Inspiring People to Care About our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

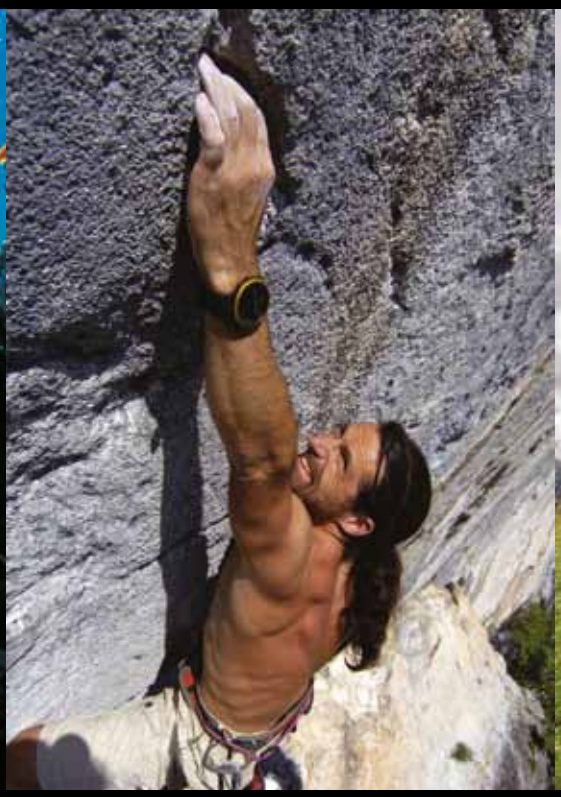
WWW.EMIRATESDIVING.COM | MAGAZINE | MARCH 2012 | VOLUME 8 | ISSUE 1

DIGITAL ONLINE

THE UAE'S ONLY

UNDERWATER PHOTOGRAPHY & FILM COMPETITION

SUUNTO



LIFE IS NOT A SPECTATOR SPORT

Diving

D6i

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Integrated tilt-compensated 3D digital compass • Full continuous decompression algorithm • Four dive modes: Air, Nitrox, Freedive, Gauge Built-in dive planner • Detailed graphical logs and dive data on your laptop using Suunto DM4 with Movescount software

D4i

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Sunrise/Sunset Time • Dual Time • Button Lock • 4 Language Menu

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Training

M5

VERSATILE GUIDANCE FOR MULTI-SPORT EXERCISE

Fitness test • 3 personal targets – improving fitness, weight management or free training • Daily exercise instructions with ideal duration and intensity • Automatically adapting exercise program for the next 7 days Real-time intensity guidance during workout • Recovery time recommendation after exercise

M4

PERSONAL DAILY EXERCISE GUIDANCE AND MOTIVATION

Fitness test • 3 personal targets – improving fitness, weight management or free training • Daily exercise instructions with ideal duration and intensity • Automatically adapting exercise program for the next 7 days Real-time intensity guidance during workout

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EDA
جمعية الإمارات للغوص
Emirates Diving Association

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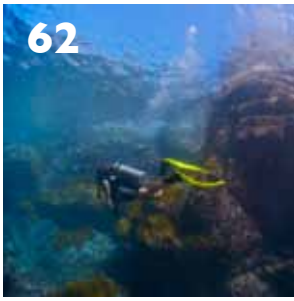


REGULARS

NEWS

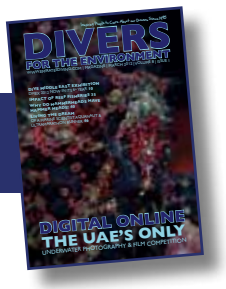
CORAL NEWS

REEF CHECK

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 June 2012. Send all articles, feedback or comments to: **magazine@emiratesdiving.com**

EDA COVER
PHOTO BY ALASTAIR MCGREGOR



REDUCE REUSE RECYCLE

Please recycle this magazine after you have read it.

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17 YEARS AND STILL GOING STRONG AT EDA

IBRAHIM N. AL-ZU'BI
EDA Executive Director

Now that 2012 has begun, I find myself excited to have another year working with the UAE's diving community; whether it be through thinking of new ways to promote for diving and marine conservation or whether it be passionately documenting marine heritage.

When HH Sheikh Zayed Bin Sultan Al Nahyan, the late President of the UAE gave his blessing to found EDA in February of 1995, he was as equally passionate as the founders of EDA about the importance of conserving the marine environment, our pearl diving heritage and regulating the diving industry in the UAE. His passion inspired the team at EDA to constantly strive to raise awareness for these issues, which we have successfully proven to do over the last 17 years. Because of this, I would like to take this opportunity to thank all EDA members and staff for showing dedication, loyalty and the passion to make the last 17 years possible. I would also like to thank the board of Directors and founders who not only showed vision but also admirable leadership and passion for our marine life. The fact that so many of us are reading 'Divers for the Environment' here today, is a true recognition of the difference that EDA has made to our environment over the last 17 years. We continue creating campaigns to make even more of a difference over the next 17 years, and I'm sure we will continue to have your support and your valuable time and energy in doing so.

To kick off the 2012 activities, we started our own Environmental Training Programme – 'The Story of Stuff' (SOS); a programme which promotes for a sustainable lifestyle where we can reduce our impact on the planet and make smart choices that won't harm the environment. Due to a high demand for this training, we offer the programme along with our usual EDA marine conservation awareness project to companies and organisations in the UAE.

For this year's Digital Online – the UAE's only underwater photography and film competition – will not only continue to have amazing underwater photos and footage, but it will also be the official UAE regional platform for underwater photographers to share their knowledge and experience with their fellow divers.

Our 17th year as EDA, also sees the 20th year anniversary to our partner; the Dubai International Boat Show (DIBS), who have shown us incredible support for the last 6 years as we have showcased our Dive Middle East Exhibition (DMEX) within DIBS. The partnership with the boat show not only put DMEX on the regional and international water sports map, but also became a platform for the diving industry to offer special discounts on the latest diving equipment for divers and even for beginners looking to start their diving courses. We'd like to thank DIBS for a successful partnership that resulted in DMEX being the region's only dedicated diving event.

EDA will also be focusing on getting more divers trained for Reef Check. We're proud that EDA is the home of the UAE's only Reef Check Course Director; EDA's marine biologist Rita Bento, who will of course be the driving force behind getting more diving instructors trained to do the surveys and teach other divers. The main focus will be collecting data, analyzing the findings and continuous monitoring of our marine life. Any small change noticed in the environment, whether negative or positive must be shared with National and International marine conservation organisations. Our goal is to have all of our members be environmentally aware divers, and I am confident that with your support we can reach our goal. To keep up to date on the developments of this training, please make sure to read the Reef Check news in this issue as well as upcoming issues.

I do hope that you enjoy reading our first issue of 2012, I can promise you that it is a very rich one with countless inspiring articles, photos and stories of success. One of these said stories is the 'Blue Project' interview with BBC Oceans cameraman and photographer; Hugh Miller. This interview is definitely worth a read as it shows how organisations and people can promote and share their passion to protect our marine environment.

I'm also pleased to welcome back to 'Divers for the Environment', EDA's longtime friend, and one of the most passionate divers I have had the pleasure of working with; Ernst Van Der Poll. Having recently moved to the British Virgin Islands after 12 years in the UAE promoting for diving and marine conservation, Ernst's article is a must read.

I am also happy to see that our health section has various articles, and I hope that they answer some of the questions that we all face for various diving health problems.

If we can resolve to work tirelessly in common effort in 2012, then we will achieve our common purpose; a world that is safer, cleaner, and healthier, and a future that is worthy for our children. I know sometimes making a difference can be difficult but difficulty is no excuse for complacency and unease is no excuse for inaction. We still need your support to help us on our mission. Each of us must do what we can and when we can to grow the diving industry without endangering our planet; and we must all do it together.

John F. Kennedy once observed that 'Our problems are man-made; therefore they may be solved by man.' It is true that for too many years, mankind has been slow to respond or even recognize the magnitude of the climate threat. But this is a new day. It is a new era. We can still make a difference.

Ibrahim Al-Zu'bi

DIGITAL ONLINE 2012 REGULATIONS

COMPETITION OPENED: 1st January 2012 | **DEADLINE:** 30th April 2012 @ Midnight | **EMAIL:** photo@emiratesdiving.com

Digital Online's main objectives are:

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

Digital Online is open to UAE Nationals and all people living in the UAE under a valid Residence Visa and of any diving qualification with a valid EDA membership.

Photos below L-R: **1st PLACE WIDE ANGLE 2011** – Photo by Adam Skrzypczyk, **2nd PLACE MACRO 2011** – Photo by Warren Baverstock, **3rd PLACE MACRO 2011** – Photo by John Hager.

SPONSORS AND PRIZES

BIOSPHERE EXPEDITIONS – Maldives Expedition
BIOSPHERE EXPEDITIONS – Musandam Expedition
DIEVAS WATCHES – Dievas Watches
DISCOVER ORIENT HOLIDAYS – Dive Package Destinations
TOURISM MALAYSIA – Diving Destination to Sipadan for 2
ATLANTIS DIVE CENTRE – PADI Rebreather Course
NOMAD OCEAN ADVENTURES – 2 Day Package with a Rebreather DSD Dive
SHEESA BEACH DIVE CENTER – Camp and Dive Package
AL BOOM DIVING – Day Dive Trip for 2 on the East Coast
AL BOOM DIVING – Shark Dives in Dubai Aquarium
FREESTYLE DIVERS – PADI Fluorescent Aware Course
AL MAHARA DIVING CENTER – Day Dive Trip in Abu Dhabi
EDA – The Underwater Photographer by Martin Edge

PRIZE SPONSORS:

The prizes, certificates and trophies will be presented to the winners on Wednesday, May 30th 2012 at the Gallery of Light at DUCTAC, MOE.

THE RULES

By entering the competition, entrants declare that they own copyright of the submitted photographs and films and it entails an automatic acceptance of all the rules and regulations. EDA reserves the right to publish winning images in both, the 'Divers For The Environment' magazine and on the EDA website. Winning images will also be used in any future promotional material for EDA, events and competitions royalty free, but copyright remains with the photographer. Use of images or video will require no additional written or verbal permissions from the photographer or videographer.

Competition organizers will take the utmost care in handling digital files submitted to the competition. However, competition organizers will not be held responsible for any loss of the submitted material at the time of uploading images. No media such as CD's, DVD's, memory cards and sticks will be returned to the participants unless fully stamped and self addressed return envelopes are provided with the submission of the original files.

Images must not have already been submitted to previous Digital Online Competitions.

Manipulation is restricted to colour correction, brightness, contrast, sharpening and cropping. The Digital Online judges reserve the right to examine untouched images if requested.

Removing backscatter is allowed to an extent, this does not include the removal of subjects such as fish or divers or cutting and pasting sections of images from one to another.

Participants are obligated to follow environmental conservation regulations and to share respect for the underwater world during the process of taking their stills and film. Be advised that any damage to the protected underwater world, including the disruption of the natural habitat of the marine life, provocation through touching, displacing, feeding or annoying, is prohibited and will disqualify the images or the photographer/videographer. Our marine biologist will help us identify images or video where subjects have been 'moved to a better background' etc.

The final deadline for submitting images and video for the 5 different categories is Monday, April 30th 2012, at 23:59 pm.

The finalists will be announced and their work displayed at the event on May 30th 2012. Participants who do not make it to the evening of the event will be asked to collect their prizes from the EDA offices.

We pledge to run this regional photography competition ethically and with integrity. Our judges have volunteered their time to help and to some it might be important to note that the photographers' details remain hidden to the judges during the judging process.

CATEGORIES

PHOTOGRAPHY

WORLDWIDE IMAGES: Photographers can enter their photographs into 3 categories, Fish, Macro and Wide Angle. Entrants may enter a maximum of two images into each category.

AMATEUR SECTION: Amateur underwater photographers to state so at registration – Restrictions for point and shoot photographers only with built in strobe.

1. FISH: Photographs of whole fish and/or fish parts as the main visual element (not mammals, crustaceans, molluscs etc.) taken with any lens, portraying its natural behavior and environment.

2. MACRO: Photographs taken with close up-equipment, portraying underwater flora and/or fauna. The main element not being fish. The photographer may not crop the original more than 20%. The original image may be requested.

1st PLACE FISH 2011 – Photo by Warren Baverstock

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

VIDEO

4. MARINE LIFE: Show off your creative and editing skills. Maximum duration including credits – 5 minutes.

5.WRECKS: Getting good wreck footage can be a challenge due to the size of most wrecks and the generally limited ambient light. Maximum duration including credits – 5 minutes.

PRIZES RECEIVED

All winners in first, second and third places of each of the 5 categories will receive a certificate, trophy and voucher/prize from SPONSOR.

The list of prizes/sponsors may change due to unforeseen circumstances.

Prizes are awarded to the winners in person and only they are permitted to make use of them unless stated otherwise.

Dive resort stays and livaboard trips awarded as prizes do not include air travel, taxes and other expenses, unless stated otherwise by the relevant sponsor.

A participant can win multiple times in each category but only the top prize in each category will be awarded. The next prize will be passed on to the next winner down the line and so forth.

PERSONAL SAFETY

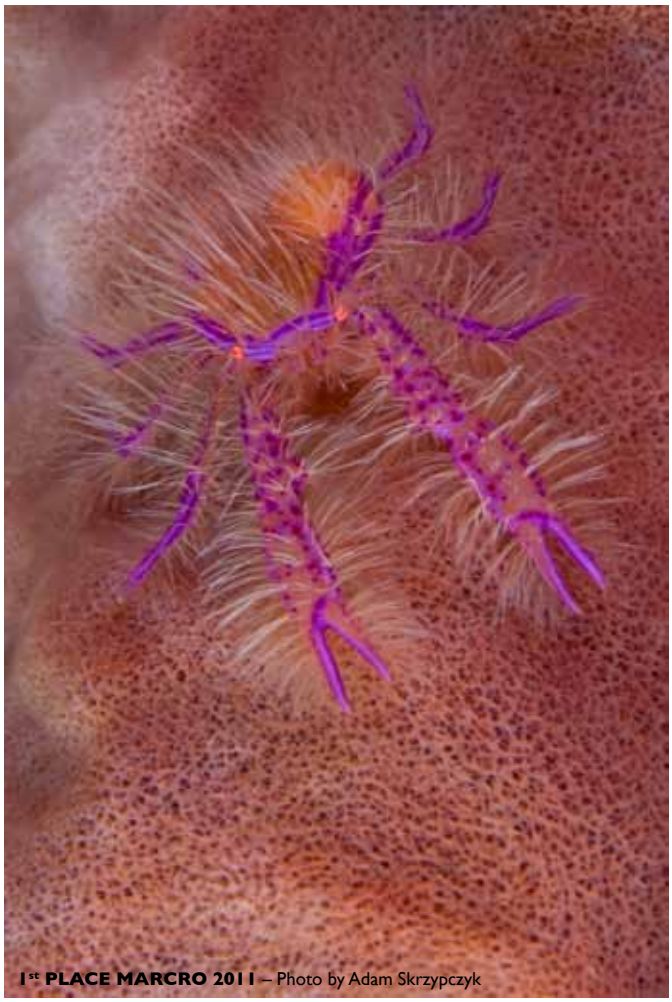
Participants are responsible for their own safety and for the proper use of their diving and photography/video equipment. Divers must dive within the limits of their own dive certification level and according to the local diving regulations (remember to take your dive certification and diving insurance with you on all your trips).

Competition organizers and sponsors do not accept responsibility for the safety of participants during their diving activity, nor do they accept responsibility for any damage or loss to personal equipment that may occur as a result of diving activities.

REGISTRATION AND IMAGE UPLOAD

Registration opened from January 1st, 2012 and closes on Monday, April 30th 2012, at 23:59pm. Registration to Digital Online is free.

The participant must be an active EDA member and send their details and images via email to **photo@emiratesdiving.com** with the following information:
Full Name
EDA Membership Number
Camera Model



1st PLACE MARCRO 2011 – Photo by Adam Skrzypczyk

Images must be submitted by email in JPEG format at a maximum size of 1024 pixels wide (landscape) or 768 pixels high (portrait). Resolution must be 72dpi. File names should comprise the photographers name and the category, eg. JSmithWideAngle1.jpg or JSmithMacro2.jpg, etc.

Video submissions must be in PAL format on DVD and sent to the following address:
EDA Magazine
Emirates Diving Association
P.O. Box 33220
Dubai
UAE

You will receive an email to confirm your registration and image upload. If you do not receive one within 24 hours, your email may not have come through and you may need to try again unless it has passed the deadline.

DIGITAL ONLINE JUDGES

ALLY LANDES – EDA

EDA Events Coordinator, Graphic Designer, Photographer and Videographer
Ally has been working with EDA since December 2004 where she created and introduced the quarterly magazine, 'Divers for the Environment' and is the magazine's Editor. She branded and helped foresee the development of Digital Online from its launch in 2009 and has since managed the event. She is a graphic designer photographer and underwater videographer and keeps busy within her fields of passion always looking to fill gaps with new improvements, developing EDA's brand and designs. She is also a PADI Instructor, using the experience within everyday life at EDA.

REEMA ABBAS – EDA

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

MARCELO MARIOZI – UNDERWATER PHOTOGRAPHER

Marcelo Mariozi was born and raised close to the sea in Rio de Janeiro, shooting underwater since 1999. He is a CMAS Dive and UW Photo Instructor and Captain of the Brazilian UW Photo Team. Marcelo is an airline pilot living in Dubai and created the set up of EDA's Digital Online Underwater Photography Competition in 2009.

JONATHAN ALI KHAN – WILD PLANET PRODUCTIONS

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

NUNO SÁ – WILDLIFE PHOTOGRAPHER

Professional Photographer Specializing in Marine Life
Nuno has been a professional photographer since 2004, specialized in marine life photography. He is the author of three books and several dozens of articles published in National and International magazines. He is the co-author of the "Azores Diving Guide" – Portugal's first published diving guide, and a regular collaborator of several magazines, such as National Geographic Portugal. He is the first Portuguese wildlife photographer nominated in some of Europe's major nature photography competitions, such as: Wildlife Photographer of the Year and Asferico International Nature Photography Competition, amongst others. Nuno is also on the Wild Wonders of Europe's team of top European nature photographers. This is the world's biggest ever nature photography project with an expected public of over 100 million people, a project supported by the National Geographic Society.

DIGITAL ONLINE
EMIRATES DIVING ASSOCIATION
PHOTOGRAPHY AND FILM COMPETITION

We look forward to receiving all your entries for 2012! Good luck!

2nd PLACE FISH 2011 – Photo by Simone Caprodossi

EDA CONDUCT A **TWO DAY WORKSHOP** FOR DUBAL STAFF

EDA conducted a two day workshop for Dubal on the 13th and 14th of December. The workshop was titled, 'The Story of stuff' based on the short film by Anne Leonard.

Since 'The Story of Stuff' first premiered in 2007, it has been watched online over 10 million times. The Story of Stuff Project has received thousands of requests for educational programs and has partnered with organisations such as UNEP, Green Faith, Earth Charter, and many others to meet this need.

The workshop program has been developed for the youth and adults and is designed to ignite their passion for life, help them understand the problems the planet is facing, raise awareness of the changes needed and empower them with inspiration.

Jamal Al Falasi and Reema Al Abbas were the facilitators of this workshop. 40 people were trained, 20 each day. The workshop provoked a lot of debates, questions and self analysis.

If you are interested in the SOS workshop, please contact EDA directly for further information.

DIVE MIDDLE EAST EXHIBITION




Now in its 6th year, the immensely popular Dive Middle East (DMEX), held alongside the highly anticipated 20th Anniversary of the Dubai International Boat Show, will run from 13 - 17 March, 2012 at the Dubai International Marine Club, Mina Seyahi.

In conjunction with the Emirates Diving Association (EDA), DMEX is without a doubt recognised as the largest and most successful dive exhibition in the MENA region.

DMEX 2012 is set to be the biggest and the best sales event of the year, with the largest selection of promotions and products on display in the event's history. DMEX offers a dedicated platform for participants to showcase and promote the very latest in diving equipment, services and techniques to a captive audience including traders, dealers and the ever increasing number of diving and leisure enthusiasts who visit this unique event year on year.

Maintaining its unique position as the only dive exhibition in the Middle East, the 6th edition of DMEX will occupy an enhanced dedicated area within the Dubai International Boat Show as a direct result of its unprecedented growth over the past years.

In Conjunction with

In Association with

13 - 17 March 2012
Dubai International Marine Club, Mina Seyahi
www.boatshowdubai.com

DMEX
DIVE MIDDLE EAST EXHIBITION

DIVE MIDDLE EAST EXHIBITION
DMEX 2012 IS NOW IN ITS 6th YEAR

AL BOOM DIVING
STAND NO: DMEX M2

The ever popular Al Boom Diving stand will be back even bigger and better than before for DMEX 2012. New Products, new Brands, a new Dive Shop and Workshop along with a growing Team of Staff – a lot has been happening at Al Boom Diving. Make your way to the DMEX-M2 stand to meet the team and make the most of Al Boom Diving's Boat Show Special Offers, whether you're looking to sign up for your next PADI Dive Course, Book a Dive Trip to Fujairah or the Musandam or find a deal on the latest and best diving equipment.

Aqua Lung, Apeks, Cressi-Sub, Suunto, Poseidon, Innovative Scuba Concepts, Underwater Kinetics, Sea and Sea, GoPro, Amphibious Outfitters, Trident Diving Accessories, Sea Pearls weights, XS Scuba Cylinders, Bauer Compressors and more… you'll find it all at the Al Boom Diving stand!

