile and has since had no contact with a male of the same species. It is not unusual for female sharks to lay eggs in aquariums, even when there is no male present to fertilise them, but they are normally discarded by aquarium staff as infertile. What is unusual in this scenario is that some of the eggs that Zebedee laid developed embryos, even though there was no male to fertilise them!

Since 2007 Zebedee has produced eggs on an almost annual basis and from these eggs zebra shark pups have been hatched. This reproductive process is called parthenogenesis and Zebedee is the first shark of her species to be confirmed reproducing via this method. It is also the first time that successive parthenogenesis has been seen to occur in any shark species.

Parthenogenesis which comes from the Greek parthenos, meaning 'virgin' and genesis, meaning 'birth', takes place when the female's egg cells double their genome and then split in two. The process involves egg cells taking on the role of the male sperm and effectively fertilizes the other egg as they merge back together to produce an embryo with two sets of chromosomes from the mother.

A zebra shark egg in the wild attaches itself to corals and substrate by sticky fibrous threads

Zebedee lays on average 40 eggs per cycle over a period of two to three months. We have so far hatched 21 pups since 2007, eight of which are still alive. Zebra shark pups are notoriously hard to rear, only a few facilities around the world have successfully managed to raise them to adulthood. All of the pups are female as there is no paternal genetic contribution made during parthenogenesis. For the first couple of years we had a low success rate with rearing the pups. As the years have progressed, we have increased our knowledge regarding zebra shark nutrition and husbandry and, in 2011, we have had a 100% success rate with our latest batch.

Our oldest pup 'Nimr' is now nearly four years old and is swimming around the Al Mahara with her mum. What makes Zebedee important is that until now, other examples of parthenogenesis in sharks have been 'one-off' occurrences and the majority of pups have died. Zebedee is producing offspring that are surviving on an annual basis, suggesting that parthenogenesis is indeed a viable method of reproduction for sharks. Parthenogenesis has been genetically confirmed in an aquarium setting for the bonnethead shark (*Sphyrna tiburo*), white spotted bamboo shark (*Chiloscyllium plagiosum*) and blacktip shark (*Carcharhinus limbatus*). From the increasing number of shark families and species seen to


Feeding the pups at Burj Al Arab aquarium's quarantine facility


Zebra shark pups after hatching


The Burj Al Arab aquarium staff preparing the zebra shark eggs for incubation


The Al Mahara aquarium in the Burj Al Arab is home to 'Zebedee' and 'Nimr'

be able to reproduce via parthenogenesis, we can speculate that it is probable that most shark species, if not all, possess this capability.

Proving to the scientific community that parthenogenesis had occurred turned out to be a challenge. There were several possible causes for the reproduction that we first had to disprove before we could confirm parthenogenesis had occurred. We knew that Zebedee could have possibly stored sperm and there was also the possibility of hybridization with the male blacktip reef shark (*Carcharhinus melanopterus*) that she was housed with.

We worked closely with Dr Kamal Khazanehdari, the head of molecular biology and genetics, at the Central Veterinary Research Laboratory in Dubai. We confirmed that parthenogenesis took place through the DNA analysis of some of Zebedee's offspring. All of the pups that were tested displayed elevated homozygosity relative to Zebedee and had no apparent paternal genetic contribution, which ruled out both sperm storage and hybridization.

Whether Zebedee's offspring will be able to produce pups of their own is yet to be seen, these sharks are not clones as they differ genetically from each other and from the mother. We know from the post mortem examinations of deceased pups that they have perfectly formed and normal reproductive systems and so we are very excited about the next stage of research which will be to pair them with males to see if they reproduce. There is absolutely no reason, genetically, developmentally or otherwise why these pups will not be able to reproduce.

Parthenogenesis is nothing to be concerned about and has never been recorded in wild populations of sharks, what is interesting is the discovery that they can do it! As long as female sharks have access to male sharks, it is doubtful it will ever occur in wild populations, although, to our knowledge, nobody has actively looked for it. Males are certainly not disposable by any means as they keep the genetic diversity of a population healthy. If all the male sharks were removed, it is highly unlikely any population would remain healthy. Parthenogenesis is however a handy ability for female sharks to possess and may go someway to explain their evolutionary success and remarkable adaptability.

In November 2011, the findings of our research were published in the Journal of Fish Biology and from that, coverage was generated around the world, including National Geographic and the BBC.

For further information about the zebra shark story, the research paper is available online directly from the Journal of Fish Biology or you can contact us at: **baaaquarium@jumeirah.com**.

Zebedee and Nimr can be seen by visiting the Al Mahara restaurant in the Burj Al Arab.

THE SHARK WHISPERER

FEATURE **CHANTAL BOCCACCIO** PHOTOGRAPHY **EDDY RAPHAEL**

In these incredible photographs, a diver recalls the moment Cristina brought a Caribbean Reef shark under control. He said: "My first time to witness Cristina feeding the sharks was amazing. I expected an adrenaline rush, but the dive was so peaceful and calm. It was totally relaxing to watch the sharks swim slow circles around us in hopes of being fed by Cristina. I was in awe and could not keep the smile off my face. She's been working with sharks for more than 15 years. She's incredibly comfortable around them and that calmness seems to translate to the sharks as well."

Cristina Zenato is an enigma; a quiet symphony of fire and passion wrapped in a little girl's body. A world-renowned diver, mentored by diving legend Ben Rose, Zenato defies any sort of traditional labeling – as she's undeniably One Of A Kind.

As well as a tireless champion for shark awareness.

This pint sized Italian, part ballerina, part fish out of water, has the ability to coax – what some might call – man's most feared predator, literally, into the palm of her hand. But don't call them Predators to her face, because to Cristina Zenato, they're simply "family."

Zenato induces a "tonic" state in the shark, in effect hypnotizing it, by rubbing the ampullae of Lorenzini – the name given to hundreds of jelly-filled pores around the animal's nose and mouth. The pores usually act as electroreceptors for the shark to detect nearby prey, but when gently rubbed they bring on a natural paralysis, which can last for up to 15 minutes. To the observer, this looks like the shark has fallen asleep right in her lap. Zenato's ability to work with sharks in this manner has enabled her to study up close, in the wild, a mysterious world very few will ever encounter.

As a precaution, however, Zenato wears a chain mail suit. Sharks have rows of razor sharp teeth and a powerful bite. The chain mail is designed to keep those teeth from penetrating the skin if the shark bites down on a diver.

Hers is certainly not a traditional work week. With over 17 years experience and a daily log of shark diving activities, rescues and behavioral study, Cristina Zenato is the First Lady of shark behavior, DNA sampling, migratory patterns as well as a leader in shark conservation. Cristina teaches shark awareness and trains shark professionals all over the world.

A passionate advocate for marine life, her genuine nature betrays a love affair with the ocean, and its inhabitants, that most of us only speak of; few of us dare to "put their money where their mouths are"; few dare to brave that mostly unknown world that Zenato inhabits on a daily basis.

"Sharks are an endangered species," Zenato explains, "but they are a very important part of our eco-system, and they are so misunderstood."

"The only time sharks make it into the news," Zenato maintains "is when someone has been injured. The only time you see them on TV – is during SHARK WEEK. I don't want my story to be told like that. For me, my story with

"From birth, man carries the weight of gravity on his shoulders. He is bolted to earth. But man has only to sink beneath the surface and he is free."
JACQUES COUSTEAU

"Watching her with the sharks, it almost seems like certain sharks enjoy the sensation and nuzzle into her lap for attention."

the sharks, and what we do together, is the opposite. There is a peacefulness. I sense that they trust me, and they know that I trust them."

Zenato speaks with a soft accent that's hard to place, as so many places have left a hand upon her heart. Born in the African Congo, "my tremendous passion for the sea surfaced at a young age, and then I followed my love for the ocean, I journeyed to the Bahamas, where I found my calling…" Zenato smiles, recalling the memory. – because it's there she met Ben Rose, who changed her life…

The legendary Ben Rose was a pioneer in marine identification and discovered the underwater cave and cavern system located in the Lucayan National Park. Ben's Cave is world renowned and named after the man who discovered this natural treasure.

It was Rose who taught her how to feed and handle sharks, and from there her passion to study shark behavior was inflamed.

Now from the Bimini Shark Lab, South Africa, North Carolina, Florida and Mexico, Cristina reports for newsletters about sharks, cave diving and training, having observed first hand the behaviors of Great Whites, Tigers, Lemons, Reefs, and Bulls.

It was Ben Rose who first trained her in the techniques of tonic immobility; from there, she expanded the practice to remove hooks from shark's mouths, to remove parasites, and to work her Awareness Campaign against shark finning and capture, for shark protection, as well as human education.

In 2000, Zenato used her own time and money to train in Florida to become a Full Cave Diving Instructor. She's the recipient of the Platinum Pro Award 5000 from Scuba Schools International and a member of Women Divers Hall of Fame.

Speaking five different languages, Italian, English, German, French and Spanish, Cristina became a tour de force – a PADI, NAUI, SSI, SDI, open water instructor, NSS-CDS full cave instructor, Extended Range Instructor, TDI advanced Nitrox with decompression procedure and more.

For 17 years, she's worked for The Underwater Explorers Society, and from her humble beginnings as a Scuba Instructor, she climbed the ladder to become the head of diving at UNEXSO, teaching technical diving plus cave and cavern classes. When Cristina is not working, she can usually be found freediving or exploring new cave systems.

All of these feats would be enough for most, but not for Zenato, as they pale in comparison to her passion for studying sharks and instructing the public about shark awareness.

The sharks at her home in the Bahamas instinctively recognize her gentle spirit, and warm to her touch. Visitors at the Shark Dive at UNEXSO are encouraged to feel the shark's skin while in their calm state, allowing them to dissolve any misconceptions or preconceptions they may have had about shark life. She teaches interested divers to feed the local Caribbean Reef sharks by hand, hoping to bring people closer to understanding the secret world of these amazing creatures.

Zenato's astounding ability to lull the ocean's predators into a trance-like state, allows her to literally hold what some consider the world's deadliest animals in the palm of her hand.

Her techniques have allowed her to globally share behavioral data, tend to injured sharks, extract DNA and engage in rescues that might otherwise prove too precarious.

Freelance journalist Dia Osborn concurs "I just stumbled across this three minute, somewhat-unnerving-yet-deeply-moving video of Christina Zenato, a woman diver, interacting with sharks down in the Bahamas. Frankly, I didn't believe this kind of gentle relationship was even possible and yet here it is anyway. Sometimes it feels so good to be wrong." Osborn offers "what fascinated me most was what happened in my brain while I watched. I swear I could feel it rewiring. Some deep and unquestioned prejudice against sharks took a hit here, big time." For Cristina Zenato, this is Shoot, Score! As it is her life mission to dispel the myths ingrained in our culture about sharks while portraying them in a new light. "Sharks are perhaps the most feared, maligned and misunderstood species on the planet," Zenato maintains, "they are also a crucial component of our ocean's ecosystem and many of their kind are now critically endangered." Her Raison d'etre is to instill public awareness of the plight and danger of extinction these elegant and amazing marine creatures face.

A sense of who Cristina Zenato is can only truly be felt underwater. There, she is more at home than she is on land. There, this enigma, this pint sized ballerina of the sea, is able to realize her life-long aspiration: She dreamed of swimming with sharks. Now she dances with them.

Currently, the team behind the award-winning PBS series CUISINE CULTURE is making a documentary about this incredible woman. The filmmakers have collectively worked on series for A&E, National Geographic Channel, ShowTime, Tru TV and many other networks.

SHARK WHISPERER is a film whose goal is to spread public awareness about the plight of sharks, and the amazing work of Cristina Zenato. They are currently raising funds for the documentary through Kickstarter crowd funding. Interested parties can go to this link to learn more about the project, and help by passing this on to anyone whom you think can assist in the fundraising. There are excellent rewards for their Financial Angels – including the opportunity to swim with Cristina and her sharks in the Bahamas! Any help is greatly appreciated! Together, we can make a difference!

LINK TO THE PROJECT AND ZENATO'S AMAZING VIDEO:
http://www.kickstarter.com/projects/1389072496/shark-whisperer

TAKING A SECOND LOOK.

IS THERE A FULL-FACE MASK IN YOUR FUTURE?

FEATURE **ROBERT N. ROSSIER**

Nothing in diving is more commonly recognized than the mask. Despite the differences seen throughout the spectrum of masks, they all work pretty much the same way. And when you find one that fits your face and suits your needs and style of diving, it can be a difficult thing to part with. But as diving needs and styles change, many find the advantages of a full-face mask are worth a second look.

ADVANTAGES

Full-face masks offer a variety of potential advantages, the most important of which perhaps is the compatibility with a plethora of highly effective hardwire and wireless underwater communications equipment. Although voice communication in diving isn't limited to full-face masks, many count it as an advantage.

The full-face option eliminates TMJ (temporomandibular joint) syndrome and sore jaws that come from clenching a regulator mouthpiece between your teeth. While most divers seem to adapt well to breathing through the mouth, others may find that normal breathing through the nose with a full-face mask is a much more comfortable proposition.

When one dives in cold water, the full-face mask provides additional comfort. In conjunction with a wet or dry hood, the full-face mask keeps the cold water off the face and can dramatically improve overall thermal protection. This could translate into a reduction in air consumption and extending bottom time. However I have found no clear data to support the claim: and some sources associate a higher air consumption with full-face masks – particularly those that operate with a positive pressure.

Full-face masks also afford a much higher level of protection when divers operate in contaminated, polluted or otherwise suspect waters. Finally, a full-face mask allows an unconscious diver to remain breathing. Some divers who perceive a higher risk of oxygen toxicity for their particular dive operation or profile (including nitrox and mixed breathing gases) favor a full face mask for just that reason, but the same logic applies to other forms of wreck, cave and technical diving.

THE DOWNSIDE

Full-face masks also have a downside. First, you can expect to pay 10 times as much, or more, for a full-face mask as you would for a standard

dive mask. Factor out the cost of a regulator second stage (many full-face masks come with integral regulators), and the apparent price differential becomes more palatable. Still, it's expensive, and not likely to appeal to those who dive infrequently. And since full-face masks are much heavier (they have extra weight built in to offset the increased buoyancy) and bulkier than standard dive masks, they're more cumbersome when traveling.

But the real downside is that full-face masks require a breadth of skill and knowledge beyond that required for a standard mask. Unless you're willing to spend the time and money to become proficient, you could soon be over your head – in more ways than one.

TRAINING ISSUES

The full-face mask is a breed apart from standard dive masks. Just a cursory look at the details of construction will make it obvious that such a mask requires additional training. Simply putting on the full-face mask is different, with a "spider" consisting of four or more independent straps forming a system designed to keep the mask secure and ensure a proper seal.

Some full-face masks are designed for easy donning and doffing, but others can represent a significant challenge. Depending on the type of full-face mask used, even experienced full-face divers can benefit from a second pair of hands when they suit up.

Even the basic procedures for full-face mask diving, such as clearing the mask and entering the water, represent a departure from the standard skills learned in basic scuba training. Clearing a full-face mask presents a greater challenge: this is due in part to the greater volume and the internal configuration of the mask. Clearing the ears can also differ with a full-face mask, owing in part to the fact that an oronasal pocket typically separates the mouth and nose from the eye space within the mask.

While some full-face masks incorporate nose pockets similar to standard masks, others use "nose blocks" that sit against the ends of the nostrils to allow the diver to clear his ears. There may be no soft area to allow you to pinch your nose. Another feature of many full-face masks, a surface-breathing valve (SBV), allows the diver to breathe on the surface without consuming the precious compressed breathing gas supply: better add that one to your "must check" list before submerging.

Without a doubt, the biggest differences in training come when we progress to the emergency training portion of the program. Obviously, the standard air-share strategies used by divers with standard dive masks no longer apply or need serious modification when they wear a full-face mask. Some full-face masks can be fitted with a redundant regulator to minimize the risk of failure, and a bailout bottle is typically used to cope with out-of-air situations. Sharing air in the traditional manner typically means ripping off the full-face mask, taking an octopus and then donning a standard mask. All require a higher standard of skill, expertise and training.

While the full-face mask is a boon to cold-water diving, the prospect of facing an emergency in cold water adds another risk factor. Sudden exposure of the face to cold water can cause serious and perhaps even debilitating discomfort. To counter this effect, many instructors insist that their full-face students acclimatize their faces to the cold water before initiating a cold-water dive. Only anecdotal evidence suggests the efficacy of such procedures, especially with longer time periods between the acclimitazation and exposure to frigid water, and I have found no scientific evidence to support the claim.

Yet another potential disadvantage of the full-face mask is the buoyancy factor. Full-face masks typically offer a greater displacement than standard masks. In addition to requiring more weight to offset the increased buoyancy, some divers find that the neck strain and jaw fatigue caused by the increased mask buoyancy is uncomfortable. The degree to which this occurs depends on both the style of mask, and the orientation of the diver in the water (horizontal or vertical).

TOUR DE FORCE

Just as standard dive masks present a broad spectrum of features, benefits, sizes and styles, so do full-face masks. At one end of the spectrum is the Cressi full-face mask, featuring a molded rubber mask with two eyepieces and an integral breathing tube designed to mate with a conventional regulator, making this entry-level full-face mask an affordable option.

Another variant of the full-face mask for recreational divers is the Interspiro Divator, a design derived from the world of firefighting. Known also as an AGA (ah-ga) mask, it offers a broad, curved faceplate and side-mounted regulator that combine to provide enhanced visibility. Unlike any standard dive mask, a diver can operate the AGA mask in a positive-pressure mode (a plus for contaminated waters) as well as the normal mode.

One of the newer entries into the recreational diving market is the Ocean Reef's Neptune II full-face mask. With a design based on military Nuclear / Biological / Chemical (NBC) protection masks, the Neptune II incorporates a unique face seal designed to accommodate a wide variety of facial shapes and sizes. Ease of donning and doffing is a hallmark of the Neptune II, which also has a standard communication system. The Neptune can be purchased with the standard regulator, or, to keep the price within reason, can be fitted with any number of manufacturers' regulators.

The Kirby Morgan Dive Systems (formerly Diving Systems International) EXO-26 is a standard of the industry for commercial operations. This top-of-the-line mask incorporates a unique suspension system that offers custom fit and comfort, an adjustable-flow regulator, communications ports and oral-nasal skirt. Kirby Morgan has a full line of commercial full-face masks to suit most any need.

A variety of manufacturers also offer various models of full-face mask with numerous features and functions. Scubapro's full-face mask – similar in appearance to the EXO – sports a redundant regulator port, molded nose pocket and a variety of accessory plugs. Widolf also offers a line of rugged full-face masks designed for commercial and technical divers.

A FULL-FACE FUTURE?

As you move down the depth meter to the realm of more advanced diving, keep in mind the pros and cons of diving with a full-face mask. Even if your old mask is a comfortable and reliable friend, it may be worth taking a second look at the full-face option. Who knows? There could be a full-face mask in your future.

THE CASE FORVOICE COMMUNICATION

It's difficult to overestimate the importance of good communication on a dive, and adding effective voice communication to the mix of available communication modes certainly reduces some risk factors. Having good underwater voice communications cuts through the often murky and confusing world of hand signals, allowing divers to communicate even when they can't see one another. Moreover, a diver wearing a full-face mask with communications capability can more readily summon a buddy, or perhaps even personnel on the surface, to assist with a developing problem.

In some instructional settings, the use of voice communication can increase the efficiency of the learning situation. According to noted educator Sandra F. Rief of the Center for Applied Research in Education, in West Nyack, N.Y., students retain 10 percent of what they read, 20 percent of what they hear, and 30 percent of what they see. However, they retain 50 percent of that which is both seen and heard. Although a diver's ability to sort out problems on his own (i.e. without voice communications) is a key safety skill, some types of underwater instruction – such as marine biology and species identification – can greatly benefit from the use of underwater voice communication. Other types of diving that require close coordination of dive team members may also benefit greatly from the application of underwater voice communication.

WHO SAYS TECKIES HAVE TO WEAR BLACK?

FEATURE **TRACEY WARREN**

My husband came home one day last Autumn and said "guess what? We are both doing our rebreather training." "WHAT! You have done what? booked us on another dive training course?" Ummm yep, he had. Both the basic and advanced rebreather course at Atlantis Dive Centre in Dubai.

OMG all I could think about was those guys wearing those massive yellow boxes and all wearing black and talking Klingon.

I was handed my homework and more knowledge reviews. The structure of the manual and accompanying DVD was easy to follow, once you mastered the acronyms and Klingon language (sorry technical diver speak).

I arrived with my husband at the dive centre to find lots of black and shiny things spread all over the table. There were three 6ft guys (one being my husband) all wearing dive T-shirts with logos, "dive deeper" as well as other dive testosterone logos and little me.

I was wearing pink and had my nails done especially for the course. And you guessed it: PINK! Who says teckies have to wear black!

The guys looked on and I could see them rolling their eyes! Well as the day went on and we got more and more into the technical side of the rebreathers. By the way, they weren't the big yellow boxes, but the very small and light Poseidon MKVI units. Still, mainly BLACK. Come on people, women dive too and keep the little black number for going out!

The theory lesson went on and I had downloaded the manual, on yes my pink iPAD and also my husband's black armoured-plated teckie iPAD! Jason Sockett was great. We went through things very clearly and after a short while I too could understand and speak Klingon. Yes, I understood rebreather teckie talk. BOV, CCR eCCR, Bailout Gas and much more.

We began to assemble the units: lots of wires, hoses, cylinders and more bits than an IKEA flatpack. I followed Jason's instructions, constantly referring to the downloaded manual. So long as you can read the instructions from an IKEA flatpack you can follow instructions on how to put together a rebreather. A sip of black coffee from a pink flask and I was finished.

The unit was surprisingly light and compact. In fact I think it fits the smaller person better than the 6'+ guys. Off to the pool to start our training. Lara Croft had nothing on me: I had a bailout cylinder; rebreather and I could see fear in the eyes of the guys. OK in the pool for some skills training. Remember: "if in doubt bail out."

Then into the deep part of the pool for some buoyancy work. Jason demonstrated a perfect hover…reaching up to the surface of the pool and not breaking the surface with his finger… very cool. OK my turn, this should be easy… NOT! It was like being an Open Water student all over again. I have been diving and a PADI professional for…well…let's just say a few years. You can hover and breathe normally. Very strange at first.

Watching the guys was so funny and because there are no bubbles you can hear everyone laughing and talking to each other. Yes, you can speak to each other.

After mastery of the pool skills we went into the ocean. The guys all wearing, yes you guessed it, black and me in pink with highlights of black.

The units were great in the ocean: light, easy to use and best of all no bubbles. I was amazed at how close the batfish on the Cement Barge came up to us. It was as if they didn't know we were there or accepted us as marine life: No bubbles to scare them off.

As a keen underwater photographer I can certainly see another big advantage of rebreathers other than the normal techie concept of "deeper for longer". The no bubbles is definitely an advantage for photography.

All in all I sincerely loved the course. I haven't let on yet, as I wanted my husband to pay for signing me up for a course on the dark side. But I could only pretend for a short while. Due to "Man Flu" I passed my rebreather and advanced rebreather before him!

So ladies, don't be put off by the macho image of teck divers and thinking everyone wears black…some wear PINK.

THE PROBLEM WITH PLASTIC

FEATURE **LEANNE KING**

WHAT LIES UNDER Ferdi Rizkiyanto – 2011

These days we are bombarded with "Refuse-Reduce-Reuse-Recycle" advertisements, but how much attention are people actually paying?

WHERE DOES IT ALL COME FROM?

Plastic is everywhere. It has become an indispensable part of our modern consumer society. More plastic has been produced in the last ten years alone than was created in the whole of the 20th Century. We currently produce over 260 million tonnes a year, globally and the industry is growing 5% every year. 50% of all plastic produced is only ever used once and then thrown away. However, putting the plastic in your rubbish bin is not the end of the story.

Currently, plastic constitutes 10% of all waste we generate – America alone throws away over 35 billion plastic water bottles every year. Producing plastic bottles uses 17 million barrels of oil every year and releases 2.5million tonnes of carbon dioxide in to the atmosphere. In addition to that, 462 million gallons of oil are needed just to transport the water from the bottling plant to the shops. Just take a moment to look around and think of how many everyday items are made from, or have some part of them made of plastic – everything from food packaging (40% of all plastics produced are used merely for packaging) to tables, chairs and electronics casings. It is almost impossible to avoid and has become so ingrained in today's society that, most of the time, you don't even notice it. You'll probably shock yourself when you realise just how much modern man relies on it. Many plastics have had large beneficial effects for our lives, but the one-use, "disposable" plastics – such as drinks bottles and caps, plastic cups, plastic cutlery, shopping bags etc. – are having lethal effects on the environment. They may be cheap and convenient for us, but they are also buoyant and durable, a deadly combination when in the oceans.

THE COST OF PLASTIC

Our obsession with plastic doesn't just have negative environmental impacts, it could be costing the earth to produce. Plastic production is responsible for using 8% of the world's yearly oil production – to put that in to context, that's roughly the same amount as the whole of Africa uses! It takes 250ml of oil to produce a one-litre water bottle – considering we throw away 50% of the world's plastic produce every year, we are essentially throwing away 4% of the world's oil generation. This seems completely crazy considering the vast evidence of how finite these natural, non-renewable energy sources are and the unlikelihood that we'll ever find any vast reserves of oil in the future.

In addition to this, plastic on beaches and just off shore could be costing up to $1.27 billion annually, as it affects tourism, fishing and shipping industries.

PLASTIC BAGS – CONVENIENCE OR CURSE?

Plastic bags are irrefutably the most widely used plastic product – approximately 500 billion plastic bags are used every year worldwide, that's nearly one million every minute. The UAE alone uses 12 billion plastic bags a year – or nearly 23,000 a minute. Approximately 0.2%-0.3% of plastic bags end up in the sea, intact. That may not sound like much of a percentage, but in actual fact it's 1-1.5 billion bags every year, 36 million of which originate from the UAE. Sure, they are unquestionably convenient when out shopping, but what effect is this convenience having on our environment as a whole?

A plastic bag has an average "working" life of just 15 minutes. Think about what happens to that plastic bag once you've brought the shopping home. Many people use old shopping bags to line household rubbish bins. Reusing them like this is undoubtedly better than buying specific bin bags just to throw the shop carrier bags in, but then what happens to the bag once it gets thrown out with the trash?

Companies constantly reassure us that their plastic bags are biodegradable, that after 18 months in the environment they start to break down. But just how true is this? The honest answer is, this statement is a red herring. Plastic bags are NOT biodegradable, in the true sense of the word. No organism – be it microbe, plant or animal – has ever evolved to feed on plastic. Yes, plastic bags break down, but only in to smaller bits of plastic. This breakdown happens through photodegradation, where prolonged exposure to sunlight breaks down the polymer chains that make up plastic in to smaller pieces of, well, plastic. Physical friction, such as that which occurs on beaches, coastlines and seashores, accelerates this process. However, even the smallest molecule of plastic will not be absorbed in to the environment, by any means. Throwing a plastic bag in to a landfill site will not cause it to break down – it can last for hundreds, if not thousands of years in this situation. If a plastic bag ends up in the sea,

it constantly breaks down into smaller pieces until it forms a sort of soup with the water, but the plastic never disappears, it remains intact in some form in the environment, often ending up ingested by marine animals where, once in the gut, it causes severe harm.

ARE BIOPLASTICS THE ANSWER?

Starch powder has been mixed with some forms of plastic to allow it to degrade easier, but it still never completely breaks down. Certain species of bacteria produce a completely biodegradable polyester when under certain conditions of physiological stress. Researchers have managed to genetically engineer these bacteria to produce "bioplastics" but the process and resulting plastic is expensive. Bioplastics account for 10-15% of plastics currently produced, but they are not the answer. Bioplastics rely on potential food crops in their production and although they have become synonymous with "degradable" and "biodegradable" plastics they can take decades to break down and when they do, they release one of the worst greenhouse gases possible – methane – significantly more damaging to the atmosphere than carbon.

The only way of avoiding plastic ending up in the environment is to store it, burn it or recycle it at the end of it's life – but all of these produce other negative impacts on the environment.

"The ocean is like a soup of plastic mostly composed of fragments invisible to the human eyes, killing life and affecting dangerously our health."

Pierre Fidenci, ESI President

WHY DOES IT MATTER?

Negative environmental impacts are not the only problem with our current obsession with plastic. The small, broken-down plastic particles attract toxins, which then enter the marine food chain, from which approximately 60% of humans get the majority of their protein. The chemical compounds, known as Persistent Organic Pollutants (POPs), cause adverse biological effects in many species, including humans and they are currently being found on marine plastics in considerably higher orders of magnitude than occurs in water. The same POPs found on the debris have been linked to cancer, diabetes and low sperm count as well as genetic defects, low birth weight and developmental problems in children. It is not only plants and animals that suffer from plastic ingestion – we may be slowly poisoning ourselves.

In addition to attracting toxins, degrading plastic actually releases the chemical additives that were mixed with it on production. These chemicals are retained within the digestive systems of the organisms that eat them, transferring in to the systems of the larger organisms that in turn eat them and then on to humans.

Many people either stick their head in the sand when it comes to environmental issues, simply don't care because the issues don't appear to impact on them or their everyday life, or find it very difficult to change the habits of a lifetime, especially when it comes to something as seemingly essential and necessary as plastic. Yet, although plastic appears to benefit the human race greatly, it is having an extremely negative effect on a lot of other species we share the planet with, which will consequently impact on us in the future. Plastics have three major impacts on marine ecosystems:

1. ENTANGLEMENT

- Laist (1997) recorded over 250 different species as having become entangled in or ingested plastic.
- Allsopp et al has found that up to 7.9% of some species of seals and sea lions become entangled.
- In my first week in the UAE, I pulled discarded nylon fishing net from the shore of Al Aqah only to find it contained 9 swimming crabs and 4 conchs. Just today, while shore-diving in Al Aqah, I picked up plastic fishing line which had entangled two large hermit crabs, having to bring them back to shore to cut them free then release them back to the water.

2. INGESTION

- Plastic artefacts have been found in the stomachs of over 100 different species of sea birds.
- Around 95% of albatross carcasses washed ashore had an average of 40 pieces of plastic in each of their stomachs, which affects them mechanically and chemically.
- 31 species of marine mammals are known to have ingested plastic (Allsopp et al).

3. TRANSPORT OF INVASIVE SPECIES

- It has been shown there is a correspondence between an increase in plastic litter and an increase in invasive species (Allsopp et al).
- Man-made litter has significantly increased the transport opportunities for alien species.
- The hard surfaces of plastic debris are an attractive alternative substrate for many organisms. While this may seem like an opportunity for conservation the problem with plastic is it doesn't stay still. Plastic can float all over the world until it eventually gets caught up in a particular current and landing in one of the seven gyres, taking everything on board with it. Non-endemic species can have a catastrophic effect on the indigenous species and biodiversity where they land.