AL MAHARA DIVING CENTER AND MARINE SPORTS
STAND NO: DMEX L9

Al Mahara Diving Center is a premiere PADI 5 Star Instructor Development Dive Center offering a full range of services. With our professional team of experienced instructors and technicians, we offer PADI scuba diving training from entry level to instructor development and scuba diving and snorkelling trips locally and abroad and kayaking excursions in the mangroves with excellent customer service and safety in mind. We are also an Aqualung Partner Center and carry a full range of branded name scuba equipment such as Aqualung, Apeks, Suunto, Camelbaks, Spyderco, Cressi Sub, Dive Rite, Suunto Dive Computer, PADI materials, Scuba Innovation, Amphibious Outfitters, Airhead and Malibu Kayaks, an innovative design of quality sit-on-top kayaks for the casual paddler to the adventurer and the sea anglers and much more. We are here to provide the best customer care, quality products and brand equipment to all our marine enthusiasts. Come to visit us at DMEX as we will have great offers on scuba diving equipment, kayaks and accessories, courses and excursions!

Discover and sign up for our Abu Dhabi based activities whether it's for you, your friends or your company for a great outdoor adventure and experience. You can check us out on our website **www.divemahara.com**.

Come and experience the natural beauty and heritage of Abu Dhabi through the Al Mahara experience!

ATLANTIS DIVE CENTRE
STAND NO: DMEX L2

Atlantis Dive Centre, a PADI 5 star Instructor Development Dive Resort, PADI Tec Rec and National Geographic Centre is located on the iconic Palm Jumeirah at the Atlantis Hotel.

Open 7 days a week with 2 salt water training pools and 3 custom built dive boats, we are pleased to offer the divers of Dubai the best facilities,

amenities and PADI training. Our dedicated team of PADI Professionals and friendly staff are always happy to assist divers and non-divers with any questions they may have.

Dive enthusiasts can join us for dive trips off the Dubai coast, PADI Courses, Project AWARE 'Dive Against Debris' events and more!

We also offer the PADI Rebreather Diver courses for those who are interested and PADI Tec Rec courses including the newly launched PADI Side Mount Diver course!

BLUE WATERS MARINE
STAND NO: DMEX F8

Blue Waters Marine are leading retailers of game fishing tackle with many renowned brands, such as Shimano, Penn, DAM, Yo-Zuri, Abu Garcia, Berkley, Sea Striker, Boone, American Fishing Wire and many more.

The long list of products offered includes rods, reels, lures, lines, hooks, baits and other sport fishing tackle for trolling, popping, jigging, bottom and surf fishing. Blue Waters Marine entertain orders received from their online and actual stores from either the UAE or abroad and deliver on the same business day in Dubai and the following business day in other parts of the UAE. International shipping is also available.

Blue Waters Marine strives to offer unbeatable value and keep up with the latest developments in the industry to offer their clients the advantage of hot product introductions, promotions, special offers and exclusive pricing found at Blue Waters Marine. They understand and respect their clients' needs and work hard to meet or exceed them.

DELMA INDUSTRIAL SUPPLY & MARINE SERVICES HOLDING
STAND NO: DMEX M1

We are a marine designated company established since 1976 under the name of Delma Industrial Supply & Marine Services Holding.

PRODUCTS WE REPRESENT

- Mercury Outboard Engines
- Mercruiser Stern Drive Engines
- Onan Generators
- International & AWL Grip Paint
- Boat Parts & Accessories
- Oil and Lubricants
- Quick Silver Inflatable Boats
- Connelly Ski
- Marlow Ropes
- Safety Equipments
- Marine Buoys & Fenders
- Life Jackets
- Scubapro Diving Equipment
- Boats/Sea Ray, Bayliner, Boston Whaler & Gulf Craft

We take pride in being leaders in the United Arab Emirates for world class marine engines and aquatic leisure accessories, plus our waterfront location in Al Bateen gives us direct access to the extensive waterways surrounding Abu Dhabi.

Currently, we have an office in Bahrain and Abu Dhabi. Premises include two large showroom floors displaying a full selection of our products, a large stock containing more than 12,000 spare parts and our large workshop fully equipped with the latest computer technology to service and support all of our clients' needs.

Cont. on next page

NATIONAL TOURIST OFFICE OF DJIBOUTI
STAND NO: DMEX L19

One of the most fascinating areas of the African continent, The Republic of Djibouti is an ideal destination for ecotourism.

The majestic and alluring unconventionality of its land, irrigated by a sumptuous sea, its traditions of hospitality, its legendary nomadic shepherds and now its facilities in constant development, can only entice tourists and travellers eager for beauty and a change of scenery.

Sports are available in the form of safaris, underwater diving, big game fishing, swimming, water-skiing, sailing, sand yachting, hiking, etc.

UNIQUE LANDSCAPES.
Lake Assal is a truly natural and beautiful point of interest, within a framework of volcanoes and black lava, 153m below sea level, abutted with salt and gypsum floes of dazzling whiteness.

Several volcanoes rise up right near the lake, the most recent of which, the Ardoukoba, dates from November 1978, in a landscape from an absolutely monumental cataclysm. Within a few kilometres from there, the boundless bay of Goubet-AL-Kharab, surrounded by vertical cliffs, interconnects with the sea by a narrow channel. This is the bottom of the gulf of Tadjourah, also known as the 'Abyss of the Devils'.

A visit to the Day primal forest is absolutely indispensable. The path meanders for approximately fifteen kilometres on the massif before reaching the forest situated at an altitude of 1,500m. Giant junipers, locust trees, feral olive trees, as well as jujube trees and other specimens of a flora lined from the earth's surface cover a surface area of 3, 2km^2 which has been commissioned into a national park.

Make sure not to miss Lake Abbé and its lunar-like landscapes. It is an unusual setting which unveils itself to the eyes of the traveller. A landscape of an eerie world with its hundreds of needle-like, limestone chimneys, from a few metres to more than fifty metres in height; here and there from perennial, warm water springs, some of which bubble, supporting the development of pastures above all others in the Republic of Djibouti.

The enthusiasts of sand yachting can practise their favourite sport in the Grand Bara, a great 25km long and more than 10m wide desert area, thanks to a centre located on the spot by the Tourist Office.

DJIBOUTI ENCHANTMENT OF SUBMARINE LIFE
The coasts of the Republic of Djibouti are lined by classic, fringing type reefs. All of the richness and diversity of a fauna and a flora which is characteristic of the cliffs of the vast Indo-Pacific area and the Red Sea can be viewed there. The relative isolation of the reticule which forms the gulf of Tadjourah has remarkably favoured the creation and the development of a still vague number of species, also known as endemic (which exist nowhere else).

On the not-so-deep reef, in addition to the magnificent coral formations in the delicate and coloured arborescence, one can observe the evolution of about (at least) twenty species of chaetodons and pomacanthes (butterfly fish and angel fish) with a distinctive abundance of 'duke fish' (*Pygoplites diacanthus*), the most beautiful of the coral fish.

The unceasing round dance of the large palette surgeon fish, linked to the unending bustle of wrasse and the beds of green and blue parrot fish, in the midst of myriads of multicoloured damselfish, all contribute to the swarming effect which can be admired by all.

Sometimes a curious and daring horse mackerel, adorned with golden spots, swims right in front of a diver to gaze at him for a few moments before continuing its journey in its paradise.

On the white sand rests the extraordinary, small golden-speckled ray, spotted with azure, under the peaceful eye of a grouper lounging in the shade of a large table of Acropora coral.

A big book would not suffice to describe the excitement of the teeming life within the reefs of the Republic of Djibouti, which are already classified among the most beautiful jewels of the tropical, underwater world.

EMIRATES DIVING ASSOCIATION
STAND NO: DMEX M5-2

EDA is a non-profit voluntary federal organization and is accredited by UNEP as an International Environmental Organization.

Our mission is to conserve, protect and restore the UAE marine resources by understanding and promoting the marine environment and promote environmental diving.

Divers can prove extremely utile in conserving the marine environment through observing, reporting and preventing environmental abuse.

Visit us and collect a copy of the EDA March magazine issue, 'Divers For The Environment' and come and meet Project AWARE who are joining us at our stand this year.

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

ESAL MARINE
STAND NO: DMEX L16

Esal Marine, a division of Esal Trading LLC is a specialty marine and water sports distribution company that services the Middle East markets with the latest unique products from all around the globe with a main focus on brand building and excellent customer service trying to redefine the leisure of water sports in the Middle East with affordable products that satisfies all tastes.

We are proud of being the Middle East Exclusive Distributors for SEA-DOO® and SEASCOOTER™ and with this range of products, our aim is to enhance the water sport and leisure industry to provide extreme water sport fun to our customers.

You can soon start following us on our website **www.seascooters-me.com**

GLISS-SPEED
STAND NO: DMEX L18

Discover the first electric water kart in the world: Gliss-Speed and experience unlimited sensations of speed and glide, feel safe while exploring and forget about all noisy, slow or complicated boats. Gliss-Speed is a new concept of environmental friendly pleasure crafts, easy to pilot and doesn't require a license. Working with batteries providing an autonomy of 2h at 25km/h, you can recharge it on a simple outlet and the electric engine makes the use of Gliss-Speed very silent.

After our success in promoting and selling our boats in France, we are now going international, starting in Dubai. Try Gliss-Speed during the Dubai Boat Show!

Please feel free to visit us on our website: **http://www.gliss-speed.com**

GOLDEN DOLPHIN SAFARI WORLD
STAND NO: DMEX L4

Golden Dolphin Safari World is a Liveaboard – also known as a diving safari, takes you out to explore the most interesting dive sites of the Red Sea in Egypt. It is one of the biggest and most impressive adventures in a diver's life. Discover the Red Sea on one of the comfortable boats of Golden Dolphin Safari World.

HIGH ACCURACY TRADING L.L.C.
STAND NO: DMEX M4-2

هـــاي أكـيـــورســي للتـــجـــارة ش.ذ.م.م.
HIGH ACCURACY TRADING (L.L.C.)

High Accuracy Trading L.L.C. is duly organized and exists under and by virtue of the UAE laws with its principal business at the heart of Al Qusais, supplying diving accessories to local markets and exporting to nearby countries.

From the four years of existence, we supply cheaper diving accessories than other competitors. The quality of items are assured and meet customer satisfaction. Items are imported and made in Germany, Italy, USA and Japan.

Guided by philosophies of commitment to provide cost effective, quality products, good service and customer satisfaction, High Accuracy Trading L.L.C. strives to be most competitive in its niche.

For more information regarding our company and products, please see our facebook page FUN DIVERS.

Or follow this link:
http://www.facebook.com/pages/Fun-Divers/245973692100391

Our contact details are as follows:
Tel: (00971) 4 251 1470 / (+971) 4 267 1549
Fax: (+971) 4 251 1471 / (+971) 4 267 1579
Mobile: (+971) 55 570 2808
E-mail: m_highco@yahoo.com
We look forward to serving your company.

NOMAD OCEAN ADVENTURES
STAND NO: DMEX M4-1

NOMAD OCEAN ADVENTURES
www.discovernomad.com

Nomad Ocean Adventures is a dive resort based in Dibba, Musandam. The dive center is based in our 15 room guesthouse with shared bathroom facilities and a swimming pool. Our out table is well known amongst divers and many come to us because of the good food and atmosphere with our variety of home cooked dishes from France, the Mediterranean, Marocco, Mauritius, India and Oman.

We have two speed boats with Yamaha four stroke low carbon emission engines, each accomodating 15 divers and customized for divers and their equipment. We offer free nitrox to all certified divers but also rebreather rental and training. We also offer all PADI courses from introductory courses to Divemaster with many speciality courses. We offer a hard bargain on courses and dive packages with meals and accommodation! You can come on a weekend and relax and dive or sharpen your diver skills. We can offer courses in English, Russian, French and Afrikans!

We have been open since 2004 and have taken diving to another level and know the Musandam like the bottom of our wetsuits! Nomad has undertaken a lot of environmental causes below its wing and supports many local sustainable projects as well as beach and underwater clean ups.

Join our facebook page: Nomad Ocean Adventures Musandam.

THE PAVILION DIVE CENTRE
STAND NO: DMEX M5-1

As a PADI Career Development Centre, we can provide you with just about any PADI course you might be interested in from Discover Scuba Diving to PADI Instructor. In addition to mainstream scuba training, we also hold (DDI) Disabled Diver Training for Instructors and divers with disabilities. We also specialize in the education of children aged 12 to 18 through the Jumeirah Tawasul project and in addition to gaining a PADI license, children can also get involved in our environmental projects. We regularly dive at the popular shipwrecks off Dubai as well as the impressive Musandam. We stock SCUBAPRO dive gear and accessories. We have a great deal for you this year at DMEX so come and visit the booth for more information.

PREMIERS FOR EQUIPMENT
STAND NO: DMEX L7

Premiers For Equipment is a 100% local establishment based in Abu Dhabi, UAE founded in 2001 dealing with several government authorities, municipalities, oilfield companies, divers and diving centers as sole agent to worldwide companies. We are committed to provide a first class service to complement our quality products and to offer our clients, strong local support along with the latest technology in the field of recreational and technical diving. Our main aim is to make diving easier, more enjoyable and to discover the pleasure of the underwater world. We are the sole distributor of OCEANIC-USA and AERIS-USA for recreational diving, HOLLIS-USA for technical diving, PICASSO-Portugal and PERSISTENT-USA for spear fishing, EXPLORER CASES Italy for waterproof cases, TEKNODIVER for custom made wetsuits and OCEANREEF for underwater telecommunication systems.

PROJECT AWARE FOUNDATION
STAND NO: DMEX M5-2

Project AWARE Foundation is a growing movement of scuba divers protecting the ocean planet – one dive at a time. They focus on two major ocean issues – Sharks in Peril and Marine Debris, or trash in the ocean. There are many conservation issues converging on the ocean planet at once, but Project AWARE are concentrating on these serious problems

where scuba divers are uniquely positioned to directly and positively affect real, long-term change in these two areas.

SEYCHELLES TOURISM BOARD
STAND NO: DMEX L17

Seychelles Tourism Board – Dubai Office is the Tourism Representative of the Seychelles in the Middle East. Our role is to promote the destination throughout the Middle East to its targeted audience and in particular to niche segments such as diving, sailing, fishing, golf and spas. Seychelles offers an impressive array of diving opportunities both for experienced divers and those taking the plunge for the first time. Colourful reef fish, octopuses, lobsters and turtles can easily be spotted in the shallows surrounding the inner islands, while more adventurous dives offshore are the playground for large groupers and stingrays.

Address: 100 Al Fattan Plaza, PO Box 36345 Dubai, UAE
Tel: +971 4 286 5586
Fax: +971 4 286 5589
Email: seychelles@stome.ae
Website: www.seychelles.travel

SUBWING
STAND NO: DMEX L0

SUBWING is a small established company dedicated in inventing and developing new exciting products to introduce to the watersports market.

After a year and a half of intensive testing and developing, we give you a set of wings that literally takes the knowledge of the sky into the water and totally reinvents the way we experience the ocean and move underwater…The "SUBWING" is born…

SUUNTO
STAND NO: DMEX L1-A

A heritage of reliable sports instruments.

Suunto is a leading designer and manufacturer of sports precision instruments for diving, training, mountaineering, hiking, skiing and sailing. Prized for our intuitive design, accuracy and dependability, our precise instruments combine the aesthetics and functionality of watches with sport-specific computers that help athletes at all levels analyze and improve their performance.

Suunto has channelled its engineering processes and sporting passions into designing the best instruments for the most challenging conditions. Whether divers, mountaineers, runners or other athletes, and regardless of skill level, the Suunto user community is bonded by a common passion for performance and design. Suunto products and services provide accurate and reliable guidance about our users' environment and their bodies, and inspire them to push their limits and get the most out of their active lifestyle.

Suunto Diving Instruments are Distributed Exclusively in the UAE by Al Wifaq General Trading LLC. **Tel:** +971 4 221 2323.

TOURISM MALAYSIA
STAND NO: DMEX L11

Tourism Malaysia's mission is to promote Malaysia as an outstanding destination of excellence and to make the tourism industry a major contributor to the socio-economic development of the nation. Visit our official website at **www.tourism.gov.my** for further information.

Malaysia Truly Asia!

A recap of 2011


EDA
PROTECT


ATLANTIS


EXIT


VOTE
BU TINAH
VOTE NOW!

CORAL REEFS OF THE GULF CONFERENCE
NEW YORK UNIVERSITY – ABU DHABI INSTITUTE

FEATURE **RITA BENTO**

Dr. Steve Coles from the Bishop Museum and Hawaii Institute of Marine Biology presenting, "Thermal tolerances of Reef Corals in the Arabian Gulf".

From the 17th to the 19th of January, the research wing from the New York University – Abu Dhabi Institute, hosted the Coral Reefs of the Gulf conference. This two and a half day conference included a series of themed symposium sessions, each opened by an expert keynote addressee renowned in the field. The conference brought together leading regional and international scientists working on the marine systems in the Arabian Gulf and the surrounding seas. The main objective of the conference was to discuss the current understanding of coral reef ecosystems in the region, to open a dialogue on future research directions, and to discuss how this research could be better integrated with regional marine management programs.

The different sections throughout the conference included, "Regional Coral Community Structure and Dynamics", "Molecular and Cellular Patterns and Processes on Regional Reefs", "Physical Factors Affecting Regional Reefs", "Other Reef Fauna" and "Conservation and Management of Regional Reefs", as well as a locally-focused session on specific studies of unique reef sites in the Gulf. The conference was kept small and focused (around 100 participants) in order to foster greater interaction amongst participants.

EDA was invited to present a poster at the conference about the benthic communities of the Musandam Peninsula, a project that EDA has been working on since April, 2011 with the support of Ford Motor Company – Conservation and Environmental Grants.

The results achieved with this study with the general higher values of live coral cover, the families abundance and the species' richness, suggests that the Musandam area might have an important role for the reef communities within the Arabian Gulf and the Gulf of Oman. Some of these important results show:

- Higher average coral cover in the Musandam Peninsula (69.7%) when compared with other studies done in Abu Dhabi (40.1%), Dibba (52.5%) and the South-East Musandam (32.5%) (Bauman et al. 2010; Burt et al. 2011);

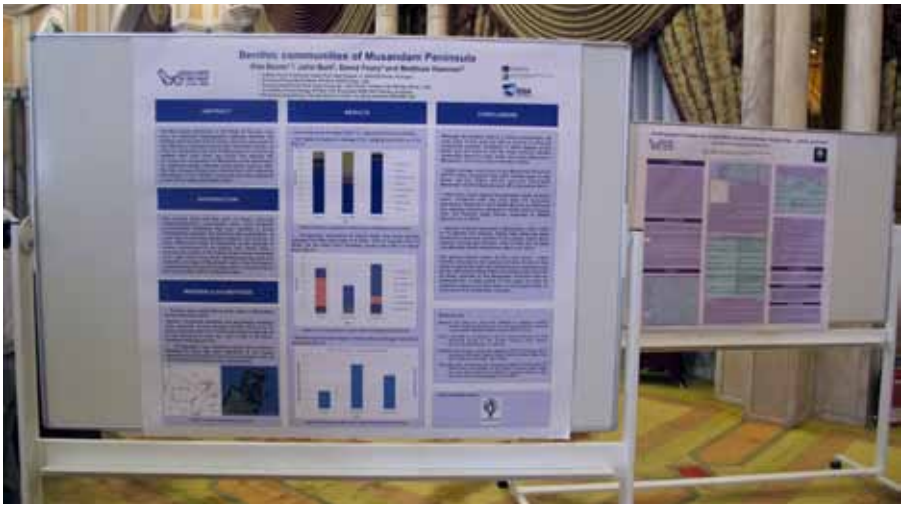
- High mean cover value of Acroporidae corals of 34.8% when compared with the less than 1% Acropora abundance observed in Abu Dhabi (Burt et al. 2011) and the radical reduction observed in Dibba (Gulf of Oman) after the Harmful Algal Bloom observed in 2008/9 (Bauman et al. 2010);

The surveys in the Musandam Peninsula will be continued by EDA for a total period of two years in order to compare seasons and also have a more detailed data of coral cover and composition changes.

Dr. John Burt from the New York University – Abu Dhabi presenting, "Biogeography of reef fish communities around the northeastern Arabian Peninsula".

Dr. Peter Sale from the United Nations University – Institute for Water, Environment and Health presenting, "Towards sustainable management of a shared, and economically, biologically, culturally and aesthetically important marine environment".

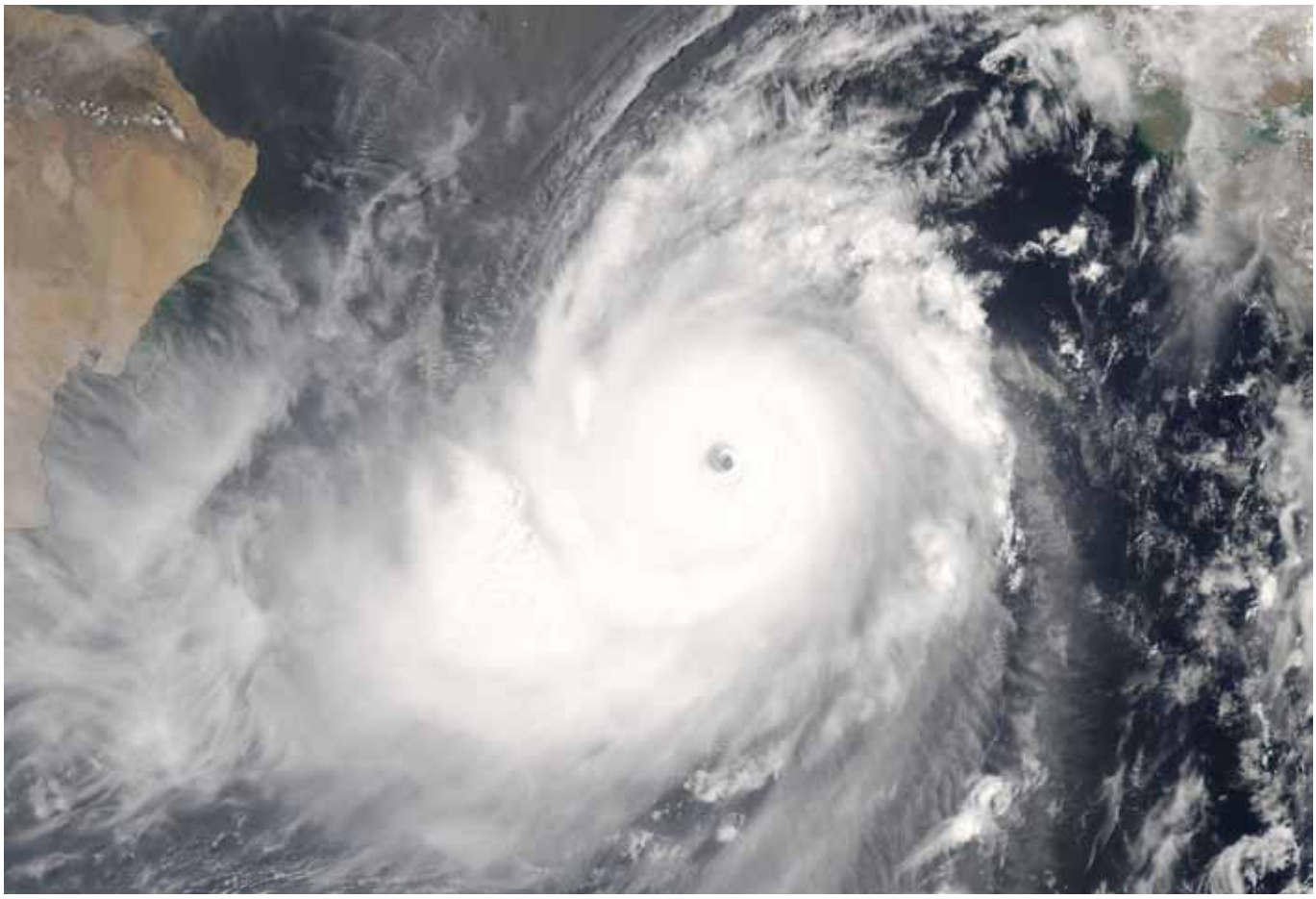
Dr. Charles Sheppard from the University of Warwick, UK presenting, "Decline and failure of the Arabian Gulf marine systems".