Some people against the anti-plastic movement are trying to claim there is no evidence of vast numbers of sea creatures being killed by the plastic discarded by modern consumer society. They say that environmentalists constantly use the same five photos of animals suffering from discarded plastic (turtle swallowing a bag, an otter and seabirds caught in bags, the stomach of a whale containing 20 separate bits of plastic) to promote the cause. However, the amount of plastic currently floating around the oceans is undeniably immense. When the stomach contents of deceased animals washed ashore have been analysed, all manner of human created rubbish has been found – everything from street signs to tampon casings. As with a lot of other animal deaths, ban be hard to determine the actual cause of the ultimate demise of the animal, but whether the trash has anything to do with the death or not doesn't really matter – it shouldn't be there in the first place and it certainly would not have promoted healthy biology in the animal.

IS IT A JELLYFISH? IS IT A SQUID? NO, IT'S A PLASTIC BAG…

It may be surprising to some, but the eyesight of a turtle is far superior to that of humans. They see in full colour, although they are obviously designed to see well underwater and so when above water they are very short-sighted. However, even to the most intelligent creature, a floating white plastic bag can easily resemble a jellyfish drifting along in the current.

Photo by Greenhouse Carbon Neutral Fd


Photo by Chris Jordan

The UAE is very privileged in having 4 of the 7 species of sea turtles resident on our shores. However, if plastic pollution continues at current trends, this situation may not last. All seven species of sea turtles currently carry "endangered" status on the IUCN's Red List. Plastic pollution only makes their situations more urgent.

In 2009, marine biologists from Disney's Animal Programs discovered a green sea turtle off Melbourne Beach, Florida, who was seemingly having difficulty digesting food. Upon investigation, the biologists found a piece of plastic was lodged in the gastrointestinal tract of the turtle. Once the plastic was removed, the turtle proceeded to defecate 74 foreign objects in the following month including latex balloons, various types of string, nine different types of soft plastic, four types of hard plastic, a piece of carpet-like material and, horrifyingly, two tar balls. For one turtle to have so many foreign items, all due to human disposal, is more than worrying and is a big eye-opener in to what we are doing to our planet with our current "disposable" lifestyle.

In November 2008, "Whitey" a 10-foot-long crocodile tagged as part of an Australian government wildlife-tracking program was found dead. Examination showed it had consumed 25 plastic shopping bags and garbage bags.

Current conservation estimates suggest that plastic kills over 100,000 marine animals and 1,000,000 birds every year. The number of fish killed is hard to estimate, but it could be millions. It doesn't take a huge stretch of imagination to consider one plastic bag being able of killing more than one animal in it's life, given that they survive in the environment for so long.

WHY IS THERE SO MUCH PLASTIC IN THE OCEANS?

In 2010, Cinque Terre, Italy actually banned plastic bottles from the region as it was estimated 2 million were left behind on the region's beaches every year. Beach clean-ups are no doubt of benefit to the immediate environment. Too many people are in the habit of standing up and walking away from the beach, leaving their litter behind. For some, it seems out of sight really is out of mind. Many plastic bags, bottles and cigarette ends are removed from beaches on clean ups, but is it merely delaying the inevitable? 80% of the rubbish collected in the oceans originates from rubbish intended for landfill, where it has blown from either bins or the landfill itself and found its way to streams or rivers, all of which ultimately end up connecting with the sea.

Plastic debris has been found in all the world's oceans, it is everywhere, whether humans inhabit nearby or not. 46% of plastics float, so if they end up in the sea they can travel around for years. They get swept along by currents, sometimes travelling thousands of miles until they end up in one of the large ocean gyres, where vast amounts of plastics are congregating. The North Pacific is the most infamous example of this, where a large area of the ocean surface (some estimate it to be twice the size of France) now has a high concentration of plastic – most of which is now particulate plastic, having been broken down from waves, wind and UV rays. For every six pounds of plastic floating at the surface of the gyre there is just one pound of plankton.

One example of the power of the currents and the durability of plastic occurred in 1989, when 29,000 plastic toys were lost at sea in the Pacific Ocean. 15 years and 17,000 miles later, they started washing ashore on the coasts of Great Britain.

WHAT CAN WE DO ABOUT IT?

Even if the plastic did make it to the landfill, it wouldn't solve the environmental problems, it would merely contain them in one place. Quite frankly, the only way to stop plastic ending up in the sea is to stop using it. Take reusable bags shopping; refuse the plastic bags at the till. Take a proper coffee mug to work and use it; don't keep picking up a new plastic one every time you go for a coffee or for some water. If you know of a recycling system nearby, use it; don't just throw an item in to the rubbish bin because it is nearer to you. Instead of wrapping leftovers in cling film or taking sandwiches for lunch in bags, use airtight boxes; they keep food fresh and can be reused for years. The human race, as a whole, needs to desperately reduce the amount of plastic it produces and discards.

A lot of damage has already been done. There are vast amounts of plastic floating around our oceans already, amounts too immense to even consider removing. The oceans are not just like a lake that has suffered from litter from picnics – you cannot simply wade out in to it with a net and scoop up all the rubbish.

According to the Middle East Waste Summit, in 2009 the UAE was responsible for generating 22% of the total waste produced by Gulf countries. In 2010, 4.8 million tonnes of rubbish went in to landfill sites around the UAE. Initiatives to tackle the rubbish problem are being instigated. Starting next year, non-biodegradable plastic bags will be banned from the whole of the UAE. Similar programs in other countries have resulted in immense drops in new plastic bags being used. In 2002, Ireland placed a steep tax on the purchasing of plastics and as a result, plastic bag use dropped by 90%, with the money generated from the tax being used to fund recycling programs. In 2003, Taiwan starting charging for plastic bags in markets and disposable plastic cutlery in restaurants in a bid to reduce the amount used. 90% of Australia's retailers have joined the voluntary ban on plastic bags and their consumption has dramatically fallen. On announcing a ban on thin, one-use only plastic bags, a spokesperson for China's State Council remarked: "Our country consumes a huge amount of plastic shopping bags each year. While plastic shopping bags provide convenience to consumers, this has caused a serious waste of energy and resources and environmental pollution because of excessive usage, inadequate recycling and other reasons."

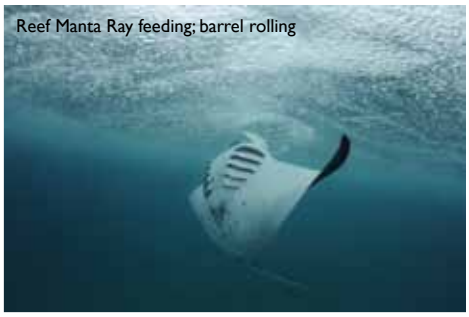
Everybody should grasp the soon to be implemented ban as an opportunity and invest in completely re-usable woven shopping bags, readily available from supermarkets across the nation. Put some plastic bags that you currently have at home in the car for emergencies. This will go someway to vastly reducing the amount of plastic departing from the shores of the UAE. Imagine the difference the disappearance of 36,000,000 plastic bags from the ocean could make to our marine wildlife, never mind the aesthetic value of the loss of 12 billion plastic bags from the UAE countryside. You might just prevent the entanglement of a shark or the death of a turtle.

Chain Feeding Reef Manta Rays

INTRODUCING **THE MANTA TRUST**

PHOTOGRAPHY **GUY STEVENS**


Two piggy-back feeding Chevron Reef Manta Rays


Reef Manta Ray feeding; barrel rolling


Oceanic Manta Ray at a fish market, Sri Lanka


Mass feeding Mantas at Hanifaru Bay, Maldives

Almost every diver is familiar with the manta ray, and if they haven't seen one of these magnificent creatures yet, it's certainly on their to-do list. The beauty, grace, and curiosity of mantas makes them one of the most engaging animals to dive with, and their harmless demeanor often invites a close, personal interaction that is unlikely with other large animals.

Unfortunately, like much of what we love in the oceans, mantas are in trouble. Over the last decade, manta and mobula ray gill rakers – the cartilaginous structures that allow them to strain plankton from the water – have been increasing in popularity as a 'traditional' Chinese remedy. While the use of dried manta gill rakers to treat a number of illnesses is not, in fact, part of the Traditional Chinese Medicine (TCM) literature, traditional practitioners have nevertheless been using gill rakers more and more in recent years, much to the detriment of manta and mobula populations around the world.

Targeted fisheries have cropped up in developing countries around the world, with fishing hotspots in Sri Lanka and Indonesia. Historically, manta fisheries have led to collapses of small, vulnerable manta populations in countries such as Mexico, and due to their low reproductive rates and small population sizes, manta rays now face a very real threat of global population crashes.

To address the growing fisheries pressures on mantas and mobulas around the world, while educating local communities and providing sustainable alternatives to exploiting manta and mobula populations, a group of scientists, conservationists, filmmakers and photographers has formed the Manta Trust. With the goal of protecting manta rays, their close relatives, and the immensely productive ecosystems which these animals inhabit, the Manta Trust, now a UK registered charity, is conducting crucial research on the basic life history of mantas, such as identifying migratory routes, feeding strategies, and critical habitats such as breeding and nursery grounds. Using this new information, we're working with local collaborators, international conservation organisations and governments to enact critical legislation to protect mantas, mobulas, and diverse marine habitats, while encouraging economical and sustainable alternatives to manta fisheries, such as responsible dive ecotourism.

Be sure to check back in each issue of Divers For The Environment for updates on the Manta Trust's work, important new discoveries in manta and mobula ecology, and global conservation efforts for mantas and their relatives. In the meantime, be sure to visit **www.mantatrust.org** or **http://www.facebook.com/MantaTrust** to learn more about mantas and find out how you can help protect them and feel free to contact us on **info@mantatrust.org** if you'd like any further information on our work.

Manta TRUST

On the surface

our work looks perfect

Deep down

it also makes a difference

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DIGITAL ONLINE 2012 RESULTS

THE UAE'S ONLY UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

DIGITAL ONLINE
EMIRATES DIVING ASSOCIATION
PHOTOGRAPHY AND FILM COMPETITION

We would like to congratulate all of the winners of Digital Online 2012 and thank all 49 participants for taking part and especially thank all the sponsors who took part in this year's competition prizes.

We would also like to give a big thank you to our printing sponsor, Print Works Mediatech that printed all 233 images for the exhibition.

The winners and prizes are as follows:

PROFESSIONAL

3rd Place Fish: SIJMON DE WAAL
Atlantis Dive Centre – Rebreather Course
3rd Place Macro: PETER MAINKA
Atlantis Dive Centre – Rebreather Course
3rd Place Wide Angle: ALASTAIR MCGREGOR
NOMAD Ocean Adventures – 2 Day/2 Night Diving Package

AMATEUR

3rd Place Fish: JOHN HAGER
The Underwater Photographer by Martin Edge
3rd Place Macro: JONATHAN CLAYTON
The Underwater Photographer by Martin Edge
3rd Place Wide Angle: KARIM SAAD
The Underwater Photographer by Martin Edge


3rd PLACE WIDE ANGLE © Alastair McGregor


3rd PLACE FISH © Sijmon de Waal


3rd PLACE FISH © John Hager


3rd PLACE MACRO © Peter Mainka


3rd PLACE MACRO © Jonathan Clayton


3rd PLACE WIDE ANGLE © Karim Saad


2nd PLACE MACRO © Alastair McGregor

VIDEO
3rd Place MARINE LIFE: KARIM SAAD
The Underwater Photographer by Martin Edge

PROFESSIONAL
2nd Place Fish: ALASTAIR MCGREGOR
Discover Orient Holidays – Destination Package 4 Days/3 Nights (Marsa Alam, Egypt)
2nd Place Macro: ALASTAIR MCGREGOR
Discover Orient Holidays – Destination Package 4 Days/3 Nights (Terengganu, Malyasia)
2nd Place Wide Angle: SIMONE CAPRODOSSI
Discover Orient Holidays – Destination Package 4 Days/3 Nights (Aqaba, Jordan)


2nd PLACE FISH © Alastair McGregor


2nd PLACE WIDE ANGLE © Simone Caprodossi


2nd PLACE FISH © Dominique Zawisza


2nd PLACE MACRO © Richard Bajol


2nd PLACE WIDE ANGLE © Collin Wu

AMATEUR
2nd Place Fish: DOMINIQUE ZAWISZA
Al Boom Diving – Dubai Mall Aquarium Shark Dive
2nd Place Macro: RICHARD BAJOL
Al Boom Diving – Dubai Mall Aquarium Shark Dive
2nd Place Wide Angle: COLLIN WU
Al Boom Diving – Dubai Mall Aquarium Shark Dive

VIDEO
2nd Place MARINE LIFE: AWNI HAFEDH
Sheesa Beach Dive Center – Camp and Dive Package
2nd Place WRECK: JOHN HAGER
Al Mahara Diving Center LLC – Diving Day Trip

PROFESSIONAL
1st Place Fish: WARREN BAVERSTOCK
DIEVAS – Watch
1st Place Macro: WARREN BAVERSTOCK
DIEVAS – Watch
1st Place Wide Angle: WARREN BAVERSTOCK
DIEVAS – Watch

AMATEUR
1st Place Fish: KELLY TYMBURSKI
Tourism Malaysia – Sipadan Destination Package 5 Days/4 Nights
1st Place Macro: DOMINIQUE ZAWISZA
Tourism Malaysia – Sipadan Destination Package 5 Days/4 Nights
1st Place Wide Angle: HOLLIE BURROUGHS
Delma Marine – Scuba Pro Regulator Set

VIDEO
1st Place MARINE LIFE: KHALED SULTANI
Al Boom Diving – East Coast Day Trip
1st Place WRECK: KHALED SULTAN
Al Boom Diving – East Coast Day Trip I


1st PLACE FISH © Kelly Tymburski

1st PLACE FISH © Warren Baverstock – www.verstodigital.com

1st PLACE MACRO © Warren Baverstock – www.verstodigital.com

1st PLACE WIDE ANGLE © Warren Baverstock – www.verstodigital.com

1st PLACE MACRO © Dominique Zawisza

1st PLACE WIDE ANGLE © Hollie Burroughs

OVERALL DIGITAL ONLINE WINNERS
PROFESSIONAL: WARREN BAVERSTOCK
Biosphere Expeditions – 1 week in the Maldives
AMATEUR: JONATHAN CLAYTON
Biosphere Expeditions – 1 week in the Musandam
VIDEO: KHALED SULTANI
Freestyle Divers – Speciality Course

Digital Online 2012 allowed photographers to submit 2 images per category. A participant could win multiple times in each category but only the top prize in each category was awarded. The next prize was passed on to the next winner down the line and so forth.

Points were not awarded to images that did not follow category regulations. For example: In fish, you could not submit mammals, crustaceans, molluscs etc. and in macro it was not permitted to submit photos of fish being the main element.

EDA will be introducing new photography categories and challenges for both the photography section and video section of Digital Online 2013. They will be announced on January 1st 2013 and will be open for submission until midnight on April 30th, 2013.

NOTE: Not all images have been made available in this issue. We will release all the remaining photography that was submitted to Digital Online 2012 in the following September magazine issue of "Divers for the Environment.