EDA poster, "Benthic communities of the Musandam Peninsula.

SCIENTISTS LINK UPWARD TREND IN POLLUTION TO INCREASED INTENSITY OF ARABIAN SEA TROPICAL CYCLONES

FEATURE **NOAA** PHOTOGRAPHY **NASA**



NASA MODIS image of Tropical Cyclone Gonu, June 4, 2007

A 'brown cloud' of pollution over the Indian Ocean resulting from human activities has led to stronger tropical cyclones in the Arabian Sea, according to an international team of scientists.

The findings appear in a paper published last November in the journal 'Nature', titled Arabian Sea tropical cyclones intensified by emissions of black carbon and other aerosols. The research was conducted by scientists from the University of Virginia, NOAA's National Climatic Data Center (NCDC) in Asheville, N.C., the Gwangju Institute of Science and Technology, Gwangju, South Korea and the Scripps Institution of Oceanography in La Jolla, Calif.

"We're showing that pollution from human activity as simple as burning wood or driving a vehicle with a diesel engine can actually change these massive atmospheric phenomena in a significant way," said study lead author Amato Evan, an assistant professor in the Department of Environmental Sciences at the University of Virginia. "It underscores the importance of getting a handle on emissions in the region."

While water temperatures in the Arabian Sea are typically warm enough to allow tropical cyclones to form and develop, winds moving at different speeds and directions at different levels in the atmosphere, called wind shear, have limited the strengthening of cyclones in the region. During the past 30 years, however, increased concentrations of airborne particles, or aerosols, in South Asia have altered the pattern of the sun's heating of the ocean. This has changed the regional wind patterns and weakened the wind shear, making conditions more favorable for intense tropical cyclone development.

The scientists used both observations and models to demonstrate the relationship between decreasing wind shear and the growth of the Atmospheric Brown Cloud, a thick layer of pollution over the North Indian Ocean caused by human emissions of aerosols like black carbon and sulfates. The team then linked the reduced wind shear to an increase in the number of highly intense storms with winds over 120mph, including five storms since 1998 that have killed more than 3,500 people and caused damages of more than $6.5 billion.

"The research shows that pollution can threaten humans in unexpected ways. In this case, by reducing wind shear in the Arabian Sea and making conditions more favourable for tropical cyclones to intensify," according to James Kossin, climatologist at NCDC and co-author on the paper.

NOAA researchers are engaged in understanding and assessing changes in climate across many regions of the world since regional climate is influenced by global conditions and patterns. Lessons learned from studying tropical cyclones and their relationship to climate in various regions of the world, including the Indian Ocean, are relevant for improving understanding of hurricanes that directly threaten the United States.

The other co-authors of the study are Chul (Eddy) Chung of the Gwangju Institute of Science and Technology and Veerabhadran Ramanathan of the Scripps Institution of Oceanography.

NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage our coastal and marine resources.

SAVE OUR SHARKS FROM A BOWL OF SOUP

FEATURE **SHARK SAVERS MALAYSIA**

A proposal for a Shark ban in Sabah has gained support of International celebrity Michelle Yeoh and Malaysia's Astronaut, Major Faiz Khaleed, as well as many other Malaysian celebrities and NGO's around the world.

Minister YB Datuk Masidi Manjun, Minister of Culture, Environment and Tourism, is seeking for a prohibition on all forms of shark hunting or shark finning in Sabah. Masidi said 42,000 divers, two-thirds of them foreigners, visited the state last year, bringing in more than RM190 million in revenue. "Tourists come to see the rich variety of marine life in Sabah, and that includes sharks. It makes economic sense for us to protect our sharks," he added. Masidi also said that it was important to start protecting the marine creature as its population had dwindled to only 20% of its original population. He said that in Sabah, sharks could only be spotted in four areas and if nothing was done, the creature could disappear entirely as had happened in waters off the peninsula.

A letter of gratitude initiated by Save Our Sharks From A Bowl Of Soup was sent on 12 December 2011 to the Minister in appreciation and support of his bold decision to restrict the shark fin trade next year. The letter was signed by former Finance Minister Tun Daim Zainuddin, Petaling Jaya Mayor Datuk Mohamad Roslan Sakima, Datuk Michelle Yeoh and Kirk Lee Founder of Save Our Sharks From A Bowl Of Soup.

Aside from Malaysians the letter was also joined in support by over 50 International NGOs namely Shark Savers, WILDAID, Humane Society International, Project Aware, Hong Kong Shark Foundation and many more including a letter from Governor Benigno R. Fitial, of the US Commonwealth of the Northern Mariana Islands.

Kirk Lee, founder of Save Our Sharks From a Bowl Of Soup says, "The purpose of the letter was to show Sabah how much local Malaysians and NGOs from around the globe appreciate what the Minister is doing and that we all support the Minister's stand. It is most exciting and promising hearing from the Minister to push a total shark ban in Sabah. We look forward to seeing the ban come to pass and hope after that it will be an example for Peninsula Malaysia to model after.

We also wish to thank Mr Aderick Chong from JCI Tanjung Aru and Professor Steve Oakley from Tropical Research And Conservation Centre (TRACC), our counterparts from Sabah who initiated the meet up with Minister YB Datuk Masidi Manjun to lobby for the shark ban."

Amber Chia, Founder of Amber Chia Academy says, "I'm a Sabahan and I fully support the cause. I'm proud of our Minister's plan to protect the sharks in Sabah waters.

Sharks are very important to our ocean ecosystem because they are the top predators that control the food chain below. We should ensure that our future generation can still enjoy a healthy ocean and be amazed at sea creatures like sharks rather than visit them in Museums. I would love to swim with sharks together with my son when he is grown up one day.

Sharks contain high levels of mercury which is bad for our health especially to expecting mothers because it could pass on to their unborn babies. Join me, Say No to Shark Fins!"

Patrick Teoh, Radio Deejay, Actor and Author says, "Why do I support the ban in Sabah? I support the ban on Sharks Fin. Not the ban in Sabah. But I am very glad that Sabah has come out in support of the Shark Ban."

Daphne Iking, TV Anchor and Journalist says, "Sharks are misunderstood and seen as vicious animals of the sea, and having been stereotyped and misconstrued in life – I empathize with them. Sharks being killed mainly for their fins is just a crying shame. I refused to serve shark fin soup for my wedding and didn't care the connotation of being "stingy" on my Big Day. Neither do I eat shark fin soup when served at events."

Major (Dr) Faiz Khaleed, Malaysian Astronaut and Dental Surgeon says, "Life has no rewind button and unfortunately time-machines have not been invented yet. As an intelligent species fully capable of protecting, humankind needs to make sure that we don't have to correct the past, but to do the right thing now. Sharks exist for a reason, and definitely not to be put in a bowl, but to maintain ecological balance…we need to do the right thing.

Matthias Gelber, voted Greenest Person on the Planet in 2008 says, "Sharks are amazing and a part of our beautiful biodiversity – to let them die a cruel death for the fins on the table is a crime against the beauty of nature. It needs to be stopped."

WHY SHARKS?

Over 73 million sharks will be killed primarily for shark fin soup. Shark finning is the practice of catching a shark, slicing off its fins and dumping the still living shark back into the ocean. Shark fins are tasteless and contain high levels of toxic methyl-mercury.

Sharks kill fewer than 5 humans on average each year. While humans kill 73 million sharks annually.

You are more likely to be killed by a lightning strike, bee sting or defective toaster. The oceans are the most important ecosystem on the planet, containing life that absorbs most of the carbon dioxide, converting them into 70% of the oxygen we breathe. Destroying the shark population is destroying our oceans and our life support system.

THE LETTER GOES LIKE THIS:

YB Datuk,

Gratitude For Shark Conservation Efforts

With reference to the above, we would like to extend our heartfelt thanks for initiating and supporting the move to ban shark harvesting, possession and sales in Sabah – the first of its kind in Asia.

We applaud your efforts in support of shark conservation. According to the International Union for the Conservation of Nature (IUCN), about a third of open water sharks currently face extinction. This is alarming, as they are keystone species in maintaining the balance of the marine ecosystem.

Shark conservation can help to boost the local economy in Sabah, as studies have shown that sharks are worth a lot more to the tourism industry alive rather than dead. Many organisations in Malaysia and the world have documented massive declines in shark populations, therefore a ban on harvesting, possessing and the sale of sharks is vital in protecting the remaining shark population. Sharks are slow to mature and they produce very few young. The new law will give them a chance to repopulate our ocean again. This will also be a great example to our Asian counterparts in handling such issues.

It is indeed very reassuring to see the Sabah government working towards a positive change. Many people are passionate about this cause, and we strive to support the State Government with your efforts to completely end shark hunting. We would like all Malaysians to join us and save our sharks from a bowl of soup, by saying NO to shark fins.

NATIONAL DAY OF THE MALDIVES

FEATURE **RIZWANA M. HALEEM**
PHOTOGRAPHY **MOHAMED SHAFRAZ NAEEM**

The 24th of January, 2012 marked the National Day of the Maldives and a small group of Maldivian Divers set out to celebrate the day under its infamous salty blue waters.

The event was organised by Muscle Load, a local gymnasium in collaboration with Atoll Scuba, a young but promising diving school in the Maldives. It was held at Maagiri Reef in the morning. As said by the organisers, the aim of the event was set to portray peace and unity amongst the Maldivians during a time of much disharmony.

The event began with the divers doing a scrum over the Maldivian flag. After, they took the dive into the ocean and the divers settled on a beautiful sand bank. Due to unforseen changes in the ocean current, the organisers had to make an impromptu change to their initial plan. The outcome was splendid!

Two divers were hovering midwater, holding a banner which read "NATIONAL DAY (1433H), MALDIVES, 24.01.2012", and behind them, a row of divers kneeling, each holding a national flag. The two participants at the center held one big flag with its red, green and white crescent moving gloriously along to the National Anthem which was being played. They made their stance for peace as they held their right hand to their chest in salute.

It was a breathtaking moment for many to witness this message and togetherness, along with the flow of bubbles as the flag moved underwater to the anthem. The event came to an end with each diver dispersing, one by one swimming across the front, each end holding a flag. The whole event was beautifully orchestrated. It caught much of the media's attention and is thus far the first of it's kind done here in the Maldives.

www.atollscuba.com

A DREAM **COME TRUE**

FEATURE **HASSAN HISHAM MOHAMED**
PHOTOGRAPHY **MOHAMED SHAFRAZ NAEEM**

Having grown up in the Maldives, one of the most famous diving destinations in the world, it has always been my dream to get my Open Water Diving Certification and fully enjoy the beauty of my island home. Recently, I was given the opportunity to fulfil this dream.

We went to the house reef of Bandos Island Resort and Spa for my first dive. While I was excited, I must admit that I was slightly worried and nervous about what to expect. At first, my anxiety got the best of me, and I couldn't really enjoy my beautiful surroundings due to the fear of getting lost. It was also challenging getting used to breathing through the regulator. Luckily, I had an excellent diving instructor, Shafraz, who gave me the confidence to conquer my fears and taught me the critical skills necessary for safe diving. After that, everything went terrifically and it was everything I could have hoped for. I even saw three sharks on that very first dive, which I hear is extremely rare!

My second and third dives were also at the house reef at Bandos Resort. By then, I felt much more confident. Going down, I felt like I was floating in space! However, my fourth dive at Banana Reef is my favourite. The current was so strong that I had to struggle to hold on. It was quite the thrill! Once underwater, I came up close to schools of fish of all shapes and sizes. The fish appeared to have no fear towards us, which made it the perfect dive site to get excellent photos.

I had an amazing experience and earned my PADI Open Water certification and I truly believe that everyone should experience scuba diving at least once in their lifetime.

THE EAST COAST – **BACK TO ITS FORMER GLORY!**

FEATURE AND PHOTOGRAPHY **ANDREW ROUGHTON**

It's undeniable that Cyclone Gonu which hit the East Coast of the UAE in 2009, left a lasting and detrimental effect on the coastline, marine-life, and quality of the diving in the area. However, having spent almost every weekend of 2011 diving in Dibba, Khor Fakkan, and the Musandam, I can happily report that time has restored the East Coast to its former glory.

Dibba Island, a marine reserve located on the north-eastern tip of the UAE, has been particularly fascinating for scuba divers and snorkelers during the past year. A site well known for its resident Reef Sharks, Green Turtles, and Jawfish, it has recently been playing host to shoals of Barracuda (often hundreds strong), Devil Rays, and King Fish as well. On recent dives I have simply stopped finning, knelt on the ground, and allowed myself to be surrounded by hundreds of Silver-Tailed Barracuda occasionally interspersed by a curious Black-Tip Reef Shark or fleeting King Fish. It's a magical experience, which gives the diver the sense that he/she is literally inside a Jacques Cousteau documentary.

However, it's not just the "big stuff" on offer at Dibba Island. There are abundant soft, whip and fire corals which help to create a wonderfully unearthly aquatic realm. Moreover, if you scratch the surface, (figuratively speaking of course as Dibba Island is a marine reserve where interference of any kind is prohibited), you can find Clownfish, Goby Fish, and Nudibranchs galore. As this is a relatively shallow dive site (largely between five and fifteen meters), you can spend fifty minutes weaving your way around the island with your eyes constantly agog with curiosity at the awe-inspiring array of marine life.

Providing access to the abundant marine life, Dibba boasts an array of Dive Operators offering daily trips to the island. Taking a little prudence in your selection goes a long way. Blue Planet Diving is the closest Club to the island and runs daily trips at 09:00, 11:00, and 13:00 as well as fairly frequent night dives. This means that, provided you're not expecting a guided tour or speciality training (which should be pre-booked), you can arrive and dive fairly casually – an option that proves appealing to many West Coast based divers who appreciate a slightly later start on the weekend. Moreover, given the accessibility to the dive site (Dibba Island is only one nautical mile from Blue Planet Diving) you can return between dives and enjoy a coffee at the Club House, lie on the beach, or have lunch at the Holiday Beach Motel, which just adds to the laid-back appeal of this dive operator.

Despite its casual appeal, Blue Planet Diving is a very professional operation and its biggest selling point is the knowledge of its staff. They will take you to areas of seemingly dead coral to visit nesting Turtles, encourage you to attach your snorkel so that you can bimble around the shallows with the flitting Reef Sharks at the end of your dive, and drop you at the perfect vantage-point to almost guarantee that you'll see the majority of the Arabian Gulf's relentlessly appealing marine life.

If you're keen to book a visit, contact:
ALLA DRUZHYNINA
Blue Planet Diving at the Holiday Beach Motel

Tel: +971 50 629 6592
Email: scubaajman@mail.ru

FALSE KILLER WHALES
MIGRATION FUJAIRAH 28/01/12

FEATURE **ANDREW ROUGHTON**

I think we all appreciate the virtues of diving regularly: some dives will be poor, some will be good, and some will be great. However, you must dive regularly to reap the rewards, forget the poor dives, and store the great dives in your memory's greatest hits archive.

One such memory that I will never forget occurred when diving in Fujairah on Saturday 28th January 2012. We arrived at Inchcape 1 bright and early to be met by no other boats, no real current, and crystal clear visibility.

Inchcape 1 is a predictably rewarding wreck dive. It has two decent penetration points, resident Moray Eels, and whole host of other colourful marine life. However, on this dive we could hear the faint whispering's of some unfamiliar creatures. When we returned to the boat we all agreed that there must have been Dolphins close by as we all heard the same strange aquatic chirping.

However, as soon as we started the boat towards the next dive at Dibba Rock, we were surrounded by dozens upon dozens of mammals much bigger than Dolphins. From the coastline, around the boat, and out into the open ocean, the sea was suddenly set alive with breaching False Killer Whales. As if putting on a display just for us, these massive mammals followed us all along the coastline – rising from enormous underwater shadows into majestic breaches behind, in front and either side of our boat. This continued virtually until we reached our next dive site, giving us the opportunity to film, photograph, and bask in the company of these wonderful creatures.

Of course, none of us being marine biologists, we were not aware that we were watching False Killer Whales. Conversely, suggestions as to their identity ranged from Common Dolphins to Pilot Whales and it wasn't until Shark Watch Arabia saw the pictures that we received confirmation that they were in fact False Killer Whales, which gave fortuitous credence to our decision not to use our remaining air to enjoy a shallow dive with our new friends.

Thankfully it was enough to watch their wonderful display from the comfort and safety of our boat. And despite not being a bona fide "diving" memory, had we not been at sea between dives, we would never have witnessed the rare migration of these mighty marine mammals, which just goes to show that, when it comes to diving, you have to take the good with the bad and everything in between is just an added bonus!

TECHNICAL DIVING
INTERNATIONAL CENTER (TDIC)

FEATURE **TIM SOLIMAN, OWSI**

We're getting loud and back into serious business…more diving, more fun! Let me first introduce you to our Dive Center, for the sake of those who don't yet know us.

Technical Diving International Center is a PADI 5 Star Instructor Development Center located at the heart of the Diving Village Al Shindagha, Bur Dubai. TDIC provides all scuba diving requirements and PADI courses from beginner to professional level.

SERVICES OFFERED:

- Discover Scuba Diving and snorkeling for beginners.
- Organize guided dive trips to Dubai, East Coast and Musandam, Oman.
- Rent boats and organize fishing trips as well.
- Conducts swimming and lifeguard lessons.
- Rent and sale of diving and fishing equipment at competitive prices.
- Repair and service diving equipment with our highly qualified technician.
- Air fills and Enriched Air Nitrox.
- Hotel pick-up and full transportation service for tourists with guided scuba diving and snorkeling trips.

We, as do Emirates Diving Association, promote the conservation of the cultural and traditional diving history of the United Arab Emirates.

Since the start of the year, I was hired to handle Marketing and Promotions, we've been busy with our discover scuba diving programs, dive trips here in Dubai and on the East Coast. And for this month, we have our first Musandam Dhow Trip which will be held monthly. For the first quarter of this year, we will also run our winter promo for PADI courses at unbeatable prices which is still on-going until end of this month. Click and check it out at: **www.tdicenter.com** and **www.emiratesdiving.com**, see the dive center promotions.

Watch out for our second quarter promo packages, one of which includes an international dive trip to Puerto Galera, Philippines . It is one of the most popular diving destinations in the Philippines. Dive trip details are now live on facebook, just click TDICenter Dive Club, ask to join the group and you'll be updated with our dive events and activities.

Winter season is almost over, time to get wet for those who were hesitant to go diving for a 20°C or less. Gear-up! Come and dive with us, we regularly do weekly dive trips on the popular wrecks here in Dubai such as Mariam express, Zainab and Neptune to name a few. Martini rock, Inchcape 1 & 2, Dibba Rock and Sham Rock are some of the favorites on the East Coast. I salute those who came and dove with us

during the winter, who were brave enough to conquer the chilling water temperatures. Keep on diving we got a lot more dives coming-up!

Dive clubs and Divemasters, organize your own trip. Book a dive with us and you will enjoy our special group rates. Independent Instructors, you're most welcome to use our classroom facilities for free, just bring your students to purchase dive equipment with us at special rates. Use our boat for deep dive and wreck dive training and you'll enjoy special rates as well. Divers, bring referrals to us, invite your families and friends to go diving and you'll enjoy our diver referral program which could entitle you for a free specialty course or a free dive trip.

I am also excited to announce that we'll be conducting our Instructor Development Course for the coming IE next month. Aspiring OWSI candidates, we've designed a special IDC package for you. All you have to do is grab your phone now and book an appointment with yours truly and let's discuss your exciting journey towards becoming a PADI Open Water Scuba Instructor.

So DIVERS! We are looking forward to seeing a lot of you to come and visit our shop, buy gear, book a dive, and enroll to a PADI course.

Happy diving everyone!

CONTACT DETAILS:
Technical Diving International Center
Diving Village Al Shindagha
TEL: 04 393 0303 | **FAX:** 04 393 6996
MOB: 0555478908/0505488707
EMAIL: info@tdicenter.com
WEBSITE: www.tdicenter.com
FACEBOOK: TDICenter Dive Club

SECOND YEAR IN THE FRAY

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

In October last year we teamed up with super cool folks at Outdoor UAE magazine and in particular Laura "Ozzie" Snook and Daniel "big boss" Birkenhofer for a barter agreement between the 2 companies that culminated in a fantastic 2 nights/2 days live aboard safari up to Sheesa Bay. Upon boarding I knew that leaving our energy tablets behind was going to be a huge mistake as the guests that Outdoor UAE had invited really believed in the "sleep when you're dead" cliché.