All images and videos can be viewed on the EDA website and on the EDA Facebook page.
www.emiratesdiving.com

DIGITAL ONLINE 2012 **SPONSORS**:

PROFESSIONAL FISH CATEGORY

	NAME	PHOTO	TOTAL
1	Warren Baverstock	16.1	418
2	Alastair McGregor	5.1	410
3	Sijmon de Waal	13.2	383
4	Anna Bilyk	7.1	378
5	David Robinson	8.2	378
6	Iyad Suleyman	10.1	372
7	Iyad Suleyman	10.2	370
8	Anna Bilyk	7.2	362
9	Warren Baverstock	16.2	362
10	David Thiesset	9.2	355
11	Stewart Clarke	15.1	355
12	Abdulla A Shuhail	1.2	351
13	Ahmed A Shuhail	2.1	347
14	Alexander Nikolaev	6.2	345
15	Simone Caprodossi	14.2	340
16	Ahmed El Agouza	4.1	334
17	Ahmed El Agouza	4.2	322
18	Simone Caprodossi	14.1	319
19	Alexander Nikolaev	6.1	306
20	Philippe Lecomte	12.2	303
21	Ahmed A Shuhail	2.2	291
22	Ahmed Abdulla Yousif Al Ali	3.2	286
23	Ahmed Abdulla Yousif Al Ali	3.1	285
24	Philippe Lecomte	12.1	265
25	Sijmon de Waal	13.1	263
26	Alastair McGregor	5.2	259
27	David Thiesset	9.1	248
28	Peter Mainka	11.2	241
29	Stewart Clarke	15.2	239
30	David Robinson	8.1	228
31	Abdulla A Shuhail	1.1	220
32	Peter Mainka	11.1	214

PROFESSIONAL MACRO CATEGORY

	NAME	PHOTO	TOTAL
1	Warren Baverstock	16.1	461
2	Warren Baverstock	16.2	438
3	Alastair McGregor	5.2	411
4	Alastair McGregor	5.1	402
5	Peter Mainka	11.1	391
6	Stewart Clarke	15.2	377
7	Abdulla A Shuhail	1.1	353
8	Iyad Suleyman	10.1	341
9	Simone Caprodossi	14.1	330
10	Ahmed A Shuhail	2.1	326
11	Iyad Suleyman	10.2	315
12	Stewart Clarke	15.1	312
13	Ahmed A Shuhail	2.2	311
14	Peter Mainka	11.2	308
15	Simone Caprodossi	14.2	301
16	Alexander Nikolaev	6.1	299
17	David Robinson	8.1	293
18	Anna Bilyk	7.2	284
19	David Robinson	8.2	282
20	Anna Bilyk	7.1	279
21	Ahmed Abdulla Yousif Al Ali	3.2	275
22	Ahmed El Agouza	4.2	274
23	Ahmed El Agouza	4.1	264
24	Sijmon de Waal	13.2	235
25	Ahmed Abdulla Yousif Al Ali	3.1	231
26	David Thiesset	9.2	229
27	Abdulla A Shuhail	1.2	0
28	Alexander Nikolaev	6.2	0
29	David Thiesset	9.1	0
30	Philippe Lecomte	12.1	0
31	Philippe Lecomte	12.2	0
32	Sijmon de Waal	13.1	0

PROFESSIONAL WIDE ANGLE CATEGORY

	NAME	PHOTO	TOTAL
1	Warren Baverstock	15.2	413
2	Warren Baverstock	15.1	411
3	Simone Caprodossi	13.1	395
4	Alastair McGregor	4.1	351
5	David Robinson	7.1	349
6	David Robinson	7.2	349
7	Anna Bilyk	6.2	341
8	Simone Caprodossi	13.2	341
9	Sijmon de Waal	12.2	321
10	Stewart Clarke	14.2	321
11	Sijmon de Waal	12.1	317
12	Philippe Lecomte	11.2	313
13	David Thiesset	8.1	308
14	Philippe Lecomte	11.1	307
15	Iyad Suleyman	9.2	304
16	Iyad Suleyman	9.1	294
17	David Thiesset	8.2	286
18	Alastair McGregor	4.2	279
19	Ahmed El Agouza	3.2	269
20	Ahmed El Agouza	3.1	259
21	Anna Bilyk	6.1	256
22	Peter Mainka	10.2	247
23	Stewart Clarke	14.1	229
24	Alexander Nikolaev	5	227
25	Ahmed Abdulla Yousif Al Ali	2.2	224
26	Peter Mainka	10.1	211
27	Ahmed Abdulla Yousif Al Ali	2.1	173
28	Ahmed A Shuhail	1.1	134
29	Ahmed A Shuhail	1.2	128

AMATEUR FISH CATEGORY

	NAME	PHOTO	TOTAL
1	Kelly Tymburski	19.2	388
2	Dominique Zawisza	8.1	366
3	Kelly Tymburski	19.1	363
4	John Hager	15.1	353
5	Claire Barker	6.2	352
6	Rima Jabado	24.1	347
7	Shadi J.S. Alzaeem	25.1	347
8	Rima Jabado	24.2	346
9	Jeffrey Catanjal	14.2	342
10	Dominique Zawisza	8.2	338
11	Collin Wu	7.1	332
12	Josofina Ng	17.1	310
13	Jonathan Clayton	16.2	310
14	Yousif Jasem Al Ali	28.1	305
15	Erika Rasmussen	9	296
16	Awni Hafedh	3.1	289
17	Hollie Burroughs	12.1	285
18	Awni Hafedh	3.2	283
19	Collin Wu	7.2	282
20	Richard Bajol	23.2	281
21	Claire Barker	6.1	266
22	Hollie Burroughs	12.2	266
23	John Hager	15.2	265
24	Jonathan Clayton	16.1	263
25	Simon Long	26.2	258
26	Redentor Vargas	22.1	253
27	Terry Garske	27	251
28	Andrew Roughton	2.1	244
29	Jeffrey Catanjal	14.1	233
30	Gisela S.Vargas	11	230
31	Louis Girard	20.1	230
32	Ghazi Gashut	10.1	227
33	Richard Bajol	23.1	225
34	Yousif Jasem Al Ali	28.2	224
35	Louis Girard	20.2	222
36	Ismail Mohammed El Fakhry	13	216
37	Redentor Vargas	22.2	214
38	Christopher Gawronski	5.1	209
39	Josofina Ng	17.2	204
40	Shadi J.S. Alzaeem	25.2	193
41	Karim Saad	18	185
42	Abdulazeez A. Alkarji	1.2	185
43	Christopher Gawronski	5.2	176
44	Rania Mostafa	21.2	152
45	Abdulazeez A. Alkarji	1.1	143
46	Rania Mostafa	21.1	143
47	Beverly Humphreys	4	0
48	Simon Long	26.1	0
49	Andrew Roughton	2.2	0
50	Ghazi Gashut	10.2	0

AMATEUR MACRO CATEGORY

	NAME	PHOTO	TOTAL
1	Dominique Zawisza	6.2	378
2	Richard Bajol	22.2	371
3	Jonathan Clayton	14.2	368
4	Awni Hafedh	2.2	343
5	Erika Rasmussen	7.2	338
6	Simon Long	25.1	328
7	Erika Rasmussen	7.1	326
8	Nicola Bush	19.2	319
9	Awni Hafedh	2.1	318
10	Jonathan Clayton	14.1	318
11	John Hager	13.2	316
12	Dominique Zawisza	6.1	315
13	Claire Barker	4.2	315
14	Rima Jabado	23.1	310
15	Rima Jabado	23.2	294
16	Nicola Bush	19.1	293
17	Yousif Jasem Al Ali	27.2	292
18	Yousif Jasem Al Ali	27.1	289
19	Hollie Burroughs	10.1	282
20	Richard Bajol	22.1	282
21	Karim Saad	16	279
22	Collin Wu	5.2	278
23	Jérôme Devie	12.1	272
24	Josofina Ng	15.2	269
25	Josofina Ng	15.1	266
26	Kelly Tymburski	17.2	261
27	Jérôme Devie	12.2	260
28	Gisela S.Vargas	9	258
29	Shadi J.S. Alzaeem	24.1	258
30	Terry Garske	26	253
31	Hollie Burroughs	10.2	248
32	Claire Barker	4.1	240
33	Kelly Tymburski	17.1	224
34	Louis Girard	18.2	219
35	Redentor Vargas	21.1	217
36	Christopher Gawronski	3.1	201
37	Louis Girard	18.1	190
38	Shadi J.S. Alzaeem	24.2	176
39	Ghazi Gashut	8.1	174
40	Christopher Gawronski	3.2	173
41	Rania Mostafa	20	140
42	Abdulazeez A. Alkarji	1.2	92
43	Jeffrey Catanjal	11.2	0
44	Jeffrey Catanjal	11.1	0
45	Collin Wu	5.1	0
46	Redentor Vargas	21.2	0
47	Abdulazeez A. Alkarji	1.1	0
48	John Hager	13.1	0
49	Ghazi Gashut	8.2	0
50	Simon Long	25.2	0

AMATEUR WIDE ANGLE CATEGORY

	NAME	PHOTO	TOTAL
1	Hollie Burroughs	11.2	341
2	Collin Wu	6.1	333
3	Collin Wu	6.2	312
4	Karim Saad	16	306
5	Jonathan Clayton	14.2	303
6	Jonathan Clayton	14.1	296
7	Hollie Burroughs	11.1	291
8	Yousif Jasem Al Ali	21.1	285
9	Richard Bajol	19.2	268
10	Josofina Ng	15.1	261
11	Jeffrey Catanjal	12.1	257
12	Claire Barker	5.1	242
13	Kelly Tymburski	17.2	240
14	Ahmed Abd Elsalam Elsayed	2.1	239
15	John Hager	13.1	235
16	Claire Barker	5.2	230
17	Dominique Zawisza	7.1	225
18	Christopher Gawronski	4.1	223
19	Jeffrey Catanjal	12.2	223
20	Christopher Gawronski	4.2	220
21	Gisela S.Vargas	10	216
22	Ghazi Gashut	9.2	208
23	Ahmed Abd Elsalam Elsayed	2.2	207
24	Erika Rasmussen	8.1	205
25	Rima Jabado	20.1	202
26	Yousif Jasem Al Ali	21.2	202
27	John Hager	13.2	201
28	Rima Jabado	20.2	194
29	Awni Hafedh	3.1	193
30	Ghazi Gashut	9.1	186
31	Richard Bajol	19.1	183
32	Kelly Tymburski	17.1	180
33	Josofina Ng	15.2	171
34	Rania Mostafa	18.2	164
35	Awni Hafedh	3.2	163
36	Abdulazeez A. Alkarji	1.2	162
37	Rania Mostafa	18.1	159
38	Dominique Zawisza	7.2	152
39	Erika Rasmussen	8.2	136
40	Abdulazeez A. Alkarji	1.1	120

MARINE LIFE VIDEO CATEGORY

	NAME	VIDEO	TOTAL
1	Khaled Sultani	6	353
2	Awni Hafedh	2	274
3	Karim Saad	5	223
4	Fazaluddin Jayanth	3	187
5	John Hager	4	173
6	Ahmed El Agouza	1	168

WRECK VIDEO CATEGORY

	NAME	VIDEO	TOTAL
1	Khaled Sultani	2	406
2	John Hager	1	197

PROFESSIONAL OVERALL

	PLACE	TOTAL
Warren Baverstock	1	2503
Alastair McGregor	2	2112
Simone Caprodossi	3	2026
Iyad Suleyman	4	1996
Anna Bilyk	5	1900
David Robinson	6	1879
Stewart Clarke	7	1833
Ahmed El Agouza	8	1722
Peter Mainka	9	1612
Ahmed A Shuhail	10	1537
Sijmon de Waal	11	1519
Ahmed Abdulla Yousif Al Ali	12	1474
David Thiesset	13	1426
Philippe Lecomte	14	1188
Alexander Nikolaev	15	1177
Abdulla A Shuhail	16	924

AMATEUR OVERALL

	PLACE	TOTAL
Jonathan Clayton	1	1858
Dominique Zawisza	2	1774
Collin Wu	3	1727
Hollie Burroughs	4	1713
Rima Jabado	5	1693
Kelly Tymburski	6	1656
Claire Barker	7	1645
Richard Bajol	8	1610
Yousif Jasem Al Ali	9	1597
Awni Hafedh	10	1589
Josofina Ng	11	1481
John Hager	12	1370
Jeffrey Catanjal	13	1316
Erika Rasmussen	14	1301
Christopher Gawronski	15	1202
Shadi J.S. Alzaeem	16	974
Louis Girard	17	861
Redentor Vargas	18	829
Ghazi Gashut	19	795
Karim Saad	20	770
Rania Mostafa	21	758
Gisela S. Vargas	22	704
Abdulazeez A. Alkarji	23	702
Nicola Bush	24	612
Simon Long	25	586
Jérôme Devie	26	532
Terry Garske	27	504
Ahmed Abd Elsalam Elsayed	28	446
Andrew Roughton	29	244
Ismail Mohammed El Fakhry	30	216
Beverly Humphreys	31	0

VIDEO OVERALL

	PLACE	TOTAL
Khaled Sultani	1	759
John Hager	2	370
Awni Hafedh	3	274
Karim Saad	4	223
Fazaluddin Jayanth	5	187
Ahmed El Agouza	6	168