We had planned some really fun activities that involved diving, kayaking, dhow jumping, a bonfire and barbeque on the beach and the highlight being a walk to ancient village ruins in the mountains. The evening activities comprised a magic show by Thameem (the kitchen manager here at Sheesa Beach), reminiscing about the day's activities and star gazing. A small upper deck party did take place into the wee hours while the rest of the folks onboard slept under the stars. So thanks to Daniel and Laura for introducing us to über cool people that we now call friends.

For the first time, we will be exhibiting at the Dive Middle East Exhibition from 13-17 March. The decision was made as 2011 was purely to get our dive centre (we specialize in 3 different areas) up and running and 2012 is a growth year for us. Therefore it made perfect sense to get out there and showcase our wares and services. Sheesa Beach Dive Centre is the only Oman based dive centre that can boast 7 dhows, 3 speedboats and a 180 bed camp. Combine this with highly experienced staff and you best hold onto your seats as it is going to be a fun ride. We will be based in the DMEX section at stand L-3, so if you are looking for a unique approach to the exhibition and people who know what they are talking about and a couple of specials and promotions, pop in and come and say hi.

2012 is now the 2nd year in the fray so to speak and our focus this year is expanding on what we have built by offering more sharing live aboard cruises to varying locations, embarking on a joint venture with a leading East Coast Dive Centre that will allow our divers to get a lot more wreck dives under their belts. We are also increasing the courses as we have instructors who have international reputations by working in nearly every corner of the globe and are able to impart this knowledge to those who want quality training and those that need to increase their confidence and skill level.

LET'S GO **CLUBBING!**

FEATURE **PAUL SANT, DIVERS DOWN**

No, not that type of clubbing – we mean come to one of our dive club events! Divers Down is returning to its old routes by bringing back club days (and nights).

With all the new fantastic and exciting opportunities within diving, we feel that you may not be benefitting from what is out there or making the most of what you already have!

Why a club? Let us take ramblers as an example; they meet on club nights to learn new skills, gain information on new routes, talk about equipment and listen to guest speakers talking about expeditions. The fact that you are there with like-minded people, means you can make new friends without running the risk of boring them with your questions and "nerdy" talk. You gain knowledge and have a fun time.

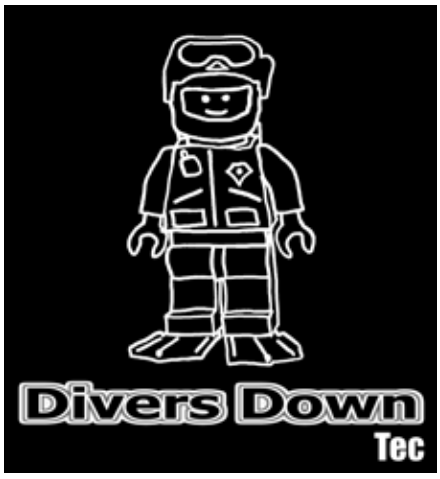
There is no club member fee – you only pay for the dives and any material needed.

WHICH CLUBS HAVE WE STARTED?

- Technical Diving Club (Divers Down Tec)
- DD Photo Club (Digital and 35mm)
- DD Coral Watch Club
- DD Travel Club

TECHNICAL DIVE CLUB

WHEN: 1st Friday of each month
DURATION: 9:30 – 19:00
BOOKING: Please book your space at least 1 week in advance.
WHO CAN JOIN: Everyone interested in trying, learning or diving Tec.



Divers Down was one of the first to bring Tec to the UAE and has 6 full Tec sets available for training and rental. We have a Tec Instructor Trainer who can take you from Tec 40 to Tec 50 and continue your education into the world of Tri Mix and Rebreather diving.

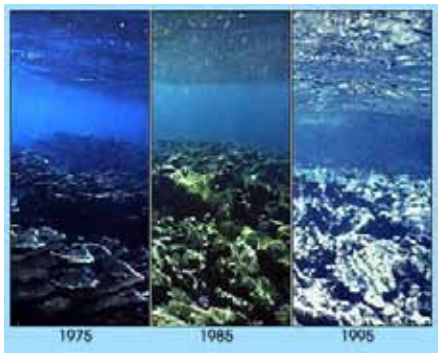
By joining us on the club day, Tec divers will have the opportunity to dive with like-minded Techie's and gain knowledge from them.

We will provide a boat for the day that is dedicated to Tec divers. When conditions allow, we can dive some of the Tec sites such as Ines – if not we can at least dive Inch 1 and Coral Gardens as decompression dives.

After a day of Tec diving, the guest speaker will run a small workshop or presentation.

CORAL WATCH CLUB

WHEN: 3rd Friday of each month
DURATION: 9:30 – 17:00
BOOKING: Please book your space at least 1 day in advance
WHO CAN JOIN: Divers and snorkelers interested in marine conservation.



Environmental issues have always been firmly entrenched in the Divers Down mission statement. We have participated in many summer surprises, clean up's and project AWARE programmes over the years, and whenever we notice potentially hazardous fishing lines and/or nets, we go out and remove them in our spare time. We also encourage our guests to collect any rubbish they may see during their dives – continuously caring, rather than doing clean-up dives on certain days. Now we're taking it a step further with our Coral Watch programme.

During the past 11 years, we have seen the effects, mankind and natural disasters have left on the local reef systems – now we want to show this to others and also record what we see on a daily basis.

So what is Coral Watch? Simply put, it refers to monitoring of coral bleaching. We have an area in Shark Bay marked out and we record the colour changes on a monthly basis. Our reports are sent to the Coral Watch team in Australia, who keep a database with worldwide data.

In order to join the club you will be required to undertake the speciality course for Coral Watch, learning about the causes, signs and symptoms of coral bleaching as well as other issues related to coral health. During the 2-day course you will participate in classroom sessions, pool sessions and 2 dives (non-divers snorkel) on the coral watch site, monitoring the coral.

This is a project AWARE course and can be counted towards the Master Scuba Diver programme. Since it's a project we care deeply about, we further support it by offering this specialty course at a much lower price than the other courses which include diving.

The environmentalist ethos should not be a once-per-year event. Every day, the ocean is fighting a battle against nature and mankind, so the ocean needs you to be an environmentalist 365 days a year!

PHOTOGRAPHY DIVE CLUB

WHEN: Last Friday of each month
DURATION: 9:30 – 19:00
BOOKING: Please book your space at least 2 days in advance.
WHO CAN JOIN: All certified Scuba divers, regardless of level and experience.

Paul Sant has been teaching photography for 11 years and is an expert with 35mm as well as digital point-&-shoots and DSLR's.

When Paul teaches the digital photography course, he adds more to the course than is required, such as a pool session and land based photography. It is for this reason the digital photography course here at Divers Down takes 2 full days to complete.

Setting up a photography club was considered essential by Paul. The vast majority of divers can improve the quality of their photography substantially with some training, both theoretical and hands-on: from the theory behind light and composition over positioning and placing the strobes underwater to post-editing software – and everything in between. One of Paul's principles is that divers should always continue developing their skills and share their knowledge with others.

You may dive with your own camera or with one of our rental cameras. The club day starts with a presentation that covers the topic of the day by the guest speaker, followed by 2 dives on a dive site where the subject matter is achievable.

After each dive, the guest speaker and Paul are available for de-briefing and critiquing to ensure that you are getting the most out of your camera.

In the afternoon, our guest speaker will give a short presentation on the subject of the day and Paul will show post editing techniques to help you achieve the best results for your hard day of diving and shooting!

The January Club Day was on Macro, the next Club Day February 24th will be on lighting techniques.

TRAVEL CLUB
WHEN: 3-6 times per year
DURATION: 2 – 7 days
BOOKING: Will be announced
WHO CAN JOIN: Divers and non-divers

Whether you go on a package tour, independent dive trip or a live-aboard, your level of enjoyment and pleasure depends on several factors such as quality of food and accommodation, other guests, dive staff – and of course quality of dive sites. Sometimes it's really a hit and miss.

Enter the Divers Down Travel Club: Our staff members have extensive experience in several regions and countries, such as the Caribbean, Indonesia, Malaysia, Thailand, Philippines, Africa and the Mediterranean. We can use this knowledge to ensure that your destination is suitable for your level of dive experience and wishes, and to make sure that you do not end up with unprofessional or even unsafe dive operators.

In addition, one of our staff members – who knows the area – will join the trip and be available to conduct any courses you are interested in, as well as taking care of any questions or problems that may arise. Since we arrange the trips, we'll be able to negotiate discounts, which means you will save money as well.

In other words: you will travel with friends and you will go to great places without risking dodgy dive operations. You can continue your dive education in exotic locations, but with instructors you trust. And on top of this, you save money.

The next trip goes close to home, when we drive to Muscat March 8th – 10th, 2012. We are renting an entire villa (en-suite double bedrooms, kitchen facilities, bbq and garden, parking space, etc) for two nights and dive the Daymaniyat Islands for 2 days. Definitely a trip worth looking forward to.

Trips will be announced on the Divers Down website and Facebook page as well as our monthly newsletter, 'The Divers Down Dependent'.

We hope to see you on the club days and look forward to making it possible for you to practice and learn more about your hobbies with like-minded people.

If you require more information on the clubs, please drop us a line on **info@diversdown-uae.com**, check out the web site **www.diversdown-uae.com** – or even better, give us a call on **+971 (0)9 237 0299**.

THE DUBAI MALL **AQUARIUM DM**

FEATURE **DARREN WHITFIELD**

I first started diving as a hobby at the age of 14 on holiday in Thailand. Little did I know at that point, that diving would be my future industry and true passion.

I went on to become a PADI Dive Master at Al Boom Diving. In the training stages, I learned self discipline with the responsibility to help others in a great environment (Musandam and Fujairah, "who would complain!").

Once I became a certified PADI Professional, Al Boom Diving took me in to become a new member of the family. I would like to think this was because I was the best Dive Master candidate my instructor, Sam, had seen. I was to be based at the Dubai Aquarium situated in the Dubai Mall.

I didn't know what to expect when I first arrived. The idea of diving in an aquarium with one of the world's largest collection of sharks – this was not really my story, but I went through with it. After the intense training I was to lead dives in the aquarium and I found my fear of the sea's apex predator, turn to respect. Diving in the aquarium then became everything! I found that sharing my passion with divers who had the same stressed out face as I once had, to be very rewarding upon surfacing and to then see smiling faces. I really feel very lucky to have the opportunity to dive in this aquarium that is teeming with life.

Sadly, I have to leave to further my career as a Commercial Diver. I will truly miss my colleagues and all the divers I have had the pleasure of diving with. I hope that wherever I end up, I may again have the opportunity to work with such a professional team as this one.

BUBBLE N SQUEAK DIVING REVIEWS THREE TRAVEL BCD'S

FEATURE **JOHN HOWARD, FREELANCE INSTRUCTOR**

So with the market for travel BCDs increasing, there are new ones coming on all the time. What makes a good one? Weight, comfort, look, price? What's most important to you?

Bubble n Squeak reviews and compares three of the most popular ones on the market.

THE NEW ZUMA FROM AQUALUNG

Bubble n Squeak was probably the first to buy the Zuma in Dubai and I have loved it from the start. It has some significant plus points that have probably made this BCD the market setter. The price is cool as is the design. Its wing style gives it a very uncluttered feel and I found the integrated weight system is both effective and adequate for neutral buoyancy in a 5.5mm wetsuit. The dump valves are all low profile adding to the streamlined minimalist look. Two areas that disappoint are the lack of 'storage' due to the size and number of the D rings combined with the one small pocket and finally the thickness of the bladder. When using the Zuma you first notice the low tank band with the tank security clip giving you the exact tank position for perfect balance. As with many of the travel BCDs the back plate is replaced by a padded back. The front of the BCD is very uncluttered with a one clip securing buckle and an adjustable chest strap. There are no shoulder clips, just padded shoulder straps with easy to use fit adjusters. In the water the Zuma is very comfortable, nicely balanced and does not ride up or shift about. On the surface you have to learn to lay back as with all wing type BCDs there is a tendency to push you face down. I did not have any issue with this and always felt there was sufficient buoyancy. Overall the BCD is great value for money, looks good and most importantly fits well. After the dive it dries quickly and packs up small for travel.

The plus points are, great fit and ease of use, attractive design with integrated weights. Negative points, lack of D rings and pockets. Overall, great value.

THE GEO FROM SCUBAPRO

This attractive looking travel BCD is possibly the lightest on the market at 1.9kg yet it provides plenty of lift. I loved the real fun holiday look about it as did a number of my dive buddies.

In the water it is reasonably comfortable and has sufficient aluminium D rings for all the usual clip on needs. The pockets are a good size and you can easily fit a spare mask in one. I really like the idea of the twin tank bands but the upper one is placed about two inches too high so that it worked free during the dives. When I lowered the BDC on the tank so that the top band remained secure, the BCD is positioned too low so that the 1st stage touched the back of my head. Unfortunately the BCD also tends to move about laterally during the dive and does not have a really snug fit. This meant that on the surface it tended to rise up leaving a gap at the shoulder. The other big minus for me is the omission of an integrated weight system.

The Go-dive clip is a complete waste of time (and a few grammes) but the inclusion of the grommets for a dive knife is well thought out. The Geo feels flimsy compared with standard design BCDs but it is probably tougher than it looks. It dries very quickly after a dive making it an ideal pack and go piece of kit. The low profile dump valves are efficient and complement the sleek design. The Geo fits very neatly into its own little travel bag so you can even put it in your hand luggage.

So its plus points are, attractive, light, good pockets, proper D rings and it provides good lift. There is room for improvement with the fit, the top tank band needs repositioning and I would have preferred an integrated weight system.

THE CRESSI TRAVELITE

This is a reasonably attractive jacket style BCD with a very stable integrated weight system including trim pockets. It fits snugly in the water with none of that lateral tank movement that I find really irritating. The double tank band and carry handle are positioned perfectly for tank balance in the water and I found that I didn't need to use the trim pockets to maintain a horizontal in-water position. The two pockets are generous and there are adequate D-rings for the 'Christmas tree diver'. The nifty strap that holds the rolled up BCD in its own neat carry bag is probably this BCD's most innovative feature. For me this BCDs biggest downside is price as it is basically the same as a higher range regular BCD. The other little niggle is the old style dump valves reducing the BCDs attractiveness. Divers who prefer a jacket style BCD will probably find this BCD their natural choice provided they are prepared to spend the same as they would as a higher spec regular BCD.

Bubble n Squeak's choice is the Zuma because of its design and comfort combined with the great value. A close second with its superb fit but not so impressive value for money is the Travelite.

	ZUMA	GEO	TRAVELLITE
Fit and Stability	5	3	5
Comfort	5	3	4
BCD Weight	5	5	4
Style/Attractiveness	5	4	4
Pockets	3	5	5
D rings	3	4	5
Tank Band/Retainer	4	3	5
Dump Valves	5	5	4
Pack and Dry Carry System	4	5	5
Grommet for Dive Knife	5	5	5
Weight System	4	0	5
Price	5	4	3
Overall	4.5	3	4

DIVING IN **THE MUSANDAM**

FEATURE **TOM CRABBE, AL BOOM DIVING**

I'm staring down at my feet concentrating on my balance having tuned out everything around me. I'm now very conscious of my breathing as it has slowed but now heavy as I suck in and out, through puckered lips and clenched teeth, in a controlled way preparing to hold my breath. Just about ready I take one final look around. All clear below. I shorten my stance bending my legs and have come to almost a complete crouch. Rapidly my muscles all start firing swinging my arms up and backwards, my spine now a reverse arch of which it previously had been. I feel my feet leave the ground as I begin a transition from a launch to free fall at which point my eyes close. It lasts only a mere second. I've completed a full loop and my feet hit the water's surface first. The impact causes a sudden explosion of white foam and bubbles around me and instantly I look up for the surface. I've gone deeper than intended and can feel the pressure in my ears. I feel relief that I managed a backward somersault successfully and haven't agonizingly landed on my back from a 5 meter drop with the smacking pain it brings. I reach the surface and breathe out before taking a deep breath in. I laugh like always somewhat out of excitement and a little nervousness subsiding. The first thing I hear when I look at the small crowd of spectators above is "TOM, AGAIN! ONE MORE TIME!" It's the second or third jump from the Dhow that afternoon and I've heard the same thing every time, but am happy to give it another go doing something equally daring but usually a back flip or a running leap off the side into a dive are good crowd pleasers. Making sure that it's safe to do so every time.

Working every Friday on the Dhow trips to the Musandam, the jumps are what I enjoy most unless the diving has been exceptionally good and I've spotted something that I truly like, a turtle or a shark are usually what make me enjoy diving most. The reason I like it is because it's something that not everyone wants to do either because they feel they physically can't do it or are too scared to give it a go. They're fine watching and taking photos but don't want to take a step out of their comfort zone. In many respects it's the same for those starting out with diving. It may well be considered a recreational sport and look quite relaxing but I remember when I first started out that the weight of the equipment along with getting used to moving in the water with fins and trying to get buoyancy right was physically draining. Now having reached the level of Dive Master and very soon to be an Instructor, these issues no longer trouble me. I do get reminded of them every now and again through the various divers that I guide or assist with teaching. The majority of first time divers' initial fears are the sense of claustrophobia and a feeling of not getting enough air. I always try to calm them down and say that it's normal to begin with, seeing as you're doing an activity that goes against the way we are physiologically built. We aren't meant to be underwater for ages and all our senses get restricted to a certain degree. And yet, we have made it so that we can breathe, and we can see and move with relative ease underwater. A few more tries using the scuba gear and the student divers are normally overjoyed that they stuck with it and went on to become true divers.

It's these divers that travel with myself and my fellow crew on the dhow, many regulars and a few fresh faces every week, all of varying levels and abilities. Each exited to be doing something that so few experience. All are true divers but only a few can claim to be a high diver.

SCUBA DUBAI REOPENED IN JANUARY 2012

FEATURE **COLIN NELSON**

After the sad news about the closing of Scuba Dubai towards the end of last year, the local diving community can breathe a sigh of relief to know that Stevie Macleod and the Crew from the Scuba Dubai Workshop aren't going anywhere. The same Scuba Dubai location, same staff, same quality service. Different name above the door. The Workshop has been reopened under Al Boom Diving with Stevie leading the way as General Manager supported by Romi, Aquil and Tom as well as Al Boom Diving's Technicians. Combined, the Team has qualifications, parts and tools to work on almost all major scuba brands.

More news from the Workshop is that Al Boom Diving has now become an Authorized Bauer Dealer and Service Center for the United Arab Emirates. Al Boom Diving's Lead Engineer – Necasio Mindajao is a Certified Bauer Technician and the principals from The Bauer Group have been working closely with the rest of our workshop and sales staff to provide the necessary training to support the high standards associated with their brand.

The old Scuba Dubai shop is also back in business with several new brands on the shelves. Aqua Lung, Apeks, Cress-Sub, Underwater Kinetics, Innovative Scuba Concepts, Trident Diving Accessories, XS Scuba, Sea Pearls, Sea and Sea, GoPro, Poseidon, Amphibious Outfitters, PADI, Spare Air and more. Underwater photographers will be pleased to hear that Leo Cabrera – Scuba Dubai's Ikelite expert has returned to the Al Quoz store and is ready to help with any Ikelite enquiries and orders.

This new location means that divers will not only have another outlet to purchase and service diving equipment but will now be able to sign up for a PADI course, book a dive trip, rent equipment and fill their tanks. Residents of the Arabian Ranches, Motor City, Emirates Lakes, Dubai Marina etc will appreciate this convenient location. Of Course Al Boom Diving's Al Wasl Dive Center will remain open 7 days a week for divers living closer to Jumeirah.

If you have any comments or questions regarding these changes at Al Boom Diving please contact Colin on **00971 (0)50 4534784** of **colin@alboomdiving.ae**.

RED SEA DIVING


Photo by Gordon T. Smith

The Red Sea is a unique marine paradise that offers some of the most spectacular diving in the world. With miles of beautiful coral reef, numerous wrecks and a vast array of marine life from brightly coloured nudibranchs and tropical fish to large pelagic such as oceanic White Tips and Hammerheads, there really is something for everyone! Whether you are a complete beginner or an experienced diver, your Red Sea experience will be one that you never forget!

We will be staying for 7 nights on a 5 Star diving vessel with spacious living areas and staterooms with private facilities and throughout air-conditioning. The fresh water maker allows generous use of showers and rinsing of cameras and equipment. Around the clock electric power (220V) guarantees fully charged strobes and hot and cold water. Center of the social life aboard is the air-conditioned, fully carpeted lounge, with stereo and video system. 3 first class meals, snacks, coffee and tea at your convenience, will make each day enjoyable.

THE DIVE SITES INCLUDE:
Straits of Tiran, Ras Mohammed, Shab Mahmoud (wreck of Dunraven), Shab Ali (wreck of Thistlegorm), Shag Rock, and Shab Abu Nuhas (weather depending).

Must have a minimum of 25 dives and must be an Advanced Open Water diver.

All for just AED 6,800.

Flights + Nitrox + drinking water + all meals are included. (Price is subject to change due to cost of flights).

The flights will be departing Dubai at 5.00am and arriving at Sharm El Sheikh at 9.00am.

Equipment hire can be arranged, along with double tanks, rebreather cylinders etc on request.

If you have Air Miles, or would prefer to book your own flight, the cost of the live-aboard is AED 4,400! If you do want to book your own flight, we need to be arriving in Sharm the morning of Thursday 28/06/12. Deposits need to be in by the end of the month!

For any further information please contact James at the Atlantis Dive Centre.
james@atlantisdivecentre.com

100% AWARE

The Atlantis Dive Centre has continued its commitment to the great work Project AWARE does, remaining a 100% AWARE Dive Centre. For every PADI certification through the Dive Centre, the Dive Centre donates £10 to Project AWARE. Just by learning to dive, you have a positive impact on our environment.

More than just donating money, this coming year we will and have been running 'Dive Against Debris' once a month. January and February we had an incredible amount of volunteers, so thank you to everyone who have given up their time. Many discarded nets have been removed and huge amounts of fish released from the nets. Apart from giving back to the environment the trips are a lot of fun.

For more information about our 'Dive Against Debris', please log onto my Project AWARE blog. Also create your own.
www.projectaware.org/diver/jason-sockett.

ATLANTIS TRIBAL DIVERS

I joined the Atlantis Dive Centre in June last year and was tasked with the running of their schools program. After several meetings and presentations to various schools and the children, Atlantis "Tribal Divers" was up and running.

The enthusiasm and response from the children, teachers and schools was electric and I knew then that it was going to be a very busy year. The enrollment was far beyond anything we had expected. Courses include:

- PADI Seal Teams
- Junior Open Water
- Open Water
- Advanced Open Water
- Rescue and Emergency First Response

All programs are tailored for the individual school.

Each term sees the start of new courses and projects including underwater clean ups, turtle conservation, whale shark watch and shark conservation projects. Some students will be venturing into videography and producing a DVD for the end of the year. This is only one of the exciting projects currently underway.

We shall continue to run day trips to the East Coast and will also offer some overseas dive trips for all our school members. Also this coming Easter, we have a great program planned. Also for you parents, '…not sure what to do with your children for the summer?'

We are currently putting a program together for the summer.

Should you or your school wish to join our school program please contact the Dive Centre to discuss the options available to you.

PUMA'S **MARMO**

FEATURE AND PHOTOGRAPHY **KATHLEEEN RUSSELL**
PHOTOGRAPHY **KEIRA PURDUE**

The start of 2012 was met by nearly 100 enthusiastic beach volunteers and a cute little red Octopus, PUMA's mascot named Marmo. They all came together to participate in the American Community School's Global Issues Conference ICARE project, Abu Dhabi beach clean up on Lulu Island. This event was supported by the Environment Agency of Abu Dhabi, PUMA, Emirates Diving Association, Abu Dhabi International Marine Sports Club, CNIA, Center of Waste Management of Abu Dhabi, Al Mahara Diving Center and Sorouh (Lulu Island). About 40 students took to the beach front and collected over 40 bags of marine debris ranging from plastic bags, beverage cans, food wrappers and even several soggy foam mattresses within one and a half hours.

PUMA's Marmo gave the young volunteers a helping hand and also a photo opportunity as he shared his story called, "Save Our Sea" after the clean up. Marmo highlighted how the marine debris can negatively impact the ocean environment and by being ambassadors of the sea and taking action such as doing the beach clean ups and telling friends about the plight of his ocean buddies, everyone can make a difference and keep the oceans clean, healthy and safe.

The chart shows what volunteers collected in just one and a half hours on a 2km stretch of the beach. This data will be reported to Project Aware's global data so we can have a count of all the trash that is found in and around the sea.

Again, we want to thank all the organisers and the volunteers who took action to help Marmo keep the sea clean. We look forward to the next beach and underwater clean up and hope that everyone will spread the message and bring their friends.

Bags	351
Plastic Beverage Bottles	211
Glass Beverage Bottles	53
Beverage Cans	157
Caps, Lids	117
Clothing/Shoes	7
Eating Utensils	88
Food Wrappers/Containers	231
Pull tabs	51
Straws/Stirrers	31
Toys	13
Bait Containers	1
Buoys/floats	16
Crates	0
Fishing Nets	14
Oil/Lube Bottles	15
Plastic Sheeting/Tarps	43
Rope	30
Strapping Bands	0
Cigarettes/Filters	351
Cigarettes Lighters	0
Cigar Tips	0
Tobacco Packaging/Wrappers	8
Batteries	3
Building Materials	50
Condoms	0
Diapers	0
Caps	117
Paper	15
Pipe	4
Cups	51
Brooms	1
Brush	2
Styrofoam	5

VOLVO OCEAN RACE

HOSTS A BEAUTIFYING BEACH CLEAN WITH AN ARTISTIC DIFFERENCE

Volvo Ocean Race organisers hosted a beach clean on Lulu Island on the 17th January 2012 with the collected rubbish becoming the raw materials for a sculpture that is to be created this week at the Destination Village in Abu Dhabi. Held in each host port throughout the 9 months, 39,000 nautical mile race, in conjunction with art group Skeleton Sea, the Volvo Ocean Race is spearheading a call to arms to reduce pollution and share a simple message through its 'Keep the Oceans Clean!' initiative.

More than 80 members of the Abu Dhabi community and Volvo Ocean Race family of all ages and nationalities participated in the morning beach clean along with local dive centre Al Mahara. The more adventurous of the participants were able to kayak or paddle-board out to the island where they collected rubbish from the shoreline.

Jacqui Smith, project coordinator for 'Keep the Oceans Clean!', said:
"It was fantastic to see so many people participating in the Abu Dhabi Beach Clean, showing the commitment we have to maintaining the natural beauty of our oceans and beaches. With the rubbish haul collected yesterday, our Skeleton Sea artist is well on the way to turning flotsam and jetsam into a stunning sculpture to be created this week (8-14 January) at the Destination Village Abu Dhabi. Adults and children alike can get involved in the artistic action by attending the art workshops where they will have the chance to make their own individual contribution to the unique installation."

João Parrinha, Skeleton Sea artist, said:
"The beach clean was a great success, with lots of people turning up to help us collect the rubbish. We've been getting as much rubbish as we can so we can make a fish sculpture for display in the Destination Village. In the workshops we'll be making the fish scales with the kids. It's amazing to work with them; what they do and what they create is very unexpected and wildly creative. It's a lot of fun to work with them."

Rubbish and debris collected by the group will go towards Volvo Ocean Race's 'Keep the Oceans Clean!' art workshop campaign,

an initiative organised in collaboration with international artist-activists, Skeleton Sea. Beach rubbish, including old plastic bottles, wrappers and other beach trash plus weathered and dead materials, are brought back to life by the group to form skeleton-like art.

The beach clean was successfully coordinated with support from Al Mahara Diving Centre, Abu Dhabi International Marine Sports Club, Environment Agency of Abu Dhabi, CNIA (Critical National Infrastructure Authority), Emirates Diving Association and the Center for Waste Management.

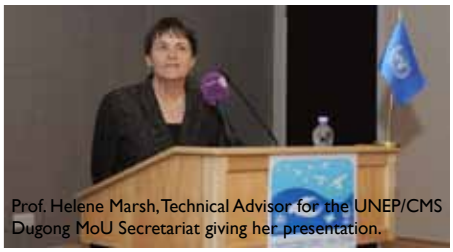
PASSING THE
OPEN WATER COURSE
FEATURE **DARREN DREWERY**

Al Mahara Diving Centre has the great pleasure of congratulating the following students on completing their Open Water Diver course . It was a fantastic weekend had by all, which culminated with Al Mahara's dive boat being followed back to the marina by a pod of up to twenty humpback and bottle nose dolphins.

Congratulations to Ashley Kirchberg, Stefanie Loan, Amr Abulhasan, Alain Bourjeily, Fouad Ishac, Hesham, Omar, Rana, The 3 musketeers – Robert Hugg, Aiden Hugg and Brighton Hugg – Lloyd and Annaliese. We look forward to seeing you again soon. Keep Bubbling.

THE DUGONG, SEAGRASS & COASTAL COMMUNITIES INITIATIVE LAUNCHED AT THE S.O.S: "SAVE OUR SIRENIANS" EVENT IN ABU DHABI

Dr. Donna Kwan, Programme Officer for the UNEP/CMS Dugong MoU giving an intrdouction about the initiative.



Prof. Helene Marsh, Technical Advisor for the UNEP/CMS Dugong MoU Secretariat giving her presentation.

ABU DHABI, 27 FEBRUARY 2012

A program to improve livelihoods and create economic opportunity in exchange for the conservation of dugongs and their seagrass habitat was officially launched in Abu Dhabi yesterday. The Dugong, Seagrass and Coastal Communities Initiative aims to attract funding partners whose investment in rural coastal communities and local partnerships will return financial and environmental benefits to communities in developing nations. The initiative will provide incentives for conservation activities and environmental safeguarding across the dugong's range using innovative financial, educational and knowledge transfer tools.

The initiative was launched at the S.O.S: Save Our Sirenians – Dugongs and West African Manatees event in Abu Dhabi, which opened with an address from Mr Thabit Zahran Al Abdessalaam, Executive Director of the Marine and Terrestrial Biodiversity Sector, Environment Agency – Abu Dhabi (EAD) followed by an introduction to the initiative from Dr Donna Kwan, Programme Officer for the UNEP/CMS Dugong MoU.

Dr. Nicolas J. Pilcher, Technical Advisor for the UNEP/CMS Dugong MoU Secretariat, went on to explain that this approach addresses the joint challenges of the 21st Century environmental conservation and sustainable development, while maximising the impact of investors' funding by combining investment with conservation and development tools. The initiative's flagship species is the dugong, but its broader contribution will be to show how pioneering partnerships among investors, local communities, conservationists and scientists can combine conservation efforts, sustainable development and financial investment to the benefit of all.

Prof. Helene Marsh, Technical Advisor for the UNEP/CMS Dugong MoU Secretariat and internationally recognised expert on sirenians, gave presentations entitled, 'The West African Manatee in Crisis and 'Dugongs at the Edge'. The presentations highlighted the need for coordinated effort in preserving the existence of both these species, remembering that the dugong's closest modern relative, the Steller's sea cow, was hunted to extinction in the 18th Century.

The event was organized by the UNEP/CMS Office – Abu Dhabi which services two Memoranda of Understanding (MoU): the Dugong MoU and the African Eurasian Birds of Prey MoU. They operate under the United Nations Environment Programme (UNEP) and the Convention on Migratory Species (CMS). The UNEP/CMS Office – Abu Dhabi is funded and hosted by the Environment Agency – Abu Dhabi on behalf of the Government of the United Arab Emirates.

The dugong and the West African manatee are closely related members of the Order Sirenia. The dugong is a strictly herbivorous marine mammal with a dolphin-like tail, whereas the West African manatee lives in freshwater river systems, has paddle-like tails and may also eat small amounts of fish in addition to vegetation. Key threats to the dugong are incidental catch in artisanal fisheries as well as illegal poaching, while the West African manatee is threatened primarily by the increase in bushmeat consumption. Both species suffer greatly from habitat loss caused by coastal development and climate change, and both species are subject to hunting.

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) works for the conservation of a wide array of endangered migratory animals worldwide through the negotiation and implementation of agreements and action plans. CMS, which acts under the auspices of the United Nations Environment Programme (UNEP), is a rapidly expanding global biodiversity convention with special expertise in the field of migratory species. At present, 116 countries are Parties to the Convention.

For more information please visit:
http://www.cms.int

Thabit Al Abdessalaam, Executive Director of the Marine & Terrestrial Biodiversity Sector speaking at the Launch.

GHOST NET REMOVAL EXCERCISE

FEATURE **DARREN DREWERY** PHOTOGRAPHY **ANDRE COSSETTE**

The day started at 0630am on the 30th December. The Al Mahara team gathered at AM HQ for a brief on the day's events and to receive their individual responsibilities.

We headed off in two crammed 4x4 fours and a trailer full of all the diving and safety equipment. As we headed into the Abu Dhabi city centre, all heads craned around to see the UAE national flag out on the Corniche breakwater to see if the weather reports we had all been watching with anticipation had been accurate and the flag would be limp or the flag would be flowing full tilt and we would have to postpone… I had decided that the wreck that needed the most attention by our ghost net removal exercise was the M/V Jasim, a stunning wreck laying on its port side between 26-30 metres and is about 60km off the Abu Dhabi coast. When planning the exercise, we had to work around the sometimes temperamental weather of the UAE waters. Heading that far out on a 37 ft hard hulled boat and then having the weather change, could make for a very interesting trip back.

The volunteers arrived by 0815am and we went straight into the boat safety brief and the brief for the dives. Everyone was excited and there was a buzz in the air that only comes from diving, particularly on that day as it was not just a normal dive, but a conservation exercise and a learning curve. All of the day's participants had a general idea as to why we do not want these nets hanging on the wrecks of the UAE, but on this day we reinforced the importance of clearing these nets. Wrecks are like Eco systems of their own and just one badly positioned net could destroy this. Once a fisherman cuts a net away because it can't be lifted, it will stay there and trap and ultimately kill the marine life until it is either removed by divers or slips onto the sea bed where it then starts to damage the ocean's animals and corals that reside there.

After about an hour and a half boat ride out to the dive site, everyone started to get ready. We had a slight 2 ft swell which made our entry a little bit more exciting but none the less, within 15 mins, all 10 divers were safely at the bow of the boat and starting their descents down the anchor line (which has been perfectly dropped off the port side of the hull). I had buddied up with Andre, a regular diver and PADI Open Water Scuba Instructor who also took the photos for the day. We started the long and cautious job of slowly cutting away at the nets that hung over the boat like a flowing curtain of death. After we had very carefully removed and stuffed as much netting into the bags which were going to be lifted to the surface, we started our ascent. I remember looking down as the wreck started to mould into the blue background of the ocean and thinking how lucky I am to be able to see the things I do.

Once we had finished our second dive and brought up yet more netting, there was an air of satisfaction on the boat. We all knew that although we had cleared a lot of netting off of the wreck, there was still more to do and we had only made a minor dent in the ever growing ghost net problem that is apparent across the whole of the UAE's wrecks. Upon reaching the shore after the hour and a half boat trip back, we emptied the boat of all the bags of netting and any other rubbish we had collected and enjoyed a few moments of recollection about the days diving and the general consensus was that we all couldn't wait to get back to the Jasim for another day of diving.

The ghost nets here in the UAE are a concern for the marine life and even if we go out every weekend removing discarded nets left by the fishermen, we know that we are not solving the problem. We need to educate the fishermen themselves. If the nets keep getting left behind and killing the marine life, eventually there will be nothing left for the future generations to see but also to fish. Sites like these should be used as breeding grounds for the fish life to thrive and grow strong.

I would like to thank all the ladies and gents that joined us for the ghost net removal exercise, to Andre for his fantastic photography coverage of the event, to Arnel the boat skipper and to Al Mahara for helping organise the event.

Please keep your eyes peeled on the Al Mahara website **www.divemahara.com** or come and join us on the facebook group for further exercises as I can promise more will be happening.

Darren Drewery – Master Scuba Diver Trainer
Darren@divemahara.com

A NEW AND EXCITING YEAR **WITH NOMAD**

FEATURE **CHRIS CHELLAPERMAL AT NOMAD OCEAN ADVENTURES**

With 8 years of experience in the diving industry we have gained invaluable knowledge on diving in the Musandam. we know the dive sites throughout and have actually discovered a few. At Nomad, we are a dive center like no other. Like many operators we offer diving trips and courses but what sets us apart is that we have based ourselves in a guesthouse. Since we have started operating we have always been looking to offer value for money. Every weekend we have a regular clientele that comes through our doors seeking adventure, good food and a good laugh! This is what Nomad is all about.

It's not just the cool ambiance and the smiles on divers faces that sets us apart, but when you come and dive with Nomad we offer you piece of mind and enhanced safety. We are the only dive center in the Musandam offering free nitrox to all certified divers, all our boats are equipped with a thuraya satellite phone and an 8l oxygen kit that allows for emergency decompression. We have rescue plans that are not just on a piece of paper, but a plan that we test out regularly to ensure that if needed, we can have a quick and positive response which at the end of the day makes the difference!

Rebreathers have recently become popular and it seems everyone is getting into it! We have 2 rebreather rental units at the dive center and offer training or introductory dives. We are the exlusive dealers of Subamtix which is a German rebreather. What is interesting about these machines, is that they have been created alongside the expertise of some professionals and have been thought of in the perspective of divers! They are dual functional and offer full electronic control as well as manual systems for operations. I often compare rebreathers to sports cars and in many cases when you look at those machines it is a bit like comparing a Lamborgini and a Ferrari, but one thing is for sure, would you buy a Ferrari that can't go over third gear? The Subamtix rebreathers can be used in no decompression time but also allow for decompression if needed and is the absolute must if you want to go over that no decompression time that forces you to go back up when you're diving with scuba! It is a real treat for photographers as we get immersed in schools of fish, but it is also a real new start if you think you have done it all in scuba!

Imagine you get into rebreathers and you buy your own unit and you want to travel… Not every center in the world is rebreather friendly. Sure it is getting popular, but it is still limited.

In that respect, we have joined a network of centers called hsdc. There are 15 hsdc's scattered around the world with destinations in the Carribean, the Maldives and Polynesia. These centers are Submatix rebreather friendly and usually have units, tanks for rental and specialize in guiding recreational or technical rebreather divers!

This year, as we have for the last three years, welcomed "Plongeur du monde". They have trained Omani kids diving for free from Dibba, generally from families of fishermen. After a long discussion with "Plongeur du monde", we have approached "Longitude 181", another association. Together we have decided that this year we want to introduce marine awareness amongst the children of Dibba.

We are aiming at raising the concept of ecosystems and the importance of sharks in the sea, educating the children about shark conservation through games after diver training. As many of you might have noticed, there is a serious problem of overfishing sharks in the Middle East. It is not a secret that the shark stocks are quickly depleting, leaving fewer sightings during dives and the catch in Dibba harbor seems smaller in size over the years.

Diving at Nomad is going to be very exciting in the coming year, whether you have been one of our regular divers or a brand new diver. Never forget diving is fun!

LIFE AT SEA

WITH AN ARABIAN DIVER COASTAL CAPER

FEATURE **SEVEN DAYS**

What does a 'Coastal Caper' entail?
You arrive at the Al Hamra Marina, Ras Al Khaimah at 8.30am and board a luxury yacht which takes you out into the open sea for a day of snorkelling, scuba diving, fishing or general relaxation!

8.30am in Ras Al Khaimah – that's a little early?
Yes. It does mean getting up at 7am on my day off and as much as I was dreading the idea the night before, it felt so nice to actually be up doing something and making the most of where I live. The drive from Dubai to RAK was peaceful and almost a joy to do!

So what happened once you'd set sail?
We sat back in comfy cabana-style seats as fresh juices were served.

My partner was given a rod and introduced to the art of fishing which kept him quiet while my friend and I just chatted away watching the coast slip further out of view before a delicious breakfast was served.

To be honest I had been more than a little cautious about the standard of food, being a worrier, but in reality the fare was tasty enough to have been served up by one of Dubai's top restaurants.

So when did the snorkelling begin?
We eventually dropped anchor near to an old shipwreck and were kitted out with masks, fins and even wetsuits for those who weren't brave enough to face the water in just trunks or bikinis! We were offered a quick course introducing us to scuba diving but we were quite happy with snorkelling. The water was crystal clear so we were able to see great marine life, even turtles on the wreck. The divers could be seen from onboard the boat and they looked as they were truly peacful in that silent world.

How long could you snorkel for?
The crew were really flexible and asked the guests how long they wanted.

Those diving took a while longer than us snorkellers but that was great as it gave us a chance to wash our hair and clean up in the fantastic onboard showers – I had been expecting a hose pipe but the showers were nicer than my apartment!

What did you do next?
A three-course lunch was served on the beautifully-laid tables. It was one of those moments where you realise why it's great to live in Dubai. We'd just been snorkelling and were drying off while being served food under the sun. All the soft drinks you like are included all day long.

And then was it home time?
It took a few hours but with all that sea air many of us slept. Magazines were provided and others sunbathed or fished for the couple of hours it took to reach the marina. We witnessed a beautiful sunset and it was after 5pm when we reached. I'd readily recommend the trip for anyone feeling stressed or needing a reminder of why it's good to live in the UAE.

MAKING WAVES
Arabian Diver runs full-day boat trips daily except on Sundays. The trips are Dhs 500 all inclusive but there is a 10% discount offer running at the moment. Call 050 242 8128 or 07 243 3800 or visit booking@arabiandiver.com to book your places.

FEATURED **CREATURE**

ORANGE-SPOTTED GROUPER *(Epinephelus coioides)*

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

Local Species in the IUCN Red List 2011

RED LIST CATEGORY & CRITERIA: NEAR THREATENED

Scientific Name: *Epinephelus coioides*
Common Names: Orange-spotted Grouper; Hammour

Justification: The Orange-spotted Grouper is unlikely to become extinct as hatcheries in a number of countries are now able to produce fry from captive brood stock. However, there is only a limited supply of grouper seed for mariculture, and much current grouper mariculture is still based on the supply of wild-caught grouper seed. This reliance on wild caught seed may actually remove groupers that might otherwise reproduce and supplement the wild stock. Given that *E. coioides* is widely targeted across its global range as adults for food, and as juveniles in SE Asia for culture, it is unlikely that such heavy harvest on this grouper is sustainable in long term and wild populations of this grouper are likely being depleted. However, more information on catch volumes is needed, since trade volumes can reflect many things other than catch rates.

Epinephelus coioides is assessed as being Near Threatened because the overall decline of imports of plate-sized fish from SE Asia into Hong Kong (a major import centre for live fish), extensive take of juveniles for international juvenile trade for mariculture grow out which is completely unregulated and documented, and large losses in mangroves in some of the largest countries in SE Asia, key habitat for young E. coioides from many areas of SE Asia.

This species also forms spawning aggregations (at least in some regions), and shows long life (maximum recorded 22 years), factors which are likely to increase its vulnerability to overexploitation. Spawning aggregations of groupers have consistently been shown to be easily overexploited as fishes from a large area will gather in a small place at the same time and place each year, making them attractive targets for fishers. It seems likely, that species of grouper that are sought after for food and that form spawning aggregations, will be more vulnerable to overfishing than those that are not targeted and do not.

For such a significant commercial species, little is known of its biology or catch rates – efforts need to be made to address both data gaps.