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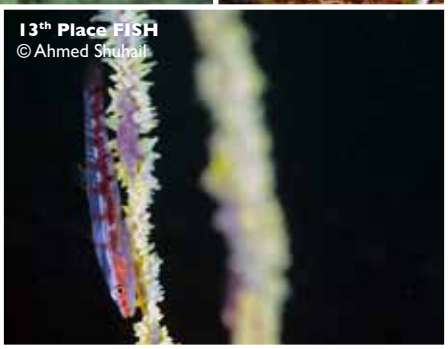
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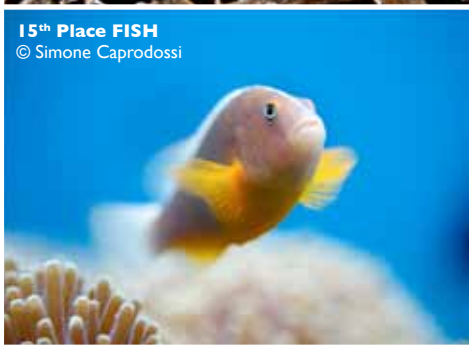
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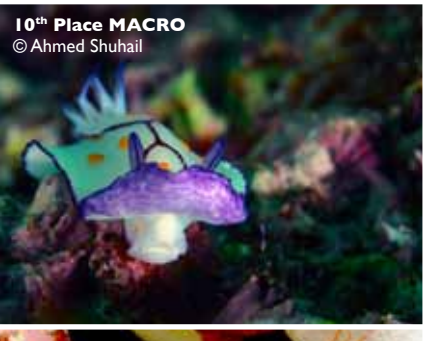
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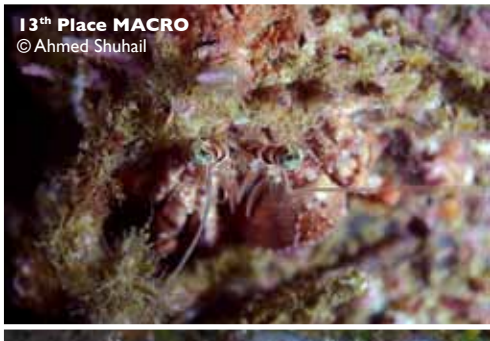
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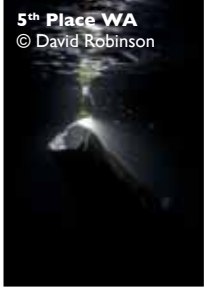
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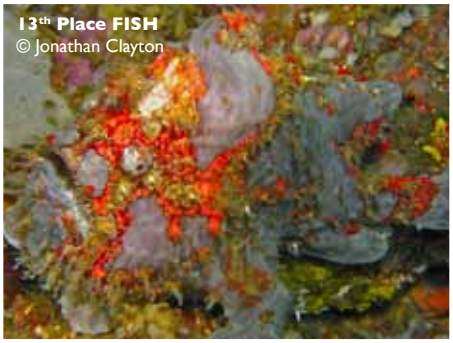
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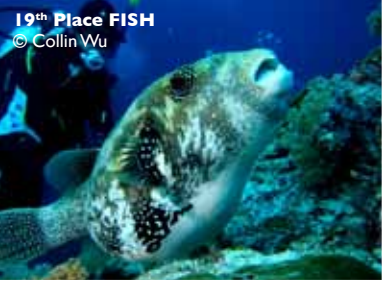
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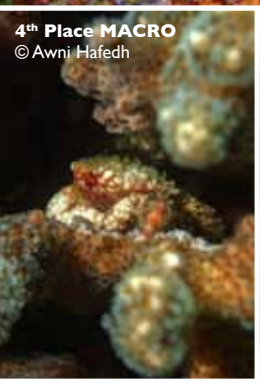
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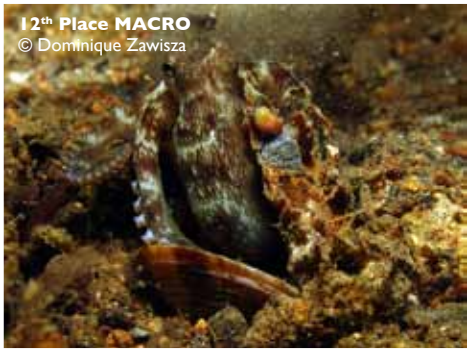
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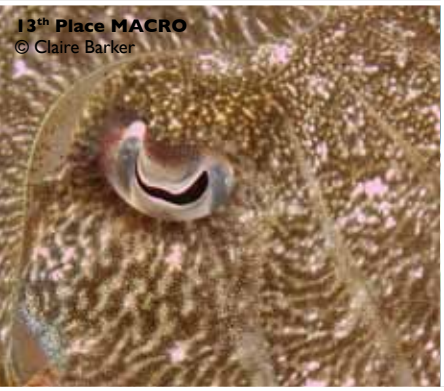
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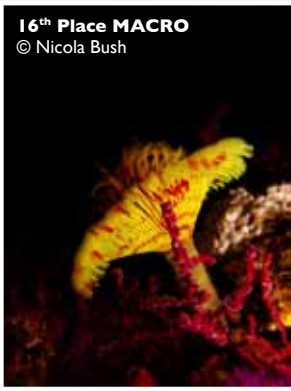
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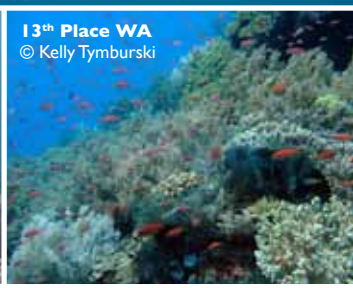
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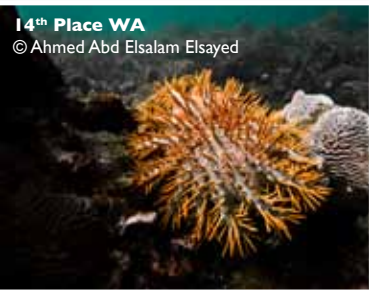
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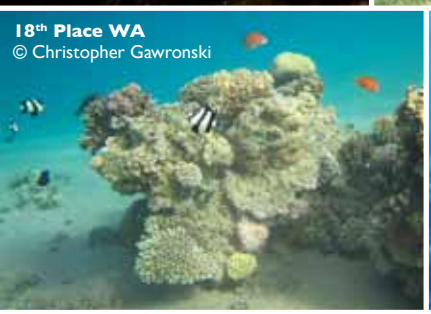
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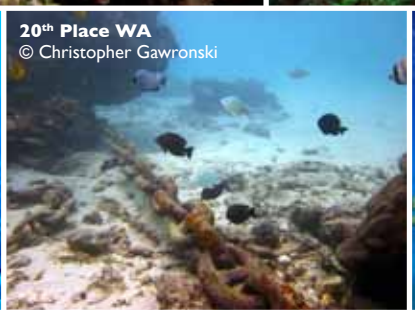
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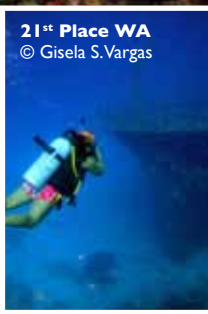
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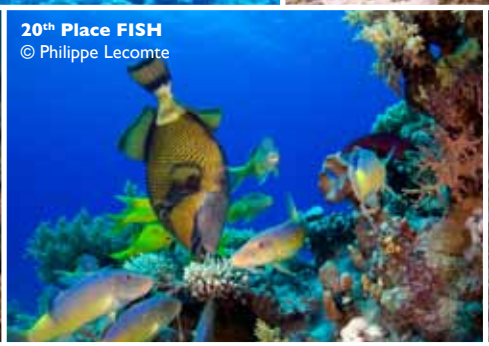
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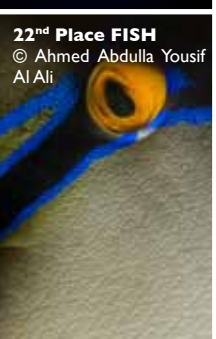
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GALLERY OF LIGHT

The Awards and Exhibition evening was held at The Dubai Community Theatre and Arts Centre (DUCTAC) in the Gallery of Light at Mall of The Emirates on Wednesday, 30th May 2012 at 7pm. Photos by Roy Sison Alexis.

49 Participants in total, 16 professional (SLR), 31 amateur (Point & Shoot), 6 filmers, 233 photographs and 8 videos!

Ibrahim N. Al-Zu'bi
EDA Executive Director

Mr. Khalfan Khalfan Al Mohiari – EDA Financial Director and
Mr. Omar Al Huraiz – EDA Head of the Technical Committee

Jonathan Ali Khan
Managing Diretor of Wild Planet Productions


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MACRO AND **SUPER MACRO** PHOTOGRAPHY

FEATURE AND PHOTOGRAPHY **ALASTAIR MCGREGOR**

Pygmy Sea Horse 1:1 macro with 105mm lens F16, 1/200. | Pygmy Sea Horse 2:1 macro with 105mm and macro mate diopter f16, 1/200. | Pygmy Sea Horse 2:1 macro with 105mm and macro mate F25, 1/200.

In this article we are going to explore macro photography and super macro photography and what it means to the underwater photographer. What do we need to have on our cameras to do it and how. All the photos in this article are taken with a Nikon D90 using either a 60mm or 105mm micro Nikkor lens. In most images I have used two Inon Z240 strobes. **Note:** super macro is not a type of photography for people with a low patience threshold as it can take a long time to line up shots, oh and an understanding buddy.

Macro photography is close-up photography, usually of very small subjects in which the size of the subject in the photograph is greater than life size. Traditionally a macro photograph is one in which the size of the subject on the image sensor is life size or greater(1:1). The ratio of the subject size on the sensor to the actual subject size is known as the reproduction ratio. Likewise, a macro lens is a lens capable of reproduction ratios greater than 1:1, although it often refers to any lens with a large reproduction ratio, despite rarely exceeding 1:1. In underwater photography, we tend to refer to macro having reproduction ratios of 1:1 and super macro as 2:1 or greater.

Generally, we will use a 60mm lens for standard macro photography. For underwater, using the Nikon or Canon 60mm or the sigma 50mm lens makes a good starting lens for portraits or macro. The Advantage of the 60mm is that its minimum focus distance where it achieves 1:1 magnification is close to the lens. This is very beneficial underwater as it cuts down the amount of water between camera and subject. Water absorbs light starting with the red end of the spectrum hence the reason many photos you see are very blue or very green. Flash restores this colour but we have to get closer and closer. 60mm DSLR lenses achieve 1:1 macro in less than a hand span from your subject and some point and shoots are even closer. For P&S cameras you will have to have your camera on the macro setting and generally zoomed all the way out to get macro and fin closer – zooming in puts more water between you and the subject and does not give you a true macro photograph. Good buoyancy control is a must for any underwater photography but even more so for macro and super macro where even a slight movement will cause your image to be out of focus or cause damage to reef or the subject. The last thing you want to do is destroy that which you are taking a photo of!

Most good macro photographs are taken when you are looking up at the subject, that famous rule still applies, get close and shoot up. This is the most important fundamental rule; to try and be below your subject and look up to it with the lens. This is not always easy and some animals are just in the wrong place.

You will see a lot of my photos on this page are taken with the 105mm macro lens. This lens has the same reproduction ratio as the 60mm but due to its longer focal length it will put more distance between you and your subject. This is good if animals are nervous or skittish around divers, but again bad as it puts water between you and the target, so you will need to increase your strobe duration (power) and this can lead to backscatter requiring an adjustment in strobe position. The 105 is harder to use as it also has a narrow angle of view meaning that it enables us to tightly frame our subject in the image without resorting to post image cropping, but it also means that we can, with a small inhalation or rough use of the shutter release, chop off bits of our subject by causing the camera to move. But as we move on to super macro, the longer focal length is important and worth perseverance.

Macro underwater photos start with knowing your subject. Read field guides and talk to other divers and dive guides to find out what is around and where to find a suitable subject – inchcape 2 springs to mind and obviously the Musandam. You will need to know the animal's behavior and understand it a little more, this will help you get that shot. And most of all patience!

For super macro photography, the 105mm lens is the weapon of choice due to its increased focus distance. There are many ways to get greater than life size magnification and some I discuss below:

EXTENSION TUBES: extension tubes work by moving the last element of the lens away from the focal plane to increase magnification, this has a large disadvantage in that your port will have to be long to accommodate these and you will lose light and probably the ability to autofocus.

TELECONVERTERS: these are small add on lenses in a variety of strengths that mount on your camera and then the lens mounts into the teleconverter, multiplying the focal length

Fang Blenny 1:1 macro 105mm f25, 1/200

Fang Blenny 2:1 macro 105mm f29, 1/200

of the lens. For example, a 2x teleconverter will turn your 60mm lens into a 120mm macro lens. You also retain the full range of autofocus on your lens. The downside is a dim view finder as they absorb light – for 1.4x you will lose 1 stop of light, 1.7x you will lose 1½ stops and 2x you will lose 2 stops of light. All this makes it harder to get enough light to your subject.

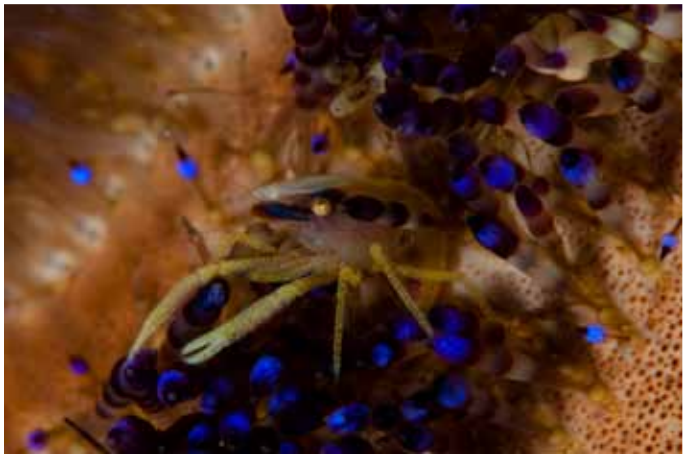
DIOPTERS: Dry diopters are close up lenses that screw on to the front of your lens inside the housing and give you magnification denoted by + number on the side. These work by reducing the minimum focus distance to get greater magnification. The disadvantage is that they are on for the whole dive and the camera will no longer be able to focus in the distance. A better and more flexible way to super macro is to use the wet diopter and these are available for the DSLR shooter and point and shoot cameras and work the same way as the dry diopter. They come in a variety of strengths +5, +8, +10 being the most common. There are two types of these add on lenses. The first looks like a magnifying glass and screw or push onto the front of the port. The magnifying element is in the water and some sharpness is lost due to that fact. Examples are some of the inon diopters and the woody diopter. The other type have two elements and the magnifying elements are inward facing and in a sealed housing so that the magnification is done in air which leads to greater sharpness and retains the magnifying power of the glass. Examples are the Sub See (+5 and +10) and the Macro Mate (+8). All the super macro photos in this article were with the macro Mate. Use of a longer lens (100 or 105) is recommended here as the diopter will halve the minimum focus distance for the lens. With a 60mm you are in real danger of crushing your target.

When using any of the above devices or combinations, special care has to be given to aperture and depth of field. It is not uncommon to use F-stops of 25 and even 32 to ensure that the image is sharp. F8 on point and shoot cameras. Shutter speeds need to be from 1/60 to 1/250 depending on the colour you want the back ground to be. Faster shutter speeds will give a darker background. Although on occasion I will use an f-stop of 16 or so to give me a nice bokeh background. Bokeh (blurred) backgrounds often give nice pastel colour to show off your macro subjects. The pygmy sea horse is an example of this. The other images of the fang blenny show a different approach using higher f stops and shutter speeds in order to create a dark/black background. The urchin shrimp and the whip coral shrimp show that even at F25 when using a close up diopter, the Depth of Field is very limited and can lead to some important parts of the image (eyes) being out of focus. In some cases, the zone of sharpness is barely a pencil line in thickness. I have tried to choose images that show a 1:1 image and then 2:1 image to show the difference.

The far east is without a doubt the place for macro photography, but here in the UAE, we are lucky and we have a large amount of subjects for super macro photography. Everything from shrimps, gobies, nudibranchs, soft coral crabs, juveniles and anemone fish. There are some very good websites and facebook pages around for macro underwater photography. One of them is the macro underwater page on facebook where some really good pictures are displayed.

You can view more of my photos on:
www.McGregorUW.smugmug.com

Bobtail Squid 2.2:1 The extreme end of my lenses capability. The Bobtail is approx 5mm long.

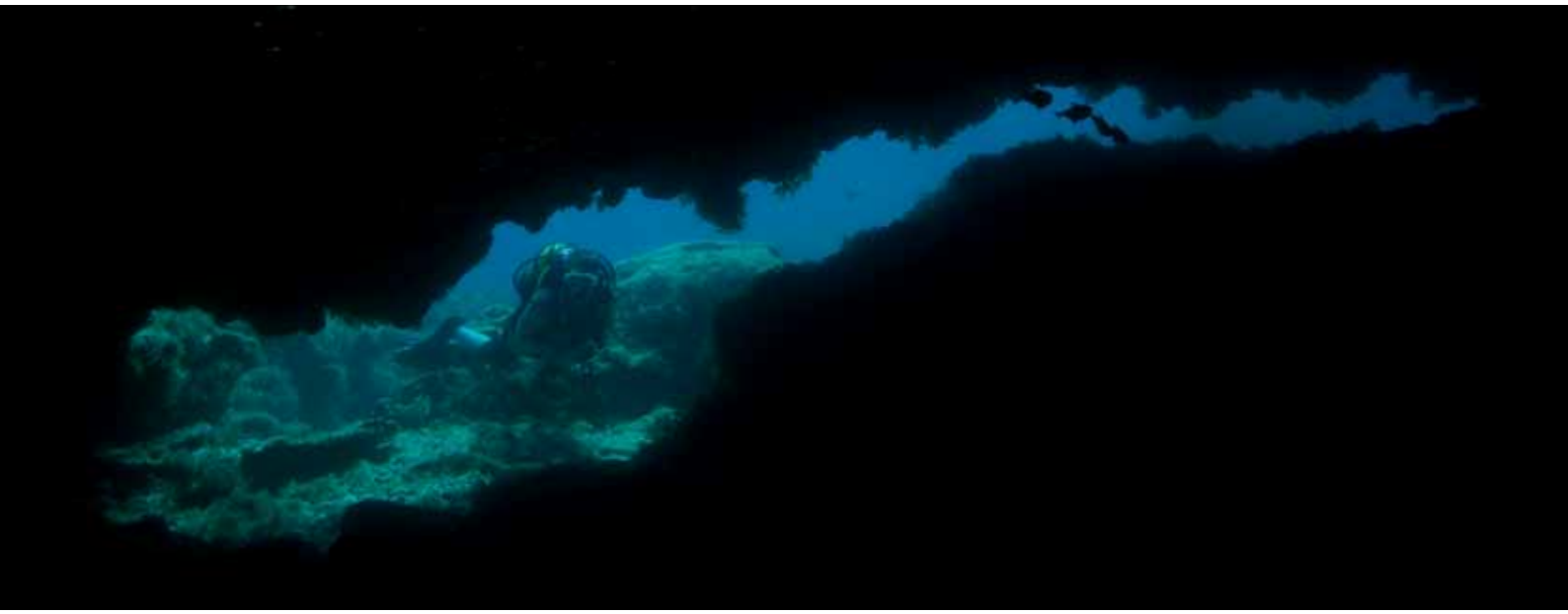


Urchin Shrimp 2:1 macro 105mm with macromate diopter f25, 1/180. | Whip Coral Shrimp 2:1 macro 105mm with Macro mate f22, 1/125 for a blue back ground.

DIVING IN CYPRUS

A TASTE OF THE MEDITERRANEAN

FEATURE AND PHOTOGRAPHY **ALLY LANDES** UNDERWATER PHOTOGRAPHY **SIMONE CAPRODOSSI**



THE CAVES | One of the small caves at this dive site is the shape of the map of Cyprus!

An invitation to dive the Mediterranean doesn't come around very often and when the Larnaca Tourism Board sent us a request to cover diving in the region in our magazine, 'Divers For The Environment', we were delighted to oblige! Diving in the Mediterranean was a first for me, so I was really looking forward to exploring the Cypriot med and see what it had to offer.

Our diving was organised through AAK Larnaca Napa Sea Cruises – owners of the Zenobia wreck which they purchased in 1997. The Zenobia is rated one of the 10 best wreck dives in the world, making this a must dive to add to your list! It lies 1.5km off the coast of Larnaca, its depths starting at 17 metres and ending at 43 metres, is 174 metres long lying on its port side on a flat bed of sand and rocks and has 3 massive cargo holds to explore! The Zenobia is huge and it has been described by some to take up to 20 dives to fully explore all it has to offer.

Its fate came in May 1980 when it set sail for Syria with a cargo of over 100 lorries, industrial machinery, cars and extensive cargo when it ran into some difficulties and the ship's computers failed and caused a continuous flow of water to be pumped into the side ballasts. Without a chance to recover the Zenobia, it was towed out to avoid any collisions inside the port.

Visibility is fantastic and can be as good as 50 metres. Water temperatures are between 16°C to 28°C. Marine life is as much expected from the overfished Mediterranean, but when you dive a wreck of that scale and content, you are not necessarily there for the marine life. The Zenobia offers you its own unique adventure that requires several dives to explore the majority of its layout and it's pretty spectacular.

The only down side to our trip was the disappointing experience we had with AAK Larnaca Napa Sea Cruises. There is unfortunately no way around them as they own the wreck and give the rights to dive it. We recommend you find yourself a nice little dive centre to dive with through this company that will look after you and show you all the best bits and the trip will be fantastic.

I had sent AAK an email a week prior to our departure to prepare and learn about the types of diving that we would do before arriving there, but found communication to be very slack. I managed to get an email back from one person asking us for our equipment requirements and sizes and when we arrived, no one had been made aware that we had made such a request. If you have your own diving equipment, we recommend you take from it your fins, mask and your regulator or you may be disappointed as it was a mission to get proper fitting equipment together as they were very limited with what they had on board.

The AAK captain (and also the dive guide) on our second day was very unpleasant when we went to check in with him. We had expected the same dive guide from the day before, but learnt he was not there and our new man was not expecting us and to top it off, had no clue as to who we were. We were told to go and wait for him while he made a few angry calls and then came back a little later singing a slightly different tune – mockingly. A slightly wry start to our morning and not sure at this point whether this was going to get any better. All the diving equipment we had spent the prior afternoon getting together, was no where to be found and we had to start all over again.

Seeing our slight frustration while getting his own divers ready for the wreck dive, we were very fortunate to meet Simon Banks, owner of the Windmills Diving School based in Protaras (45 minutes to an hours drive from Larnaca). Simon always comes down with students to dive the Zenobia and was the friendliest face on the boat along with his colleague, Doc. As well as being incredibly social, Simon is also full of facts and knowledge about diving in Cyprus and within 10 minutes of chatting, we had learnt a great deal! He highly recommended that we get our dive guide to take us inside the Zenobia, if not he was happy for us to tag along with him (our guide did not recommend us going in with the intent to take photos or just couldn't be bothered).

As we kitted up, we finally got to plan our dives and explained where we had dived on the Zenobia the day before and our reluctant dive guide decided we would dive the same place but slightly deeper! On seeing we would only have 3 dives in total on the Zenobia to photograph it, we asked if diving the same area was really worthwhile photographywise. It turned out it wasn't as Simone had already accomplished the shots we had needed in this part and we had to pin this guy's arm back to get him to take us inside the wreck to see all the commotion we had read up on for our third dive. He eventually agreed.

DIVING DESTINATIONS

We have to say, that entering the Zenobia was an incredible experience and was a fantastic opportunity for photography. It also allowed us to see certain things we didn't even know were there as our guide did not take any torches down or point anything of interest out to us which you expect. We were led in blind. Simone's flash highlighted certain bits of colour that we later discovered were all sorts of fun things when we got back to our hotel to check out the days shoot. We knew that we had ended up in the restaurant at one point as the red tartan carpet was highlighted! Our entry point was through a fairly large opening and buoyancy is important as you do pass through a lot of corridors and change depths a few times. You do need to make sure you have a dive computer to monitor your dives. The dive on the inside is every bit as good as it is described and you see how it rates as one of the top 10!

One thing is for sure, we all agreed we would love to go back and dive the Zenobia all over again, but next time we would go through another dive centre as it makes all the difference to your diving experience and what you pay for as our diving saga with AAK continued the following morning.

The last morning's dive was meant to have been at the Pyla Caves so that we could experience another type of diving. I made sure to call the manager from AAK first thing in the morning (we had still not met him at this point into our trip) before heading down to breakfast to confirm we were in fact sticking to the intinerary. He nonchalently confirmed that we were going and closed with "and we'll have a coffee!" The ending to that conversation was not convincing.

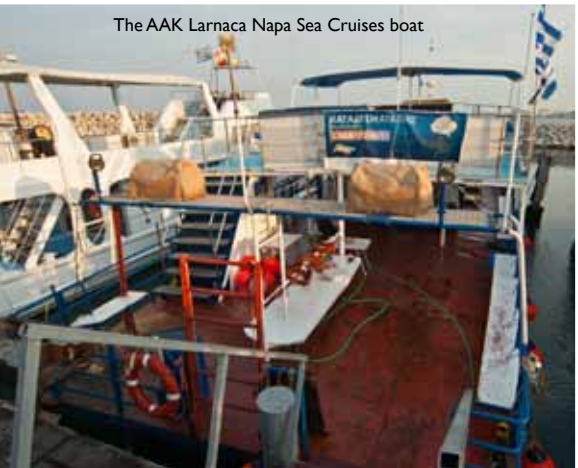
We headed out on our 10 minute morning walk to the Larnaca Marina from our hotel and found out that we were in fact not going to the Pyla Caves but instead to dive the Zenobia again because the winds had changed direction. To cut a long story short, we had to at this point say our thank you's and make a break for it as this was one diving experience we could not end our memories on – least of all share with our readers!

We went back to our hotel and immediately called Simon Banks up and he opened an invitation for us to get to his dive centre at our earliest and he would take us to The Caves, a lovely little dive site in Cape Greco.

The cheapest option to getting around and the most fun, is to of course hire your own car! We'll skip the part about us walking out to find a car dealer we were recommended and couldn't find (although hilarious, the people we met along the way were incredibly friendly and helpful) and just tell you about the part our lovely hotel receptionist organised a rental for us in 2 minutes flat! Within 30 minutes, the car was delivered to our hotel.

Larnaca Marina

The AAK Larnaca Napa Sea Cruises boat



A small fishing port

The Pyla Caves

Windmills Hotel Apartments

A look at a one bedroom aparment's kitchen and living room

A LITTLE BIT ABOUT OUR HOTEL:
The Livadhiotis City Hotel is situated just 100 metres from the famous Larnaca Seafront (Phinikoudes Beach) and located in the heart of Larnaca's town centre. It is surrounded by lots of great cafés, pubs and restaurants, only 10 minutes away from the Larnaca International Airport and just a stone's throw away from the towns main shopping and commercial centre.

The surrounding area is steeped in history with the historical Saint Lazarus Church directly opposite the hotel, while the Pierides Museum, the Larnaca Marina, the Medieval Castle, and the Larnaca Archaeological museum are all within a short walking distance. It was a great place to stay and the staff were brilliant.

So, we ended up on a road trip to Protaras, saw some lovely scenery along the way and made it over in a relaxed 45 minutes. The dive centre is conveniently located at the Windmills Hotel Apartments, a family owned and run complex which offers studios for 2 or 3 persons or one bedroom apartments for 2 or 4 persons with all the amenities required for a comfortable stay.

Simon got us each sorted out with properly fitting equipment in no time and we left the dive centre and followed Simon's pickup in our little rental and he went out of his way and stopped to show us a couple of beautiful landmarks on our way to the dive site which are great to see.

If you are not going to dive in Cyprus, there is plenty to see and visit. They have a very rich history and culture that is worth exploring and finding out about.

We reached our lovely spot, parked the cars and got ourselves ready for the walk down to the water's edge. Slightly tricky with steel tanks and a little extra weight on our backs, plus hauling the heavy camera and video equipment while trying to keep our balance – but with careful footing we made it down the rocky path and did a backwards roll off the ledge into the very clear blue water and descended beneath the surface where a new world lay before us!

A FUN FACT WE LEARNT: Believe it or not, there are no tides or currents there.

The Caves is a really fun dive site and the topography is beautiful and so different. It's an easy shallow dive with a maximum depth of 12 metres consisting of holes, tunnels and overhanging rocks. Photographers can have a lot of fun here using diver models to add some depth to their images.

Simon had seen a seal at this dive site a few days before, but we unfortunately did not get a visit. We did see a lovely little orange moray eel and we saw our first Neptune's Lace. Katie Brooks, a marine biologist for The Manta Trust came along as part of the EDA team and gives a detailed description of the marine life we got to see on our dives in Cyprus on page 74.

If it were not for the 5mm wetsuits, gloves and booties, I don't think I would have managed to stay down as long as we did on our dives. It was 16°C at one point, which does take a little getting used to. I highly recommend getting a hoodie as most of the local/resident divers were all (maybe not all of them…but most of them) wearing one. I know I will be investing in one for future dives in those temperatures.

As 3 divers sent out on a mission for this latest EDA FAM trip, we have learnt to make a turnaround out of something not so good, into something so good you envisage coming back to do it all over again, but this time with the added value of good knowledge and experience. We enjoyed our dives so much and there are many more dive sites to explore. That will be one to plan and look forward to for another time.

Oh, and if you love to eat – as we sure do (you won't be able to get enough of the halloumi!) – then Cyprus with the added bonus of good food, diving and historical sites makes a great long weekend destination. All the tastes and sites of Cyprus are ever so close.

Emirates have a 4 hour direct flight from Dubai to Larnaca!

PLACES WE RECOMMEND:

The hotel we stayed at in Larnaca:
LIVADHIOTIS CITY HOTEL
50 Nikolaou Rossou Street
P.O. Box 42800, 6021 Larnaca
Tel: +357 24 626 222
Email: info@livadhiotis.com
www.livadhiotis.com

These are the restaurants we experienced and suggest you ask them to give you a sample of their choice (food is fresh, homemade and incredibly sumptious that you always manage to find room in the bottom of your stomach for one last bite):

MILITZIS RESTAURANT
(they offer a rich selection of genuine homemade Cypriot dishes – they make their own delicious halloumi)
42, Piale Pasia Street, Larnaca
Tel: +375 24 655 867

CHARMERS RESTAURANT
(famous for their meat dishes, but we opted for fish not knowing this little fact)
Piale Pasia Street, Lordos Seagate, Larnaca
Tel: +375 24 624 127

TARATSA
(opposite the beautiful St. Lazarus Church)
Corner of Mehmet Ali & Pavlou Valsamaki, Larnaca
Tel: +375 24 621 782

KARAS VILLAGE TAVERN
(known for their exquisite seafood dishes)
Kennedy Avenue, Kappari 55, Paralimni
Tel: +375 23 820 565
www.captainkaras.com

The dive centre we can recommend to dive with:
WINDMILLS DIVING SCHOOL
SIMON BANKS
128 Prenera Avenue 69, Protaras
Tel: +357 96 213 982
Email: admin@windmillsdiving.com
www.windmillsdiving.com

The dive centre accomodation:
WINDMILLS HOTEL APARTMENTS
Pernera Avenue 75, Protaras, P.O. Box 33075, Paralimni
Tel: +357 23 831 120
Email: windmills@cytanet.com.cy
www.windmillshotel.com.cy

Thank you to the Larnaka Tourism Board in Cyprus for arranging the FAM Trip itinerary and the guided tour on our rest day to Agia Napa and thank you to the Cyprus Tourism Board in Dubai for the overall invitation.

Cyprus in your heart

THE SMALL ISLAND OF CYPRUS AND WHAT LIES BENEATH ITS SURFACE

FEATURE **KATIE BROOKS** PHOTOGRAPHY **SIMONE CAPRODOSSI**

The small island of Cyprus lies in the eastern corner of the Mediterranean Sea a far cry from the shores of the UAE and an even further cry from seas in which I have spent the majority of my career as a marine biologist. Nearly all of my scientific experience has been in the tropics and the vast majority of that in the Indian Ocean, so when I was asked to join a trip with EDA to Cyprus to look at the marine life, I jumped at the chance.

Being a marine biologist is probably one of the most enjoyable jobs in the world, but it encompasses so much more than simply knowing your fish. Working as a marine biologist also means working with governments, fishermen, tourists and a whole host of other stakeholders and involves issues as wide ranging as fishing, protection, enforcement, research, education, communication, management and recreation as well as knowing and understanding the marine life of a particular area. So it was with all this in mind that I travelled to the Mediterranean to learn more about what it's really like in the waters of Cyprus!