Geographic Range: *Epinephelus coioides* occurs in the Red Sea south to at least Durban (South Africa), eastwards to Palau and Fiji, north to the Ryukyu Islands (Japan), and south to the Arafura Sea and Australia. It has also migrated through the Suez Canal to the eastern Mediterranean. Its extent of occurrence and area of occupancy are unknown. This species is also frequently misidentified as E. malabaricus or E. tauvina in aquaculture and fisheries literature.

A spawning aggregation of *E. coioides* has been reported from Papua New Guinea where 1,000 to 5,000 fish congregate in the muddy/

sandy bottom of a large shallow bay for three to four days in every month of the year. At night, the fish sleep partially buried in the mud and have been targeted by local fishers for generations. Fish are speared from a canoe with a hand held spear at night using light lamp to locate them. Fishers report that 30 to 40 years ago they could take between 200 and 500 fish in a night, whereas in 2003 they were catching between 50 and 100 fish in a night, a decline of >50%.

E. coioides has also been reported to form mixed spawning aggregations with Epinephelus malabaricus in a bay in New Caledonia.

Native: Australia; Bahrain; Bangladesh; Brunei Darussalam; Cambodia; China; Djibouti; Egypt; Eritrea; Fiji; Hong Kong; India (Andaman Is.); Indonesia; Iran, Islamic Republic of; Iraq; Israel; Japan (Nansei-shoto); Jordan; Kenya; Kuwait; Lebanon; Macao; Malaysia; Mozambique; Myanmar; Oman; Pakistan; Palau; Papua New Guinea; Philippines; Qatar; Saudi Arabia; Singapore; Solomon Islands; Somalia; South Africa; Sri Lanka; Sudan; Taiwan, Province of China; Tanzania, United Republic of; Thailand; United Arab Emirates; Viet Nam; Yemen.

Population Trend: Decreasing

E. coioides is so widely distributed that estimating overall population size, or changes in overall population size, is near impossible. As a result little is known about the population. Minimum population doubling time is 1.4–4.4 years.

Habitat and Ecology: Adults are reef-associated and are often found in brackish water over mud and rubble. Juveniles are common in estuaries over sand, mud and gravel and among mangroves.

Maximum age recorded is 22 years. Females are mature at 25–30 cm total length (2–3 years old), sexual transition occurs at a length of 55–75 cm, and the major spawning period in the Arabian Gulf is from March to June. In the southern Arabian Gulf it is March to May. In New Caledonia spawning aggregations form in late October to early December.

Major Threats: Overfishing and habitat destruction are the two most possible threats. Habitat destruction includes that of coral reefs (adult habitat) and mangroves (juvenile habitat along with estuaries).

Significant decreases in mangrove area are known to have occurred in SE Asia. In Malaysia, 12% was lost from 1980 to 1990, in the Philippines mangroves have decreased by 60% (4,000 km² originally to 1,600 km² in 1997), in Viet Nam mangroves decreased by 38% (4,000 km² to 2,525 km² in 1997), while in Thailand the loss has been 54% (5,500 km² in 1961 to 2,470 km² in 1997). These figures represent a loss of some 7,445 km² of mangroves (about 9 % of the SE Asian total) while other countries like Indonesia, which has the largest total area of mangrove habitat in the world (42, 550 km²) are also known to have suffered losses. Such destruction of important habitat will have undoubtedly reduced populations of E. coioides.

Conservation Actions: Totally protected in New South Wales waters.

Tagged *E. coioides* are released on artificial reefs in Yan Chau Tong and Hoi Ha Wan Marine Park in 2001 as a part of restocking trial (these together with Red Snapper account for 15,000 fish released to-date).

Mariculture of this grouper is carried out in SE Asia. This fish is being cultured for local consumption in Thailand and for export using mainly seed supply from the wild. This fish is also cultured in Singapore and Taiwan.

Under current Queensland (Australia) fishery regulation, E. coioides, whose length is less than 35 cm or more that 120 cm is protected.
Previous feature creatures:

Source: Cornish, A. & Harmelin-Vivien, M. 2004. Epinephelus coioides.

In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2.

www.iucnredlist.org

SHARKWATCH
ARABIA

SHARKWATCH ARABIA
UPDATE

WHALE SHARKS DISAPPEAR FOR WINTER...AGAIN

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

The winter months have again seen the whale sharks almost completely disappear from around the region with only two reported sightings in December, one in the Musandam and one in the Daymaniyats. There have been no reported encounters in January or February so far. This fact in itself supports the theory of a 'season' for the whale shark within the Arabian Gulf and Musandam region of Oman. Remote satellite imagery has shown that sea surface temperatures (SST) within the Musandam dropped to around 25°C in mid-January, whilst in-water temperatures in the Emirate of Dubai reached a low of around 19°C. Factors affected by water temperature such as zooplankton density could be an explanation for the disappearance of the sharks; time will tell and we hope to build up a better picture of occurrence in the upcoming years.

MANY THANKS

We would like to take this opportunity to thank the following individuals for their support and for sending in sightings to Sharkwatch Arabia:

- Christopher Chellerpermal
- Khaled Sultani

If you or your company would like to sponsor a satellite tag then please get in touch via the Sharkwatch Arabia website. If you encounter a whale shark in this region, please visit **www.sharkwatcharabia.com** and report your sighting.

IMPACT OF REEF FISHERIES

FEATURE **GARY PRESTON**

Humans are as much a part of the coral reef ecosystem as are the corals and fish themselves. When harvesting takes place at sustainable levels, fishery impacts on coral reefs are moderate and can be absorbed by the ecosystem. Prior to the development of technologically sophisticated or highly destructive fishing methods, and links to large-scale seafood markets, coastal communities had only limited capacity or incentive to over-exploit coral reef fisheries. Essentially, there was little point in harvesting more than the amount required for the community's immediate needs, since, even using traditional preservation techniques (smoking and drying), the harvest was highly perishable. In addition, many communities regarded reef fishery resources as an 'emergency larder' to be used when natural disasters such as cyclones or droughts caused the loss of agricultural production. Many customary practices, such as closing off reef areas following the death of a clan leader or respected elder, also had beneficial impacts on marine resources by creating sanctuaries or protected areas.

Today, things are quite different. Apart from the most remote and isolated areas, most coastal communities in tropical countries of the Indo-Pacific are integrated to a greater or lesser degree into the cash economy. Even where the lifestyle is largely subsistence in character, there is still a need for cash to purchase fuel, staples and consumer items, and to pay for school fees, transportation and health services. Cash needs are greater still in more urbanised settings, and harvesting marine resources is an obvious way to meet this need. As a result commercial imperatives are placing ever-increasing pressures on coral reef fishery resources, even in far-flung areas. Where refrigeration is available a wide variety of species may be harvested for fresh or processed use. Where infrastructure is more limited, the species that can be harvested may be restricted to sea cucumbers, trochus, pearl shell and shark fin, which can be dried to produce a sufficiently high-value product without the need for refrigeration.

The impacts of fishing on coral reefs may thus vary from being quite limited (in a very few inaccessible locations, or where reefs are highly protected, such as in the USA and Australia), through the over-fishing of selected species, to wholesale over-exploitation accompanied by widespread habitat destruction. The results of such impacts are not always obvious, or well-understood. Where fishing and habitat destruction has been extreme, reefs may become barren and unproductive, a result seen in some parts of the Philippines. Removal of herbivorous fish from the reef community may result in algal blooms which smother corals and eventually replace them, in a process which may be irreversible. This may give rise to secondary effects such as outbreaks of ciguatera poisoning, which arises from a microscopic alga that grows on the surface of certain seaweeds which themselves grow on dead coral surfaces. Where over-fishing is more selective, such as the large-scale removal of holothurians which has taken place in many areas to supply the sea cucumber trade, impacts may be harder to see. Sea cucumbers are primarily sediment feeders and are responsible for turning over of bottom sediments, playing a similar role to earthworms on land. Removal of sea cucumbers is thought to lead to reduced oxygenation of seafloor sediments, altering the habitat and making it less favourable for burrowing bivalves, which may themselves have subsistence or economic value.

A further impact of coral reef fisheries, which is only now becoming widely recognised, is on the ability of the resources themselves to recover. It is the view of many fisheries managers that, if fishing pressure on a stock is reduced or eliminated, the stock will then recover to previous levels of abundance. However this model is too simplistic for many tropical species, because of their specialised reproductive strategies and other aspects of their life histories. In the case of sea cucumbers, pearl oysters, giant clams and other reef-associated invertebrates, as well as possibly some fish, reducing population densities below certain levels will severely impede fertilisation success, leading to reproductive failure. The result is that these populations may be unable to recover even if fishing is stopped completely. There are numerous examples of tropical lagoons in the Pacific Islands where previously abundant resources of pearl shell and sea cucumber have been wiped out and have not recovered even after several decades

Andrew H Baird/Marine Photobank

Maximilian Hirschfeld 2010/Marine Photobank

Alessio Viora/Marine Photobank

http://www.reefbase.org

INTRODUCTION: ABOUT REEFS AND RISK

"One way to open your eyes is to ask yourself, 'What if I had never seen this before? What if I knew I would never see it again?'"
Rachel Carson


Howard Peters 2008/Marine Photobank

Coral reefs are one of the most productive and biologically rich ecosystems on earth. They extend over about 250,000 sq km of the ocean – less than one-tenth of one percent of the marine environment – yet they may be home to 25 percent of all known marine species. About 4,000 coral reef-associated fish species and 800 species of reefbuilding corals have been described to date, though these numbers are dwarfed by the great diversity of other marine species associated with coral reefs, including sponges, urchins, crustaceans, molluscs, and many more (**Box 1.1**).

Coral reefs exist within a narrow belt across the world's tropical oceans, where local conditions – climate, marine chemistry, ocean currents, and biology – combine to meet the exacting requirements of reef-building corals. A coral reef is both a physical structure and a diverse ecosystem. The physical structure is built up from the sea bed over centuries or millennia through the accumulated deposition of limestone-like (calcium carbonate) skeletons, laid down by reef-building corals. This structure, with a living veneer of corals on its surface, provides the basis for the incredible diversity of plant and animal species that live in and around it. Together, they form the coral reef ecosystem.

WHY REEFS MATTER

Dynamic and highly productive, coral reefs are not only a critical habitat for numerous species, but also provide essential ecosystem services upon which millions of people depend.

FOOD AND LIVELIHOODS: One-eighth of the world's population – roughly 850 million people – live within 100 km of a coral reef and are likely to derive some benefits from the ecosystem services that coral reefs provide. More than 275 million people live very close to reefs (less than 10 km from the coast and within 30 km of reefs.)

Many of these people live in developing countries and island nations where dependence on coral reefs for food and livelihoods is high. Reef-associated fish species are an important source of protein, contributing about one-quarter of the total fish catch on average in developing countries. A healthy, well-managed reef can yield between 5 and 15 tons of fish and seafood per square kilometre per year.

TOURISM: Coral reefs are vital to tourism interests in many tropical countries, attracting divers, snorkelers, and recreational fishers. Reefs also provide much of the white sand for beaches. More than 100 countries and territories benefit from tourism associated with coral reefs, and tourism contributes more than 30 percent of export earnings in more than 20 of these countries.

TREATMENTS FOR DISEASE: Many reef-dwelling species have developed complex chemical compounds, such as venoms and chemical defences to aid their survival in these highly competitive habitats. Many such compounds harbour the potential for forming the basis of life-saving pharmaceuticals. Explorations into the medical application of reef related compounds to date include treatments for cancer, HIV, malaria, and other diseases. For example, scientists have synthesized an anti-cancer agent discovered in Caribbean sea squirts into a treatment for ovarian and other cancers. Since only

BOX 1.1. CORAL REEF ECOSYSTEMS

The approximately 800 species of reef-building corals that inhabit tropical oceans are simple organisms. Individual coral animals known as polyps live in compact colonies of many identical individuals and secrete calcium carbonate to form a hard skeleton. Corals produce colonies in a multitude of shapes – huge boulders, fine branches, tall pillars, leafy clusters – and vibrant colours. These colonies build around and on top of one another, while sand and rubble fill the empty spaces.

Calcareous algae also contribute by "gluing" together the matrix to form a solid three-dimensional structure. Thus, a coral reef is born.

A coral polyp has a simple tubular body with a ring of stinging tentacles around a central mouth. The polyps contain microscopic plants or algae (known as zooxanthellae) which live within their tissues. Corals filter food from the water using their tentacles, but they also rely heavily on their zooxanthellae, which use the sun's energy to synthesize sugars. The algae provide a critical source of food to the corals, enabling them to grow where nutrients are scarce, but restricting them to shallow waters, typically 50 meters or less in depth. Some coral species do not have zooxanthellae, and can thrive even in dark, cold or murky waters. In most places they do not build large structures, but coldwater coral reefs have recently been discovered in many areas of deep cold oceans. Unlike tropical coral reefs, these reefs have much lower diversity and are quite different ecosystems. (Coldwater reefs are not included in this analysis.)

Reef types: Scientists often describe reefs by the shape of the structures they build. Fringing reefs follow the coastline, tracing the shore tens or hundreds of meters from the coast. Barrier reefs lie far offshore, separated from the coast by wide, deep lagoons. Far out in the open ocean, some coral reefs mark the remains of what were once high islands, where atolls have been formed by the continued upward growth of corals, even as their original bedrock – ancient marine volcanoes – has sunk to form a lagoon.

Reef species: Living among the towers, canyons, and recesses of a typical coral reef structure are thousands of species of fish and invertebrates. Soft corals, whip corals, and sea fans are close relatives of the reef-builders, but lack their hard skeletons. Sea urchins and sea cucumbers are among the grazers. Sponges take a multitude of forms and, as immobile creatures, constantly filter the water for food. Over 4,000 fish species inhabit coral reefs. Some butterflyfish and parrotfish feed on the corals themselves, while damselfish and others feed on plant life, and groupers prey on smaller fish and reef-dwellers. Crabs and lobsters are among the many nocturnal feeders. Worms and molluscs burrow inside the corals and rocks, collecting microscopic plankton.

Reef area: Coral reefs are found in the shallow seas of the tropics and subtropics. The total area that coral reefs inhabit globally is approximately 250,000 sq km, which is roughly equivalent to the size of the United Kingdom.


Dean Jacobson/Marine Photobank

a small portion of reef life has been sampled, the potential for new pharmaceutically valuable discoveries is vast.

SHORELINE PROTECTION: Beyond their biological value, the physical structures of coral reefs protect an estimated 150,000 km of shoreline in more than 100 countries and territories. Reefs dissipate wave energy, reducing routine erosion and lessening inundation and wave damage during storms. This function protects human settlements, infrastructure, and valuable coastal ecosystems such as seagrass meadows and mangrove forests. Some countries – especially low-lying atolls such as the Maldives, Kiribati, Tuvalu, and the Marshall Islands – have been built entirely by coral reefs and would not exist but for their protective fringe.

SOURCE: Burke L., Reytar K., Spalding M., Perry A. (2011) Reefs at Risk Revisited, World Resources Institute, Washington, DC. pp. 130

http://www.reefbase.org


Joshua Cinner/ARC Centre of Excellence for Coral Reef Studies/Marine Photobank

NUMBER OF PEOPLE **DEPENDENT ON REEFS**

With such a diverse range of coral reef stakeholders, it is not surprising that estimates of the number of people dependent on reefs vary widely, according to the definition of reef dependence or reef stakeholders applied. Moberg and Folke (1999) stated that in over 100 countries with coral reefs along their coastlines, at least tens of millions of people are likely to depend on coral reefs for part of their livelihood or for part of their protein intake. According to the International Coral Reef Action Network (ICRAN), 'An estimated one billion people currently depend on fish for food, income and livelihood, at least 85% of whom rely principally on fish as their major source of protein'. The International Coral Reef Initiative (ICRI) extends this figure further by saying that fish catches from shallow coastal waters dominated by coral reefs in Asia alone, are estimated to support 1 billion people.


Photo by Joshua Cinner/ARC Centre of Excellence for Coral Reef Studies/Marine Photobank

In spite of these impressive figures for reef dependence, the situation remains poorly understood except in localised situations. One of the most data-rich areas of reef dependence is that of small-scale fishers. According to an IFAD study smallscale fishers are identified as a functionally vulnerable group amongst the rural poor. For many smallscale fishers, the reef represents an important resource whose diversity and physical complexity favours low investment and low technology small-scale production. From an analysis of the numbers involved in this stakeholder group, it is clear that throughout the world, many millions of people are dependent on coral reef fishery employment alone. However, it will become clear from future sections that benefits from fisheries are only part of the complex benefit flows that reefs produce.

SOURCE: Whittingham, E., J. Campbell and P. Townsley, (2003) Poverty and Reefs. A Global Overview
DFID-IMM-IOC/UNESCO, 260pp. Available from: http://www.reefbase.org

MARINE PARKS
SHOW SUCCESS IN INDONESIA

FEATURE **JENNY WILLIS, REEF CHECK INDONESIA**
PHOTOGRAPHY **REEF CHECK INDONESIA**

Bingin Reef. One of the healthiest reefs in Bondalem.

Recent research supports observations from Reef Check Indonesia that marine reserves increase the diversity and abundance of plants and animals within them.

The Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) has completed a review of more than 200 peer-reviewed recent scientific publications about 150 marine protected areas in 61 countries, and has concluded:

- Biomass, or the mass of animals and plants, increased an average of 446%.
- Density, or the number of plants or animals in a given area, increased an average of 166%.
- Body Size of animals increased an average of 28%.
- Species Density, or the number of species, increased an average of 21% in the sample area.

It also found that increases were similar in places of different latitude, in both temperate and tropical reserves.

Reef Check Indonesia Field Officer, Derta Prabuning said the finding of the PISCO research is supported by anecdotal reports given to him by local fishermen.

"Additional to the ecological monitoring we do regularly, the best indication comes from what we hear from the fishermen's experience. Fishermen are saying there appears to be increasing fish abundance since the Locally Managed Marine Areas (LMMAs) were set up in Bondalem (2008) and Tejakula (2009)."

Derta also said it now appears that more rare ornamental fish can be found in the LMMAs and that there appears to be lots of new coral growing. More research is needed in Indonesia to verify these observations.

NEW PARTNERSHIPS
HELP REEFS IN INDONESIA

FEATURE **JENNY WILLIS, REEF CHECK INDONESIA**
PHOTOGRAPHY **REEF CHECK INDONESIA**

Reef Check Indonesia has been busy the past month certifying new EcoDivers and Trainers!

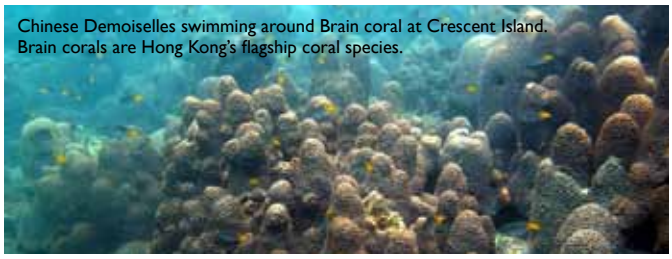
Nusa Lembongan's coral reefs will now be better monitored thanks to a new partnership on the island. Two local dive instructors, Andrew Taylor and Cody Macdonald, completed their Reef Check EcoDiver Trainer certification. Andrew and Cody co-founded the Blue Corner Dive Centre on Nusa Lembongan, a small island off the coast of south-east mainland Bali. The training certifies them to deliver the accredited EcoDiver training to others, so that they can take part in Reef Check's global coral surveys.

Jensi Sartin, chairman of Reef Check Foundation Indonesia, said that surveying the condition of reefs is a key way to monitor the effects of climate change and human-caused damage to reefs. He says, "Becoming an EcoDiver is a great way to take an active part in preserving the world's coral reefs. Anyone who can snorkel or dive can do the two day training course and join the community of hundreds of other EcoDivers around Indonesia." Having more EcoDiver trainers is one way in which dive centers can assist to protect Indonesia's reefs. "If we have more trainers then we can train more people. If we have more EcoDivers we'll be able to do more surveys and collect more data about which areas and species are particularly vulnerable and need help," Mr. Sartin added. "Reef Check is working with Indonesia communities on lots of projects, but working with dive centers is really important to us. Dive instructors spend a lot of time interacting with the reef, and they are in the privileged position of being able to teach new divers about how to look after coral and minimize their impact on it. It's really great to have Blue Corner Dive Centre become a local champion and motivate other businesses to also get involved in protecting the local reefs so we can enjoy them into the future." December saw a big step forward for coral reef conservation at Tanjung Benoa, Nusa Dua, Bali. Being one of the most popular places in Bali for watersports, Nusa Dua's marine environment is very important for Bali's tourism industry. That's why Jensi Sartin says it's great news that five very experienced dive leaders and the head of the local branch of the marine tourism authority have become part of Reef Check Indonesia's EcoDiver network. "It's really great to have such experienced dive guides from dive centres in Tanjung Benoa on board – each of these guys have done more than 500 dives," said Mr. Sartin who taught the EcoDiver course. This initial monitoring team is an important step for the Tanjung Benoa area, "if these people didn't come forward, no one will take care of the reef and it will be unmanaged and most likely destroyed." Mr I. Made Tromat, Head of Gahawisri (Indonesian Marine Tourism Association) Badung Region said the newest EcoDivers will take part in the coral reef monitoring project this January. "We're really happy to join this session especially because we've already done hundreds of dives. But by having this course, it gives us more understanding about the coral, fish, invertebrates and humans and how they interact," he said. "It will change the way that we dive. In the past we just look, but now we understand more about what we are seeing and if the coral looks sick. It's good for tourism to look after our reefs and beaches."

Many thanks to The Nusa Dua Reef Foundation and The Body Shop Foundation for their help in making these trainings possible. If you are ready to do something good for Indonesia's reefs, why don't you become an EcoDiver too? Go to **www.ReefCheck.or.id** and click "Kontak" for our contact details.

SATISFYING RESULTS FOR REEF CHECK HONG KONG 2011

FEATURE **REEF CHECK HONG KONG**



Chinese Demoiselles swimming around Brain coral at Crescent Island. Brain corals are Hong Kong's flagship coral species.