The name Mediterranean is derived from the Latin mediterraneus, meaning in the middle (medius) of the land (terra) and even the quickest of glances at a map confirms this to be true. The sea is confined by Europe in the north, Africa in the South and Asia to the east with the only natural entrance to the open ocean at the Straits of Gibraltar, a narrow 14km wide passage to the Atlantic. The Mediterranean is a 'young' sea geologically speaking having mostly filled just 5million years ago through the narrow channel at the Straits of Gibraltar and it is due to this, that most of the biota are primarily derived from Atlantic species.

Historically the Mediterranean has played an import role in the history of a number of ancient civilisations and today some 21 states have a coastline on the Mediterranean. It is a major shipping route, especially since the opening of the Suez Canal in 1879, linking its water's to those of the Red Sea meaning ships can avoid passing around Africa. It is a source of food for many and in addition has an important role as a tourism centre – a lot of pressure over a small area. So, how does the Mediterranean hold up? And what is it like to venture into and under these waters… my trip to Cyprus afforded me some major insights.

The first site we dived was a wreck called the Zenobia, which is boasted by the many dive operators around Larnaka, where it lays just one and a half kilometres from shore, to be amongst the top wrecks to dive in the world. There's no doubt that it is amazing and the excellent visibility we experienced, common throughout the Mediterranean, enhances your dive as you can take in so much of the 178 metres of this wreck even at a glance.

Neptune's Lace, photo by Katie Lee

In terms of marine life there is much to be seen, but unlike other wrecks you might have experienced it perhaps quite not as abundant or as diverse as some of the other 'top wreck dives' in the world. Wrecks are renowned for their ability to create a habitat where there would otherwise not be one, they provide a hard substrate which many species need as a holdfast to start populating an area. Having been submerged for just over 30 years, life has had time to infiltrate the Zenobia. The outside surfaces of the ship, every spare inch, are coated in a variety of species of seaweed, algae and seagrasses including peacock's tail (*Padina pavonica*), common caulerpa (*Caulerpa prolifera*) and creeping caulerpa (*Caulerpa racemosa var. occidentalis*) a non native species possibly originating from the Red Sea via the Suez Canal or even Australia. Although these algae cover her every surface, they don't obscure the outlines of the ship itself. Such a habitat makes her the perfect site for the two-banded bream (*Diplodus vulgaris*) who are usually found in seagrass meadows and algae covered rocks and are very unafraid of divers! This bream alongside the planktivourous damsel fish (*Chromis chromis*) are by far the most prolific and conspicuous species you'll see on the wreck. Looking beyond this reveals a number of other species feeding and busying themselves amongst the algae gardens that are the Zenobia, including the ornate wrasse (*Thalassoma pavo*), white bream (*Diplodus sargus sargus*) and if you look very closely, white tipped nudibranchs (*Coryphylla pedata*) and bearded fire worms (*Hermodice caruncalata*) who look unassuming, but are active predators. They're even able to cause nasty burn-like skin irritations to divers if they rub against the white tufts which line their sides. There's even the odd barracuda (*Sphyraena sphyraena*) hanging in the blue above the wreck.

Amongst the algae a variety of sponges have also colonised the wreck, in particular the black sponge (*Ircinia spinosa*) encrusts the surfaces of the wreck, its colony's up to 20cm in diameter. Less common species include the yellow tube sponge (*Verongia aerophoba*), this specimen with a small rockfish (*Scorpaena nota*) hiding within it. A variety of tube worms including the stunning spiral tube worm (*Spirographis spallanzani*) and the white tufted worm (*Protula tubulaira*) also dot the surfaces of the ship, picking plankton from the water with their feathery arms.

Inside the ship, away from the sunlight required for the green algae and seagrasses to thrive, encrusting algae and bryzoans coat the surfaces. Tube worms here too find corners upon which to unfurl their feather-like branches and large dusky groupers (*Epinephelus marginatus*) gather to stalk out their prey.

Amongst the species I have mentioned, a few come from beyond the waters of the Mediterranean and our next dive experience was to go further in highlighting the issue of invasive species in Mediterranean waters. When the Suez Canal was opened in 1869, for the first time the Red Sea and Mediterranean waters were linked and as well as allowing the movement of ships and cargo, it also enabled the movement of species from the Red Sea into the Mediterranean. These species are known as invasive species and in the case of the Suez Canal, the higher waters of the Red Sea mean that water flows from there into the Mediterranean. Invasive species can often be more adapted to an environment than their endemic counterparts and in this case the Red Sea is saltier with less nutrients than the Mediterranean which allows certain species to slip into the same ecologic niches which have been filled by endemic species for millennia, using the same resources and competing for space and food. Sometimes they live alongside their existing counterparts and in other instances they have caused major problems. This isn't an overnight issue, barriers to migration do exist, but gradually over decades certain physical barriers are lessened and one at a time, species find their new niches. A 2006 paper reported that 65 species of fish had migrated to a new environment in the Mediterranean from the Red Sea. Talking to the divers who have been in Cyprus even for as short a time as 6 years, it appeared that new species were seen with each passing year and that something as simple as a fish ID slate could not be kept up to date.

Our second site, The Caves, was certainly a real hotspot for these invasive species, situated on the Cape Greco Peninsula. The

site was beautiful and allowed us to explore the shoreline of this area and the caves just below the water. The lunar-like rocky seascape was coated in many of the same species of algae and seagrass as the Zenobia, but from the corner of my eye about 2 minutes into the dive, I spotted a blue spotted cornet fish (*Fistularia commersonii*) a broadly distributed Indo-Pacific fish! Within the algal habitat I also spotted many of the same species I had seen on the Zenobia, including the bearded fire worms which were even more abundant at this site and a second species of nudibranch, the purple nudibranch (*Flabellina affinis*), but again, fish in large were absent.

Inside the caves, algae encrusted the surfaces and Bryzoans such as Neptune's lace (*Sertella septentrionalis*) coated the roofs. The cardinal fish (*Apogon imperbis*) hovered around the cave entrances and a school of Vanikoro sweepers (*Pempheris vanicolensis*) first recorded in the Mediterranean in 1991, lurked in the shadows. There was even the odd solider fish (*Sargocentron rubrum*), another invader.

My time in Cyprus although short, revealed that the Mediterranean is a sea, like most, under pressure. Invasive species and over fishing were the two most obvious threats it faces, especially from a diving perspective, with much talk amongst the divers that I spoke with about the conflict between them and fishermen. The Zenobia, for example, is reputed to be a protected site although there was much scepticism about whether or not this was indeed the case amongst the local dive community. Problems like this unfortunately do not have simple solutions and it will remain to be seen what the future might hold for the waters around this small island nation upon which its population rely on so heavily.

PHUKET – THAILAND

FEATURE AND PHOTOGRAPHY **PHILIPPE LECOMTE**

Thailand is well known for its food, massages, nice people and the beautiful landscapes depicting temples and rice fields.

But if you look on a map, Thailand has a lot of sea coast on both sides of the peninsula with some islands. The Gulf of Thailand (part of the China sea) is in the west and the Andaman sea is in the east. Phuket is an island on the Andaman Sea side that is linked to the peninsula by a bridge. If you want to reach this island from the UAE, you have to pass by Bangkok. There is a flight to Phuket every hour from Bangkok.

Most of the dive sites are on the south of the island. Karon Beach, Kata is a good place to stay there. Finding a dive club on the island is very easy but you need to be careful of the prices for a full day of diving. Ask if you will have a guide from the shop with you or not. In Phuket, all the dive clubs drive you to the pier in Chalong Bay in order to get a bigger boat for the days diving. All the boats belong to different companies and not to the dive clubs themselves. On board there is a dive guide that does not belong to your dive club.

Diving in Phuket is really nice and surprising too. Racha Noi, Koh Racha Yai, Koh Doc Mai, Anemone Garden, Shark Point or the wreck dive, King Cruiser are just some of the beautiful sites to discover.

Phuket is well known for its Leopard shark population but unfortunately, like in most asian countries, these sharks are over fished, they are however very common around Shark Point. There are chances of also seeing Black tips or Bamboo sharks that are common around Phi Phi Island. Mantas can also be seen on the extreme south of Racha Noi. Macro photographers will have plenty of stuff to see too. Nudibranchs, Ghost pipe fish, Clown fish, Anemone shrimps or even Harlequin shrimps.

In the far west of Phuket, the amazing dive sites of Koh Similan can be visited. You need to stay over one night to thoroughly enjoy this beautiful island. Whale sharks are common as well as all the other big fish such as mantas, sharks and schools of barracudas.

Phuket is not just about diving, resting on the beach or drinking in the pub. Phuket has a lot to offer all the family with its water park, elephant rides, day trip to the James Bond Island and much more. So why not try Thailand for your next holiday destination!

WHYTECLIFF MARINE PARK: CANADA'S FIRST

FEATURE AND PHOTOGRAPHY **MARC ANTHONY VILORIA**

If you have ever overstayed a dip in the ocean, or dawdled too long in the bathtub, you know that being in the water can be a chilling experience. Water conducts heat away from your body 20 times faster than air does, so you cool much more rapidly in water.

That is why cold water diving is another diving adventure to reckon with. Being in Vancouver, British Columbia, a much colder place compared to Dubai, didn't stop me from diving or teaching it. I first braved the waters of the North Eastern Pacific in February 2012 where the water temperature is 2°C. Well, of course you won't be able to get away with that freezing temperature without wearing a dry suit and trained to use one. Thanks goes to the International Diving Centre (**www.diveidc.com**) for providing that training and teaching me the opportunities. I finally got my ticket to teach the Dry Suit Specialty course last March.

British Columbia is an awesome scuba diving and vacation destination, and Vancouver is definitely a 'world-class' city. There are plenty of dive sites in British Columbia, the more famous and inviting ones are located at Vancouver Island. However, we are blessed

to have several dive sites in Vancouver, at the Horseshoe Bay which is part of the Strait of Georgia. The widely visited dive site is the Whytecliff Marine Park which is only a 20 minute drive from downtown Vancouver.

Whytecliff Marine Park's rugged shoreline and cobble beach lies in West Vancouver's Horseshoe Bay neighborhood. In 1993, the municipal Whytecliff Park became Canada's first Marine Protected Area. Harvesting or collecting any marine life beneath the waters of this sanctuary is prohibited. 200+ marine animal species with exotic names such as the speckled sanddab, the sunflower seastar, Califonian sea cucumber or plumose anemone call these waters home, yet pay no property taxes, despite living in Canada's most affluent community. Although the majority of park visitors prefer gum boots over wet suits, Whytecliff has become a magnet for divers.

As you make your way along the beach at Whytecliff Marine Park, you'll see wet-suited figures emerge from the embankment and make their way towards the ocean. Often times, after a day at the office, scuba divers complete their day with a little weightlessness as they float off into the nether water world, where temperatures matter little year-round, provided you dress appropriately.

The bay is shaped like a half bowl and can go as deep as 80-100 meters. As you look out from the shore, the left side is a rocky breakwater that leads out to nearby Whyte Islet. At low tide you can clamber up its steep slopes and find a sheltered spot beneath a lone shore pine. Keep an eye on the progress of the tide. It's a cold swim back to shore! However, the Whyte Islet is one dive site that you can ponder because it houses a variety of not so usual catch. If you are lucky, you may find a resident giant octopus in a spot called the crack or a seal that swims and plays around

in calm water conditions. The right side of the bay on the other hand are a more popular spot for recreational and student divers alike. The shallow wall (5-10 meters) is covered with tons of star fish with the more common one, the sunflower sea star. Not to be out run, macro photographers will enjoy finding different species of nudibranches such as the *Acanthodoris nanaimoensis* or the *Dendronotus albus* most of the time.

Around the corner of the starfish wall is the artificial reef of boat fragments that commonly houses greenlings, cod fish or groups of rock crabs. Venturing west, you will be welcomed by an astonishing view of the white plumose garden. Little facts about plumose anemone; also called frilled anemone, it has a wide base, sometimes 12cm across. The column may grow to a height of 50cm. The color of the cylinder and the tentacles can be in shades of white, yellow, orange and brown. Large specimens may have a thousand tentacles. If patient enough to hang around and nibble in some plumose anemone, you may find some anemone shrimps that camouflage around its tentacles.

Further west, the bottom turns darker as you approach the site called "The Cut'. This spot is usually a challenge for technical divers from different diving associations. You will find some PADI sidemount divers or GUE (Global Underwater Explorers) divers either training or doing longer no deco diving. The Cut is also accessible from the other side of the park but requires strong legs to climb up or down a steep hill and jumping across some driftwood.

Beside the beach, interpretive signs explain in words and pictures the variety of marine life to be found beneath the surface. Although you have to take most of it on faith, occasional life forms do bob to the surface, such as the head of a curious seal or a school of divers. The setting here at the mouth of Howe Sound is dramatic, with the vastness of the Strait of Georgia spread out to the west.

Ferries serving Vancouver and Bowen Islands and the Sunshine Coast glide in and out of nearby Horseshoe Bay. As the wake from the larger boats hits the shoreline, it creates modest surf but it's an unusual sight in these sheltered waters.

On all but the busiest summer weekends, visitors can usually find a secluded spot with a driftwood log for a backrest. Follow one of the rough but well-trodden trails that run along the top of the cliffs. Small sets of rock stairways lead here and there.

A list of rules of conduct, prominently displayed in the parking lot, are directed primarily at the divers who are encouraged to change in the washrooms and to keep their language clean! Finding your way to Whytecliff Marine Park, is rewarding enough as you will drive a scenic route of Marine Drive.

DEEP THOUGHTS. THE MAKE-UP OF NITROGEN NARCOSIS.

FEATURE **RENÉE DUNCAN WESTERFIELD**

Photo by Pedro De Ureta

"I am personally quite receptive to nitrogen rapture. I like it and fear it like doom… L'ivresse des grandes profondeurs has one salient advantage over alcohol: no hangover. If one is able to escape from its zone, the brain clears instantly and there are no horrors in the morning. I cannot read accounts of a record dive without wanting to ask the champion how drunk he was."

Jacques Cousteau, The Silent World

NITROGEN NARCOSIS

What is it? Named by Jacques Cousteau "l'ivresse des grandes profondeurs," or "the rapture of the deep," nitrogen narcosis is an ever-present factor for scuba divers.

Why so? Divers breathe compressed gas. Usually it's air, but technical and commercial divers breathe special mixtures of other gases. And for 165 years, beginning with the work of a French scientist named T. Junod in 1835, scientists have recorded altered behavior in individuals breathing compressed gases.

Junod, for example, noted that when his divers were breathing compressed air, "the functions of the brain are activated, imagination is lively, thoughts have a peculiar charm and, in some persons, symptoms of intoxication are present."

Similar signs and symptoms have been noted by other scientists throughout the years, including Paul Bert, a scientist better known for his keystone work in decompression illness and oxygen toxicity. When tunnel workers and divers breathed compressed air, strange and sometimes dangerous warning signs occurred, with euphoria, intoxication, stupor, arrested activity and unconsciousness.

Later, in 1933, the British Royal Navy conducted an investigation and discovered that 17 of 58 dives 61.7 and 107.9 meters resulted in a "semi-loss of consciousness". The Royal Navy scientists recognized this as a serious condition because, for example, the diver continued to give hand signals at depth but later could not recall any of the events that had taken place underwater.

The first quantitative evidence of the narcotic effect of compressed air at depths came in 1937 when two United States Navy scientists, C.W. Shilling and W.W. Willgrube, tested the effects of compressed air between 27.8 and 92.5 meters on 46 men who performed addition, subtraction, multiplication and division exercises. Shilling and Willgrube recorded the time it took each man to perform these tasks and the number of errors each made at increasing depths.

They found that experienced workers were less affected, and that the most severe signs and symptoms appeared immediately when the subjects arrived at the target pressure. They discovered that the narcosis intensified with rapid compression.

In the 1950s, a growing number of quantitative experiments began using different tests to determine subjects' intoxication levels. With studies still ongoing in nitrogen narcosis, scientists have measured slower arithmetic and motor skills in affected divers, a decrease in attentiveness and slower responses; and they have documented physical effects such as body sway, manual dexterity and disturbances in vision in "narked" divers.

Throughout the years, navigating the complexities of each successive set of experiments, the big picture comes into focus: Breathing compressed air or gas at depths can be intoxicating.

BACKGROUND

Nitrogen narcosis is part of a larger syndrome called inert gas narcosis. Tracing the symptoms of narcosis specifically to nitrogen, the most common inert gas in air (79 percent), came around 1935 – a century after narcosis was first identified by Junod. He observed

example, showed a definite alteration in thinking skills when divers reached 10 meters.

Nitrogen narcosis has been called "the martini effect," or "Martini's Law," because of its alcohol-like effect, a feeling often compared to drinking a martini on an empty stomach: being slightly giddy, woozy, a little off-balance. One rule of thumb states that divers should consider the narcotic effect of one martini for every 15 meters of seawater.

that as the pressure of inhaled nitrogen in compressed air increased, warning signs of intoxication progressed, moving from an initial feeling of euphoria to drunkenness and finally to unconsciousness.

It was U.S. Navy physicians A.R. Behnke, E.P. Motley and R.M. Thomson who first attributed the narcosis to the raised partial pressure of nitrogen in compressed air. They demonstrated that when their subjects breathed compressed air deeper than 20 meters, it caused "euphoria, retardation of the higher mental processes and impaired neuromuscular coordination."

At 30 meters, the signs and symptoms became more apparent. Divers experienced "a feeling of stimulation, excitement and euphoria, occasionally accompanied by laughter and loquacity," sign and symptoms similar to those effected by from alcohol, oxygen deprivation (hypoxia) and the early stages of anesthesia.

The subjects also experienced a slowing in their thought processes, and their responses to visual, auditory, olfactory and tactile stimulation were delayed. Concentration was difficult, memory became faulty, and the subjects experienced a tendency to fixate on ideas. Their powers of association became limited. They made errors in recording data, and mathematical exercises became more difficult. Fine movements were more difficult, but in general intellectual functions were more impaired than their physical dexterity.

In other words, moving around wasn't a big issue for them, but keeping their thoughts focused became a lot harder.

Sound familiar? If any of this rings a bell, you've experienced nitrogen narcosis, too.

WHEN DOES IT STRIKE?

Researchers believe the potential for narcosis exists as soon as a diver begins to descend, but generally most divers have felt the effects beginning somewhere around 30 meters. Narcosis has hit other divers sooner, however, as shown with Behnke and associates' experiments, demonstrating that individuals have varying levels of susceptibility. A recent test in a Navy recompression chamber, for

Deaths attributed to nitrogen narcosis occur mostly among sport divers who exceed recreational limits. Scientists believe narcosis results from a slowing of nerve impulses precipitated by the effect of inert gas under high pressure. How does this happen? The narcotic potency of inert gases is related to their affinity for lipids, or fat. When nitrogen seeps into the fatty structures around the brain, it slows the communication between cells, and therefore, slows down your thinking and reaction times.

Narcosis is not unique to nitrogen; however; it can occur with many of the so-called "noble" or inert gases, with the exception of helium. Add to this the fact that other inert gases each have their own brand of narcotic effects at depth, and you have a complicated picture for technical and commercial divers. One of these rare gases, argon, for example, has about twice the narcotic potency of nitrogen, but helium has very weak narcotic properties and is less soluble than nitrogen in body tissues.

This is why we find helium used in deep and saturation diving, as demonstrated by diving physiologist R.W. Hamilton in ground-breaking experiments he conducted in 1966. Mixed with oxygen and called heliox, this mixture is less likely to impair deep divers, although they still have to undergo decompression in order to prevent decompression sickness (DCS). Helium has its drawbacks, however: it has a high thermal conductivity, which requires the use of heated diving suits and breathing gas; it is quite expensive and difficult to store; and it distorts the voice.

WHAT CAN YOU DO?

As to the cause of narcosis, there is one prevalent theory that states nitrogen partial pressure is responsible. One fact that emerges from all this research is that there is a wide range of susceptibility among individuals. And individual sensitivities can vary from day to day.

The fact is that if you dive, you take the chance of getting narked. The good news is that if you do experience narcosis, the shallower you get, the less you'll feel the effects. And it doesn't take long at all for the effects to wear off once you're topside.

Before you dive, however, stop and take stock of these suggestions:

- Know your limits. Exercise your discipline. Diving is a multitasked activity: You have to pay close attention to your thoughts, feelings, attentiveness in addition to your buddy, depth and air consumption. If you notice a sudden lightheadedness or experience confusion, try to step back mentally and take stock of what's happening to you and around you. Then slowly ascend to a shallower depth.
- Watch your carbon dioxide levels. Increased levels of CO2 can increase your potential for narcosis. The working or swimming diver wearing a breathing device is more susceptible to narcosis than a diver in a chamber. And the effect is synergistic: that means they can sum up.
- Avoid alcohol. When you're planning your dive excursion, keep in mind that alcohol augments the signs and symptoms of narcosis. Why? "Because of similar (and additive) effects to excess nitrogen, alcohol should be avoided before any dive. A reasonable recommendation is total abstinence at least 24 hours before diving; by that time effects of alcohol should be gone," advises dive physician Dr. Lawrence Martin.
- Be rested when you dive. Refrain from hard work and its resultant fatigue before and immediately after your dives. Work and fatigue can causes higher levels of CO2 in the body, which results in metabolic effects on the neurotransmitters in your brain.
- Be calm before you dive. Go well prepared so you can look forward to your trip. Anxiety increases your susceptibility to narcosis. "The exact mechanism isn't known," adds Dr. Peter Bennett, "but it has an effect on the brain's neurotransmitters, in the same place anxiety operates."
- Descend slowly on deep dives. Experiments have shown that rapid compression affects divers more severely than a slower compression.
- Stay warm. Cold makes narcosis worse. As with anxiety, the precise mechanism is unknown, but cold can have analgesic and anesthetic effects. These reactions in turn can be synergistic, packing a greater-than-expected punch.

If you, like our diving friend Mr. Zeimer, feel the effects of narcosis and recognize it, head for the surface and fresh air. Remember to breathe, ascend slowly, make your safety stop, then get out into the open. You'll be back to normal in no time. And if you have questions about nitrogen narcosis, call the DAN Medical Information Line.

DAN®
DIVERS ALERT NETWORK EUROPE

PREVENTION OF MALARIA FOR SCUBA DIVERS

FEATURE **BARBARA KARIN VELA, MD**

Many divers are travelling to explore more oceans and see more life underwater. In certain areas like Africa and South East Asia, malaria is a year round concern. The risk of contracting malaria is different from region to region: divers visiting countries such as Papua New Guinea, Bougainville, the Solomons and regions such as West Africa are at a considerably higher risk of getting the disease than in other areas of the world.

It is important that the drug taken against malaria is safe for divers, and that the malaria parasite is not resistant to it.

The most important ways of preventing malaria is to avoid mosquito bites and to take an anti-malaria tablet. Last, but not least, it is important to seek medical help as soon as possible if malaria is suspected.

To avoid mosquito bites, one should stay indoors from dusk till dawn, sleep in the air-conditioned area previously treated with insect repellent or sleep under a mosquito treated net. In case that staying outside from dusk till dawn can not be avoided, one should wear long sleeves, trousers, socks and shoes and have regular applications (every 4 hours) of the DEET containing insect-repellent to all exposed areas of the skin.

The next step of protection from malaria is to take the preventive medicine in a form of a tablet. Some people believe that taking the preventive drug will make the diagnosis of malaria more difficult, which is not the case. Unfortunately, taking the drug does not prevent malaria 100%, so avoiding bites is still very important. Not all anti-malaria medications are safe for divers, but as malaria in the worst case can be fatal, taking the drug to prevent it is justified. As I already mentioned before, in case of suspected malaria, seek immediate medical attention: any flu like illness starting 7 days or more after entering a malaria endemic area is malaria until proven otherwise by repetitive blood tests, by establishing other diagnosis or by spontaneous recovery (like in influenza).

There are several different drugs, which can be given for prevention of malaria, and unless there is resistance of the malaria parasite to the drug, they are all equally effective.

The safest drug for divers is doxycycline, a general antibiotic that is 99% effective in the prevention of malaria. Being a general antibiotic, it protects against other tropical diseases like thick-bite fever and leptospirosis. It also has some value against traveler's diarrhea. This medication is taken daily; it is started 1-2 days before entering the malaria area until 4 weeks after leaving the area. The side effects are mild, but you could experience nausea, vomiting, diarrhea, allergy and rash caused by exposure to the sun (the use of sunscreens and hats is recommended). This drug/medicine should not be used during pregnancy or by children younger than 8 years of age (SCUBA diving is not considered safe for these two groups in any case). This is the drug that is recommended by DAN (Divers Alert Network) Southern Africa as the drug of choice for protection against malaria for divers in Sub Saharan Africa.

The second drug, which is available in the UAE, is Malaron, a combination of atovaquone and proguanil. Safety in diving has not been confirmed, but many divers have used it with no adverse effects. There are reports of additional sensitivity to motion sickness. It has 98% overall efficacy against malaria strains that are resistant to other drugs. It is taken daily, 1-2 days before the arrival within the malaria area, during the stay there and 7 days upon return. The most often side effects are heartburn, mouth ulcers and headaches. It is not considered safe in pregnancy, in patients with kidney disease and in children <11kg (neither is SCUBA diving).

The third drug available in the UAE is mefloqune (Lariam). The drug is taken once per week, so it has convenient dosing, and is 90% effective against chloriquine resistant malaria. The regime starts 1-2 weeks before entering the malaria area, while there and 4 weeks upon leaving it. Mefloquine may cause drowsiness, vertigo, joint pains, and can interfere with fine motor coordination, making it difficult to exclude decompression illness in some cases, and for this reason it is considered unsafe for divers and pilots, but it is a good first choice for other travelers.

There are a few other drugs that are available in other countries for prevention of malaria, like chloroquine and proguanil. When taken together they offer around 65% protection against malaria, but they have different regimes and therefore can be misused or confused. Chloroquine is taken once a week, starting two weeks before the exposure to malaria, during the exposure and 4 weeks upon leaving the malaria area. The side effects are headaches, nausea and vomiting, diarrhea and rashes. Proguanil is taken daily starting one-week prior to the exposure, during the exposure and 4 weeks after it. The side effects are heartburn, loose stools and mouth ulcers. Both are considered safe for SCUBA diving in the areas without chlorioquine resistance.

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UPCOMING **EVENTS**

UNEP

WORLD ENVIRONMENT DAY | 05 JUNE
Green Economy: Does it include you?

WORLD ENVIRONMENT DAY & WORLD OCEANS DAY

8 June – EDA dives the Dubai Mall Aquarium

MOVIE SCREENING WITH GLOBAL OCEANS

20 June – TBA

REEF CHECK

22 June – Abu Dhabi

SUHOOR NETWORKING EVENT

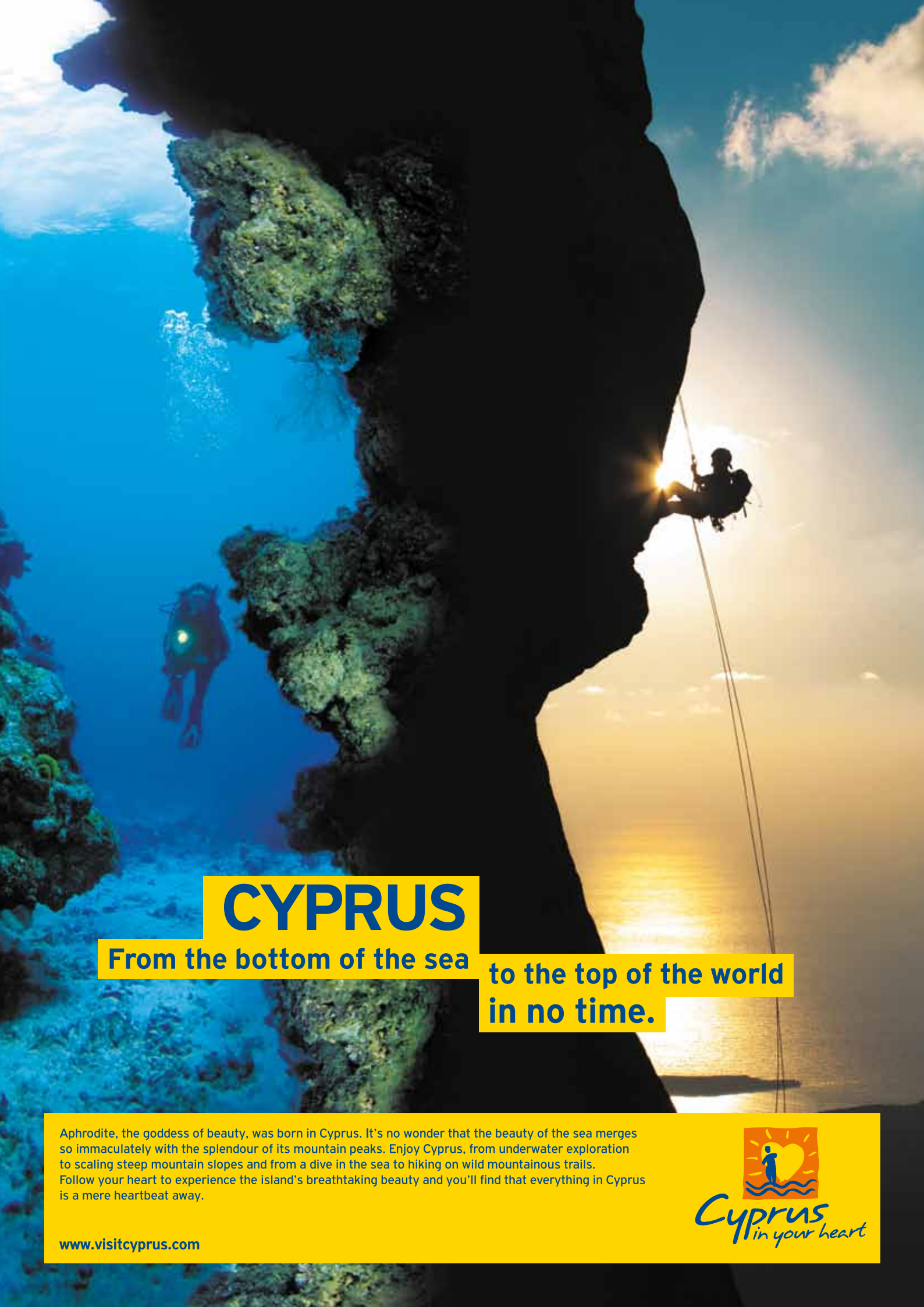
1 August – TBA

INTERESTING **LINKS AND RESOURCES**

MARINE **PROTECTED AREAS**

- http://chagos-trust.org/
- https://sites.google.com/site/thechagosarchipelagofacts/
- http://campam.gcfi.org/campam.php

EDA
جمعية الإمارات للغوص
Emirates Diving Association



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