In collaboration with Reef Check Hong Kong, the Agriculture, Fisheries and Conservation Department (AFCD) has coordinated an annual survey of Hong Kong's corals since 2000. AFCD held a presentation ceremony on December the 3rd in appreciation of the work of Reef Check teams and their contribution to the success of Hong Kong Reef Check 2011. The 41 Reef Check Teams comprised more than 500 divers from different sectors of the community, including education institutes, green groups, commercial sectors, government departments and diving groups.

The water areas surveyed are extensive, covering 33 sites of ecological importance. The three-month exercise starting in June covered coral sites in the eastern part of Hong Kong waters extending from Tung Ping Chau in the north to the Ninepin Group in the south, including three Marine Parks – Hoi Ha Wan, Yan Chau Tong and Tung Ping Chau. The survey continues to yield encouraging results. In general, the growth of corals in Hong Kong is stable and healthy. Indicator species are abundant at most of the survey sites. A variation in coral coverage (ranging from 20% to 77.5%) was recorded among 33 survey sites. Twenty-three sites, including dive-sites within the Marine Parks, recorded high coral coverage (above 50%). Among all sites, Bluff Island and Sharp Island North recorded the highest coral coverage of 77.5%.

Most of the survey sites boast high species diversity. Out of the 20 assigned indicator species, 19 were recorded – the same as last year. Wrasses, groupers, butterflyfish, sea urchins, sea cucumbers and cowries were species commonly found at the survey sites. Coral Watch has been included in the Reef Check since 2005 to enhance the monitoring of coral health status. By measuring the colour intensity of the coral using a specially designed Coral Health Monitoring Chart, the health condition of corals can then be determined. Corals at 11 sites were assessed using the Coral Watch tool. The average health index is 4.14 (ranging from 3.5 to 4.95 out of 6). The results are similar to last year (4.54). The average health index is well above the general average value (3), indicating corals were in healthy and stable condition. Coral bleaching and some coral damage were observed at a few sites but the impact was minor and localized.

The results of 'Our Coral Underwater Photo Contest 2011' were also announced at the ceremony, with 13 winners in total and three photos chosen for Reef Check Hong Kong and AFCD, the aim of the contest was to enhance public understanding and interest in coral ecology and promote local underwater sites for coral appreciation. Over 160 entries were received. All winning photos are on display at **www.afcd.gov.hk**. In addition, the AFCD introduced a new iPhone application, 'Hong Kong Reef Check'. Users can browse the coral coverage of 33 survey sites, and the distribution and photos of indicator species including reef-building corals, fish and invertebrates. Users may also make use of the Quick Response (QR) Code to download the application. Corals form a highly productive system that supports various marine organisms by providing them food and shelter. The AFCD will continue to organise Reef Check activities to collect important information necessary for devising conservation and management measures to protect the precious corals.

CORAL BLEACHING MANAGEMENT IN MALAYSIA

FEATURE **REEF CHECK MALAYSIA**

Coral reefs are valuable resources attracting millions of visitors each year to Malaysia. It is estimated that coral reefs in Malaysia are worth some US$600 million annually through direct and indirect revenues from the tourism and fisheries industries and coastal protection.

In the Indo-Pacific, bleaching events have been widely reported since the 1980s. Coral bleaching occurs when corals are stressed by environmental conditions such as unusually high sea temperatures, low salinity, and exposure to toxic chemicals. It is characterized by the loss of microscopic algae called zooxanthellae that live within the tissues of most corals. Zooxanthellae not only provide corals with a food supply, they are also responsible for giving corals their distinctive green and brown coloration.

More recently, Malaysia experienced bleaching events in 1998, 2004 and 2010. Widespread coral bleaching occurred in Peninsular Malaysia from mid April to June 2010 and bleaching in East Malaysia was reported from mid May to early June 2010. Coral bleaching seems to be increasing in frequency due to the rapidly changing environment and increasing anthropogenic threats.

Some scientists are predicting that coral bleaching will occur annually in the coming decades. While bleaching cannot easily be prevented or stopped, steps can be taken to promote coral recovery after a bleaching event.

Acknowledging this, Reef Check Malaysia has teamed up with the Department of Marine Parks Malaysia to establish a framework response for coral bleaching management. A Bleaching Response Plan is being drafted that will define a set of pre-determined actions to

be taken in response to bleaching-related events. It represents an urgent need for collaboration between managers, government, non-governmental agencies and concerned stakeholders to take immediate actions to improve reef ecosystem resilience, aiding recovery from the stress events. The objective is to put in place a simple mechanism to react to bleaching events with appropriate actions.

The response plan will have 4 major components:

1. EARLY WARNING SYSTEM

By combining satellite data with a community-based monitoring network, bleaching will be reported to the various responsible authorities when it occurs. This enables predicting and identifying possible bleaching events, which will provide information for communication with stakeholders, government agencies and the media.

2. GROUND-TRUTHING SURVEY

This will be done by assessing and measuring the level and impact of bleaching by setting up a bleaching task force to carry out bleaching monitoring and investigation. Once data is gathered, a brief report of the preliminary results can be prepared.

3. PUBLIC AWARENESS AND COMMUNICATION EXERCISE

It is important to let all stakeholders know how they can adapt to bleaching problems, and also how human activities can be managed to reduce further damage to bleached reefs.

4. RESILIENCE BUILDING ACTION PLAN

In order to give coral reefs the best chance of survival, relevant authorities will take appropriate steps to remove and reduce human stresses to the reef.

The bleaching response plan is a post-occurrence, short term action plan. Our real focus should be first and foremost to mitigate the causes of coral bleaching, i.e. reducing emissions of greenhouse gases that cause climate change. Everyone can help. Simple steps such as switching off electrical appliances when not in use, turning off the tap while you are brushing your teeth, using public transport or car pooling, will go a long way. Even though you might be physically detached from the reefs, you can still do your part to save them from disappearing.

For more information, contact Reef Check Malaysia at **wecare@reefcheck.org.my**

WHY DO HAMMERHEADS HAVE HAMMER HEADS?

FEATURE **CARA HODGSON**

Sharks are one of the increasingly rare organisms seen on coral reefs. They have been eliminated from many reefs due to demand for their fins to make shark fin soup, a Chinese delicacy. In 2011, there were some big "wins" for sharks with shark finning and trading banned in several areas. Because shark sightings are now so rare just about everywhere, Reef Checkers are asked to record any sharks during their dives – even of those observed off of the transects.

One type of shark has always held a fascination as a kind of prehistoric-looking oddity that one might think was dreamed up by a Hollywood horror filmmaker – not a result of millions of years of evolution. This is the hammerhead shark. A related shark is the bonnethead – with a head shaped more like a shovel.

Looking at the wide separation between the hammerhead's eyes and the flat surface of the head, one wonders about the evolutionary advantage of this design.

Several hypotheses explaining the evolution of the hammerhead shark's head – called a "cephalofoil" – have been proposed.

One is Stephen M. Kajiura's enhanced electrosensory hypothesis. All sharks have special gel-filled pits on their lower jaw and around their "face" that are used to detect electromagnetic radiation, such as the nerve impulses in the muscle of a fish hiding in the sand. A preferred prey item for hammerheads is the stingray – often resting buried under sand. Hammerheads have more electrosensory pores (called Ampullae of Lorenzini) than other sharks because they are spread over the wider cephalofoil of the hammerhead. Kajiura hypothesizes that the wider, flatter head allows hammerheads to have electroreceptor pores more spaced out so that the sharks can search and forage a larger area – sort of like a wide beamed flash light.

A second hypothesis is that since the hammerhead's eyes are positioned at the ends of the cephalofoil, some researchers think that this helps them to see better than other sharks. This could be because of a wider overlap in binocular vision.

The third hypothesis proposed is the ability of the cephalofoil to improve the shark's movement in the water by providing hydrodynamic lift. Most sharks need to swim continuously to pass water over their gills. The additional lift provided by the cephalofoil may reduce the effort needed for hammerheads to swim. Also, hammerheads have more muscles around their head and vertebral column which results in greater flexibility and greater ability to move their heads. Other sharks do not have musculature to allow them to depress their heads.

This extreme movement is needed for sharks that feed on benthic prey since the shark needs to make a rapid turn away from the ocean floor after attacking its prey. If the turn is not made sharply enough, the shark could end up running into the ocean floor. In addition, since it is dangerous to capture stingrays, hammerheads have developed a way to hold the stingrays down with their cephalofoils until they are traumatized and immobilized, so that they can feed on it without being impaled by the stingray's tail spines.

The cephalofoil also seems to provide a similar function to the pectoral fin on other sharks since the hammerheads have a much smaller pectoral fin than other species. Because the cephalofoil is larger than a pectoral fin and is further from the center of gravity on the shark, it therefore is better for movement and provides better hydrodynamic lift than a fin centered in the middle of the shark's body.

Regardless of the ultimate cause or causes of the evolution of the hammerhead shark's head, the hammerhead has adapted to become an aggressive and efficient predator while remaining one of the most identifiable creatures of the sea.

FISH BOMBING IN MALAYSIA

FEATURE AND PHOTOGRAPHY **REEF CHECK MALAYSIA**

Fish bombing, or blast fishing, is a form of destructive fishing that is illegal in most countries, including Malaysia. It involves the use of explosives, usually homemade, that are mixed in a bottle. When the charge explodes, it causes shock waves which kill or stun fish. The fish then float to the surface or sink to the bottom. This enables the blast fishers to collect some of them.

In Malaysia, blast fishing is still practiced, especially in Sabah, where up to 15 blasts can be heard per hour. One study has shown that many reefs in Sabah have less than 25% of their reef structure intact and some have interconnecting series of bomb blast craters. On bombed reefs, fish diversity was reduced to less than half and actual numbers of benthic living fish species were reduced to less than 10% from original numbers.

According to another study, the use of bombing techniques for short term benefit has caused destruction of more than 80% of coral reef cover in some places. A single bomb can destroy a 5m diameter of coral reef and can kill reef fish within 15m in radius. A survey in 1998 showed that 3.75% of coral reefs in Sabah were being destroyed each year. If the situation does not improve, it will mean that all existing coral reefs in Sabah will disappear before 2020.

The short term gain from blast fishing is the attraction for fishermen. Economic models show that blast fishing is initially four times more efficient than non-destructive fishing methods. However, after 20 years, income declines to one fifth of what would have been available by sustainable methods. For example, in North Sulawesi, Indonesia, net annual income per fisherman dropped from US$6,450 to less than US$550.

Although many blast fishers understand that their activities destroy fish habitats, most are not aware that their activities threaten their own livelihood. They know that their reefs have deteriorated, but most are convinced that there are still better reefs further afield. For some, lower yield from traditional fishing methods force them to turn to blast fishing, even though it exposes them to many dangers.

The general lack of funds, staff and facilities for enforcement, coupled with the lack of knowledge and awareness and a shortage of political will, means that the destruction will continue for the foreseeable future. In Sabah, fishery landings have fallen by 44% in 10 years. Unless something is done, this decline will continue.

One problem impeding more effective action on fish bombing is the lack of data. The coasts are vast and we acknowledge that it is almost impossible to patrol every single area. But with better data, we will be able to pin point the "hot spots" where blast fishermen conduct their activities and possibly when they are most likely to do so.

To this end, Reef Check Malaysia (RCM) has just launched a fish bombing data collection system, to start to collect data on the scale of fish bombing around Sabah. Simple to use, the data provides a means for dive operators, resorts and members of the public to report incidences of fish bombing. RCM will collate the data and provide periodic reports to the authorities on the scale of the problem.

Anyone hearing a fish blast, or finding recent evidence of dynamite fishing, is being asked to send a text message to 010 363 6013 or complete a short form on our website, so we can collect better information. Once credible evidence is gathered, we can pass the data on and, hopefully, properly address this issue.

At the same time, RCM is seeking funding for programmes to raise awareness of this issue and how it is affecting the value of Sabah's reefs. For more information, see **http://www.reefcheck.org.my/?page_id=928**

A BLUE PROJECT INTERVIEW

WITH BBC OCEANS CAMERAMAN & PHOTOGRAPHER, HUGH MILLER

PHOTOGRAPHY © **HUGH MILLER**

The Blue Project uses sport, adventure and digital media to connect more people to our blue environment. Jacques Cousteau once said that "People protect what they love" so our mission is to develop innovative ways to encourage greater care of our blue environment.

Our journey started with a small group of people who derive a large part of their inspiration from competing and working in the natural environment. We decided to share their stories, images and content with a wider audience and set up the Blue Project as a communications outreach programme.

In 2009, we launched the Blue Mile as a mass-participation event designed to connect more people and raise funds to support WWF's marine and freshwater programme – **www.theblueproject.org**.

NAME OF INTERVIEWEE:
Hugh Miller
OCCUPATION:
UW Wildlife Cameraman & Photographer
RECENT WORK:
Filming for BBC Frozen Planet series
FROM:
Plymouth, Devon, UK

Q1. How and when did your career as a natural environment photographer and videographer begin?
I guess it has always been an interest. Wildlife films and documentaries, particularly the underwater ones, as a child, fascinated me. Actually doing it for myself seemed pretty unattainable, you can do a lot without much equipment, but you still need some. I devoured books about wildlife and filmmakers instead. I read marine ecology at university and studied for a master's in marine biology (I had actually applied to do a post-grad in wildlife film making and got turned down)! This was fortunate in hindsight as I managed to land a job for minimum wage at the local aquarium. I was particularly awful at this job as I was constantly doing things that were not in my job description such as time-lapsing seafans in a flow tank for a scientist's project. In the end, instead of firing me they asked me to make some short films about the work done at the aquarium that was played on various screens through the building.

One day the curator, who had been a cameraman for Cousteau, said a colleague of his needed a researcher for a few weeks at the BBC's Natural History Unit. That really was the start. The programme in question was 'Planet Earth' and, frankly, I worked my backside off. I got extensions to my contract, three weeks became three months and I eventually stayed for a year. I was then offered a three year contract as a researcher on 'Life'. I turned it down. I knew I wanted to be behind the camera and if I stayed that would not have happened. So I left with no job having turned down three years work. I was mildly terrified and questioned my own sanity; I'd left the National History Unit! In my initial naivety I hadn't realised that all crew, which include camera operators, are freelance, even if they work primarily for the NHU. Slowly I picked up assisting work and worked beside the very best camera operators on the planet, learning all the time. I worked as an assistant for five years before starting to shoot my own sequences.

Q2. What is your motivation when specialising in images that depict the natural environment?
Several things motivate me. Initially it encompassed the desire to document something that's not often seen or that might not be seen again. This desire led to the satisfaction of building specialist pieces of equipment that allowed a particular event or piece of behaviour to be captured on screen. An enormously gratifying, if difficult and demanding process.

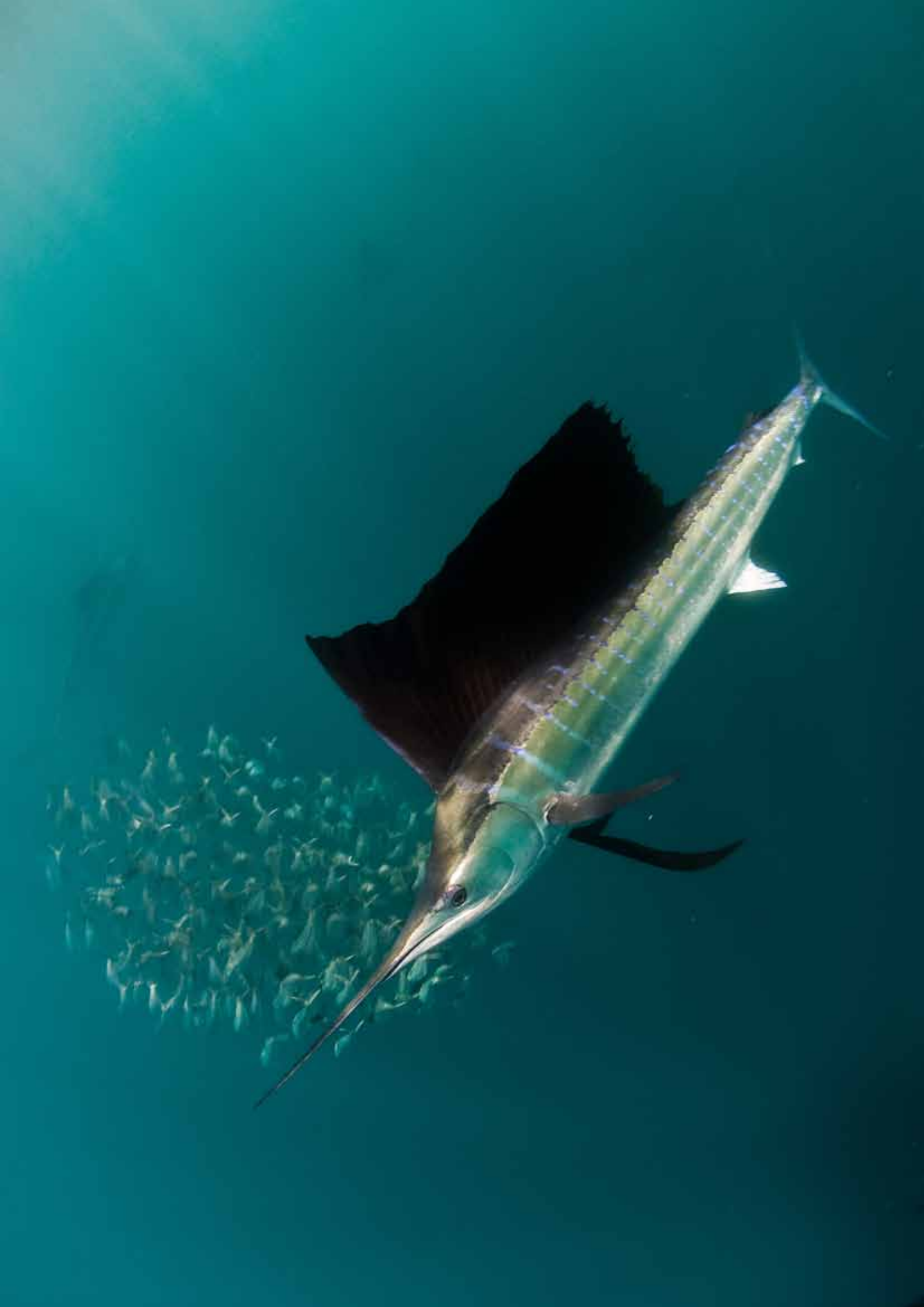
The artistic side took more time to develop, that was the sense of creating an image that has its own intrinsic artistic value no matter what the subject. That has been something I had to cultivate and encourage within myself. I was sitting with a scientist in a canteen on an Antarctic base when a science technician joined us. The two of them started talking about a particular project before the technician turned and apologised to me for talking about science that I wouldn't understand, me being an artist! I spluttered something about having two degrees in science, but then it hit me, maybe I'm supposed to be an artist now!

Actually a primary goal of mine is to communicate science. I think that's a very useful thing to do. Most science just sits on shelves to be possibly read by the occasional fellow scientist. I think to visualise some of that work is important for the future of science, it motivates people to look at it, and it promotes a wider popular understanding. It's important for science to be a cultural thing. Also it just plain inspires people. I grew up landlocked, miles from the sea, but through old films and books I fell in love with what lived below the surface of those far-flung mysterious seas.

Q3. Do you participate in sport in the natural environment and if so, what is your favourite sporting activity and why?
Well I tried my hand at all sorts of things when I had the opportunity. Sailing and surfing became dominant in my life at different times. All of that pretty much stopped when I took up diving. There are so many different aspects to scuba diving, each has its own discipline and each takes time to learn and master. From freediving and blue water work with very small cylinders to much more involved technical diving with computer controlled rebreathers, overhead environments and so on. It's quite wonderful as you may be an absolute master in one and a beginner in another. I'm still not sure if scuba is a sport. It's an activity, a pastime, a hobby, a job, an obsession, but you can't win anything and you don't compete so I'm not sure it's a sport. If it is, it is definitely my favourite!

Q4. How does your imagery connect you personally with the natural environment?
It connects me directly, as it binds me emotionally to a place, the image is a memory. Not just of the subject but also of the environment, the expedition it surrounds and the people involved. It's hard to look at an image and be emotionally detached, without feeling those things. That's why you need a good editor!

Q5. What reaction do you want to receive from the audience who view your imagery?
I think a mixture of surprise, even incredulity,



and enthusiasm for what might just be a wriggly squidgy thing on the sea floor. If I come close to any of those then that's good! The reaction depends on what you're trying to tell in the film so I guess if it's what you hoped for then you have to be more than happy with that. I think imparting a sense of wonder is something that I really hope to do.

Q6. During your photographic career have your observations of the natural environment changed and if so, in what way?
Well I don't often get the chance to go back to the same area, but that is of course something I hope to do as time goes by. I do worry that there will be nothing to film soon except jellyfish and I don't think you can make a career out of that. When I was researching for Planet Earth, I was looking for a seamount we could film around. I suggested a location off Mexico that had been filmed for Blue Planet, only to find that in the intervening years, long-line fishermen had targeted this area and stripped them of the wildlife that had lived there. There was literally no point in going to this spot any more. This is a tragedy and it's happening again and again. It's a terrible loss to a countries economy too. Those sites had been prime targets for adventurous tourists. Year after year bringing in money. I talk to older people in this profession and it's really something they talk about and have born witness too. Shifting baselines of perception with each new generation is a concern. It's important to look at old records whether its film or by book and shift your own base line back a bit. What we have today is not acceptable, though there are success stories, which should be all the encouragement we need as scientists, sport lovers, artists, and fishermen to improve the environment we live and work in.

Q7. If you were to use one specific image to inspire people globally, to want to care for the natural environment, what type of image/ scene would you use?
If I could answer that then I could have saved the world and then gone onto earn a fortune in an advertising bureau! I think it's very difficult to use one single image globally as people's tastes and value's of a subject change as you move around the globe. I think that's important to understand when approaching global issues. It's a cliché but 'think global and act local' really does have a lot of truth in it.

If I really had to pick one picture it would be 'Earth Rising' taken by one of the early Apollo missions. It is of the Earth looking very small and blue in the enormity of space and the empty lunar surface dominant in the foreground. I think that is something that really can make people stop and stare and realise that this seemingly endless planet is very small and finite.

Q8. What advice would you give to people who want to change their day to day behaviour to help protect our natural environment?
Reduce, reuse, recycle is a basic, with recycle being very much the last option. Go into your bathroom and look through all your soaps and scrubbing lotions. If they contain polyethylene, which is used to exfoliate and scrub in anything from industrial hand cleaners to the smartest facial cleansers, then please put it in the bin and not down the sink! Micro-plastic pollution is one of the top threats to the ocean environment and yet very little has been said about it in popular media. There is a film being made called Plastic Oceans, which I hope will spread the word. Question where the fish you are eating has come from. Look at the good fish guide and become choosy.

Q9. What advice would you give to youngsters aspiring to making a living from natural environment photography?
Well it's not an easy industry to make a living in. I don't mean that to discourage but as a point of fact. There is very little structure to it and it can be very fluid. You need to love the subject and gain a large breadth of experience in different environments but also it pays to be really good in one. I'm always a bit suspicious of people who claim they are brilliant at rock climbing, diving, flying, hiking, tree climbing, and caving. I just think, really? Just how many lifetimes did that take? By all means get experience in all of them or whichever takes your fancy, but spend the time you have excelling at just one or two. Don't worry if you don't have any photographic equipment when you're young. Get familiar with the environment whether it's through mountain biking or surfing; add the cameras when you can afford it. Some great photographers and cinematographers have

come out of film schools and some have not, so if that's not an option don't worry about it! Most wildlife camera operators didn't take formal training in photography and many if not most have biology and zoology backgrounds. That's not to say training doesn't help. The bar is ever higher so it certainly can speed the process up. If you have a passion, you can learn.

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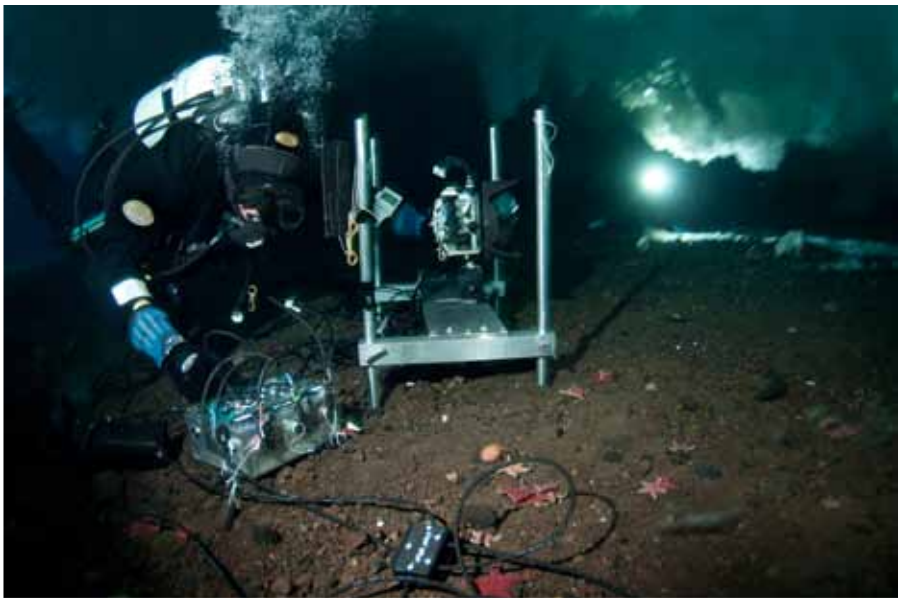

LIVING THE DREAM

OF A MARINE SCIENTIST, AQUANAUT & ULTRAMARATHON RUNNER

FEATURE **LLOYD GODSON** PHOTOGRAPHY **CAROLINA SARASITI & LLOYD GODSON**

Photo by Jason Edwards – Australian Geographic

When I was a boy, my dad told me one thing every night, "If you dream it, you can do it". One of my favourite dreams was to live underwater…

In 2005, as a young 27 year old, I won the Australian Geographic Society's "Live Your Dream", Wildest Adventure Competition. With my AUD 50,000 sponsorship prize, I began working on The BioSUB Project. My idea was to create the world's first underwater habitat incorporating a plant-based life support system (see the Bio-coil Project boxed text on page 42). In just eighteen months, I independently built an underwater habitat from recycled steel, lowered it into an Australian lake and lived self-sufficiently inside it for twelve days in what was a crazy scientific experiment.

More than 1,000 primary and secondary school students logged on via the Internet to participate in my virtual, underwater classroom sessions. Hundreds of E-mails flooded in from children and adults from all over the world and the international media found the story irresistibly quirky. By the time I emerged from my underwater habitat, it was clear I had achieved far more than a personal goal of living underwater.

The popularity of The BioSUB Project with young people led my wife, Carolina Sarasiti, and I to write a semi-educational children's book titled, "The Little Aquanaut" based on my adventure. Art imitated life as the "polka dot design" studio in Athens, Greece, illustrated the main characters of Tik and his fishy friend Bubbles. The concept behind the book was to provide young people with the message to follow your dreams, no matter how crazy they may seem.

My next project, "Life Amphibious", was an adventurous 15 nautical mile human-powered submarine expedition between the Greek islands of Kefalonia and Ithaca. The aim of the project was threefold: to get young people excited about science and engineering; to inspire environmental awareness; to provide university students with an educational experience that translated their theoretical knowledge into reality. Omer 6 was the chosen subsea vehicle as it featured a biologically inspired propulsion system design which mimics the efficient swimming style of penguins. It was designed and built by university students at the École de Technologie Supérieure (ÉTS) in Montreal, Canada and holds the world's speed record of 4.916 knots in the one-seater / non-propeller category of the human-powered submarine. Together with an assistant professor and four young engineers from ÉTS, we delivered daily presentations to schools, social groups and individuals along the Ionian Islands' coastline throughout the expedition and organized an educational exhibition at the Goulandris Natural History Museum on the projects conclusion.

Most recently, I launched the LEGOLAND Year of Records 2010 by living in an underwater house measuring just four square meters in the LEGOLAND ATLANTIS by SEA LIFE Aquarium, LEGOLAND Deutschland®, Günzburg, Germany. I entered on the 30th of March and surfaced again 14 days later having achieved a new Guinness World Record™ for the most electricity generated by human power underwater (2,502 watt hours). Riding a bicycle for an average of six hours a day at a room temperature of around 27 degrees and with 50 percent humidity, the record attempt was a strenuous undertaking right from the outset. It was a globally unique experiment with over 100,000 children and parents visiting me on location in LEGOLAND Deutschland and via the web site. The project featured on National Geographic Channel's Naked Science, 'City Under the Sea' documentary and was awarded a silver medal at the Econ Awards in Germany in the category, "PR-Activity".

Today I am a Marine Scientist, Aquanaut (I have lived a total of 624 hours underwater) and an avid Ultramarathon Runner living my dream. I want to pass this important message onto as many children as I can and contribute to making the next generation the most active, curious and creative one so far.

So, what's next, I hear you ask?
My original dream to live underwater has matured. I now plan to establish a permanent and low-cost underwater research, education and outreach facility in the Vinkeveense Plassen, a freshwater lake area in The Netherlands. The facility will serve as the international headquarters for the real-life underwater superhero, Tik (The Little Aquanaut), and his fishy friend, Bubbles. Together, Tik and Bubbles will encourage young people to discover, explore and protect our planet's freshwater and marine ecosystems. They will inspire young people to change the world through action and to follow their dreams.

Tik will use the underwater station for the following research and education activities:

- An underwater robotics R&D Programme
- Renewable and alternative energy projects
- R&D of advanced diving equipment and emerging technologies such as the revolutionary Like-A-Fish air supply systems that are able to extract air from water, for both the leisure and the professional scuba diving industries, as well as for submarines and underwater habitats
- A R&D Programme dedicated to extreme-cold subjects
- Limnology and freshwater ecology research
- A long-term, self-sufficient underwater human habitation experiment (including psychological, physiological, environmental, life support systems and operational facilities monitoring)

A robust and exciting on-line educational outreach programme will also be developed, allowing school children from around the world to participate virtually in all stages of Tik's various activities.

A long-term goal of the project is for the Underwater Superhero Headquarters to become an environmentally friendly and completely autonomous unit in terms of energy. This goal will be achieved by using off-grid renewable and alternative energy systems.

The Underwater Superhero Headquarters, which is a partnership between Cees den Toom of Scuba Academie (**http://scuba-academie.nl/**) in The Netherlands and myself, will empower our next generation to become philanthropic, proactive and compassionate stewards of our blue planet. Now there's something to dream about!

Tik and Bubbles illustrations by Polka Dot Design, Athens, Greece

THE BIO-COIL PROJECT: A plant-based life support system designed and built by Cascade High School's Advanced Biology Class.

"In 2005, the Bio-coil students were contacted by Lloyd Godson, a scientist from Australia who was interested in the project, but not for wastewater treatment. As a photosynthetic bioreactor, the bio-coil removes nutrients from waste streams using chlorella algae, in the process sequestering CO2 and producing oxygen. Godson asked if the bio-coil design could be adapted to function as a life support apparatus in a self-sustained underwater habitat. With renewed excitement, the students began raising funds to take the bio-coil in a new direction. They raised USD 30,000 in grants and donations to work with Godson in the creation of a new bio-coil to produce oxygen in his underwater BioSUB. For a year, students built and tested several designs in the classroom to determine the best possible model for Godson's project.

In March 2006, six students traveled to Australia and spent three weeks building a bio-coil to be installed in the BioSUB. While in Australia, the students participated in live webcasts with students and classes from across the world – Australia, Japan, the United States and Argentina, to name a few – to discuss the Bio-coil and inspire others to take on environmental projects. Godson spent twelve days underwater in his BioSUB with a portion of his oxygen provided by the Bio-coil. The students learned a tremendous amount about the Bio-coil's capacity and potential, and returned home determined to increase its efficiency. They met with Teacher in Space Astronaut, Barbara Morgan and presented her with their plans and designs in the hope that she could connect them with members from NASA to continue exploring the Bio-coil as a life support system."
Clinton Kennedy, science educator and facilitator of The Bio-coil Project.

The Bio-coil students went on to win USD 10,000 from the Nature Conservancy at the Sea World / Busch Gardens Environmental Excellence Awards in 2009 while their teacher, Clinton Kennedy, was awarded USD 1,000 as the National Science Teachers Association Outstanding Environmental Educator.

The Bio-coil project is a community-based science project that will serve as a model for real-world education in the Underwater Superhero Headquarters. The students are responsible for connecting with mentors, gathering community support, securing funding and actually implementing the project. Teachers can guide this process, but the onus remains on the students to choose the direction of their project and see it through to completion. Successes and challenges motivate students in their work. Students want to be a part of such projects because they realize the value in their education and leave a legacy for others to follow.

Photo by LEGOLAND Deutschland

Photo by Jason Edwards – Australian Geographic

Illustration by Engineering Office Lutat Ltd.

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MINIMUM VERSUS MAXIMUM

FEATURE **PAUL SANT, DIVERS DOWN**

Let us take a person who has completed a tandem parachute jump, are they a parachutist? Clearly the answer would be no; they have parachuted but they are by no means able to complete a solo jump independent of their instructor, as they have only completed the minimum training requirement to launch themselves out of a perfectly serviceable aircraft.

In years past, Divers Down had the philosophy that a diver certified by a recognised training agency and diving within the parameters of his/her training, should be able to dive our sites in a buddy team, without a guide (after a thorough dive briefing). That was then, but now we are seeing a new type of diver that is emerging from the UAE. Unfortunately, these new divers are unable to dive our dive sites without a guide, as they have little understanding of buoyancy and basic navigation – and we are not only talking open water level we are also referring to advanced and above.

Why is this trend happening now and not eleven years ago when I first started in the dive industry in the UAE? I have my theory as to why divers are now lacking the basic skills, and now I will let you decide your own theory.

Let us look at the basic requirements to fulfill an Open Water course PADI, SSI, CMAS, NAUI, BSAC and any of the other training agencies out there.

First we have Theory; this allows us to apply a theoretical knowledge in a practical realm. For instance, we learn to stop, breathe and then swim slower if we become over exerted. If we had not learnt this, we would not know the effect it has on a diver, or how to react to it. No doubt we would have read about it, watched a video on it, answered a few exam questions related to it and if on a rescue diver course, we would have practiced this as skill. In short we know theoretically what to do if we were to become over exerted.

Second comes Confined Water, practicing the skills we watched in the classroom. We learn skills that will aid us with comfort (mask clearing), safety (out of air) and buddy team work (s.o.r.t.e descending). Some skills like the CESA (controlled emergency swimming ascent) are harder in the pool as the swim is horizontal across the pool, not vertical. Most instructors will let their students know that in the sea it is in fact easier to complete the CESA as your lungs will have the chance to expand as you ascend due to the air expanding, and by keeping the regulator in your mouth, air will expand in your cylinder allowing you to breath once or twice on the ascent and that it will be practiced from 6-9m during your open water training.

Third we go into Open Water, the point where the students practice what they learnt theoretically and in the confined water.

They board the dive boat and head out to the dive site.

6. **During open water dives, have divers spend the majority of time at 5 metres/15 feet or greater, and breathe at least 1400 litres or 50 cubic feet of compressed gas *or* remain submerged for at least 20 minutes.**

If it is the first open water dive, they will head to a site that offers 12m depth with a mooring line that will guide them down on their underwater adventure. After buddy checks, they complete a deep water entry and make for the line (orientation in S.O.R.T.E). The instructor ensures the students are adding air to their BCD's and equalizing continuously all the way to the bottom at 12m. As they add air on the way down, the divers are all neutrally buoyant, will not damage the coral and are ready to dive. During the dive, the divers have the chance to fine tune their buoyancy whilst looking at various marine life, and as the dive gets shallower they are able to feel the effect of the air expanding in the BCD, having to let air out in order to stay neutral. Once the dive reaches either the time or air limit, the group ascends up the mooring line and completes a 5m safety stop for 3 minutes. During the stop, the Instructor makes them let go of the line one at a time to see if they are still neutrally buoyant, and after 3 minutes they all ascend to the surface where they complete a buoyancy check.

After the 2nd, 3rd and 4th sea dives to the maximum depths 12m and 18m, the students feel relaxed underwater and take more notice of the dive site.

Depth

Open Water Dives 1 and 2 – 12 metres/40 feet

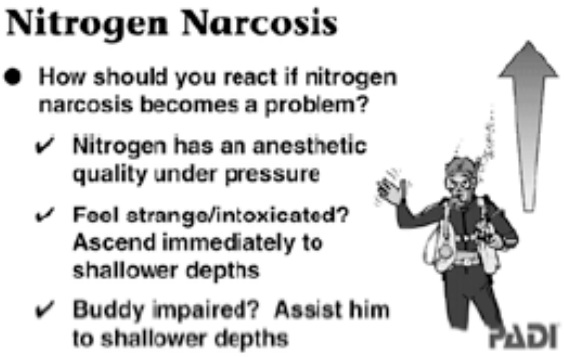
Open Water Dives 3 and 4 – 18 metres/60 feet

When conducting three dives in one day, the maximum depth for the last dive is 12 metres/40 feet.

Excursion dives taken before Dive 3 – 12 metres/40 feet

Marine life pops into view, the art of natural navigation becomes more achievable and not just a black art practiced by the dive professionals! The most important thing of all is that they are comfortable to dive without their instructor, in a buddy team, practicing what they should already have learned on the Open Water course, diving within the limits of their certification.

Or…with many training dives, this is what happens:
We walk in off a beach, swim along the bottom to around 5-6m, look at a breakwater and then complete a safety stop at the same depth we are already at…



What do you think is the better option? What is your theory as to why basic skills are lacking?

We see the effects every day of the diver type who has been trained to meet the minimum requirements. Divers should be given the maximum level of diver training from the start, not just the minimum performance requirements.

Deep Dive

A deep dive is conducted at a depth between 18 to 30 metres/60 to100 feet.

Exceptions: Some courses such as Deep Diver and DSAT TecRec courses allow for greater depths.

So a diver that has only done the minimum depths and the minimum times, are they really a diver or just a certified diver?

SEA ACIDIFICATION

FEATURE **LEANNE KING**

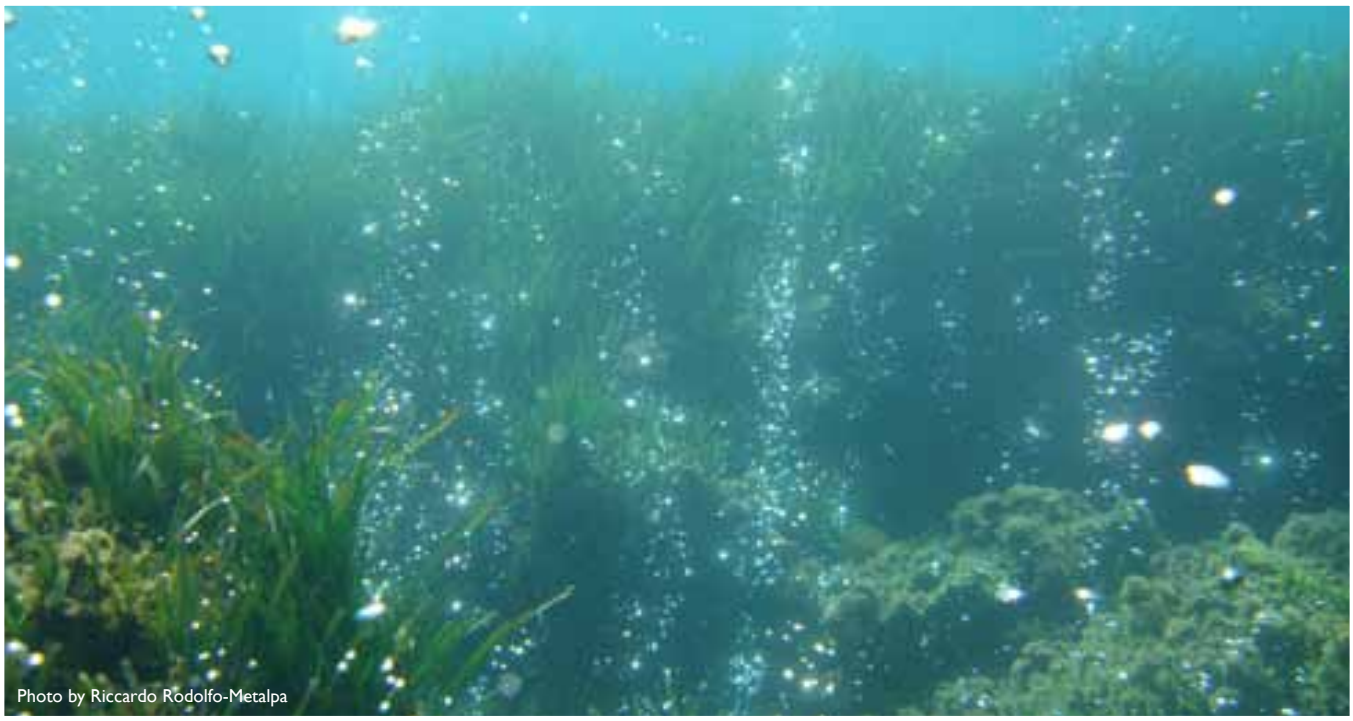


Photo by Riccardo Rodolfo-Metalpa

When many people begin their diving lives, they dream of diving in warm exotic waters, off white sandy beaches, swimming with sharks, turtles, dolphins, rays…but at what cost does traveling to these wondrous foreign destinations to see these magical creatures have on their environment?

Imagine you're planning a week-long holiday to Mexico, diving for 5 of those days. Return flights from Dubai International Airport to Mexico City, Santa Lucia, a round trip of 28,600km, is responsible for generating 2.546 metric tonnes of carbon per person, the equivalent of driving a small 1.4 ltr petrol engine car 12,950km. Add on to that transfers to and from the airport at either end, travel back and fore the dive site every day, boat fuel, the running power used by the dive centre and what seems like a wonderful holiday to explore tropical lands starts to generate well over 3 metric tonnes of carbon pollution.

WHY DOES IT MATTER?

Carbon dioxide (CO_2) is a major player in increasing greenhouse gas levels, causing the earth to become warmer than it should be. At the moment, CO_2 levels in the earth's atmosphere are at their highest for 800,000 years. In the last 200 years, since the start of the industrial revolution, CO_2 has increased by 40% – enough coal, oil and natural gas has been burned and enough deforestation has occurred to emit more than 500 billion tonnes of CO_2. Consequently, the earth's temperature has risen by 0.75°C in the last 100 years. Some estimations suggest that the temperature could rise by up to 6.4°C by the end of the 21st Century. This may not seem like much, but it has an adverse effect on all sorts of natural mechanisms – glaciers and sea-ice melts, sea levels rise and natural disasters (typhoons, tsunamis, droughts etc.) are more likely to occur.

Increasing levels of CO_2 don't just affect the levels of the sea; they affect the chemistry and consequently its biology. When CO_2 dissolves in water it causes acidification, forming carbonic acid, especially near the surface. The sea has a natural ability to absorb CO_2, acting as a buffer to protect life on Earth and it has long been thought to be a steady mechanism, levels of CO_2 have been relatively stable for tens of millions of years. However, research has shown that since the turn of the 19th Century, the pH level of the sea has dropped from 8.25 to 8.14, becoming 25% more acidic. Hardly surprising since current estimations suggest the sea absorbs 2.3 billion tonnes of human produced CO_2 every year. Currently the seas absorb 22 million tones of CO_2 every day, only a third of the total CO_2 produced by humans. In one way this has benefited the Earth, as it has slowed climate change, but scientists are starting to realize that it is having a devastating effect on life in the water.

HOW DOES THIS ACIDIFICATION AFFECT SEA LIFE?

Just like life on land, sea animals and plants are finely tuned and adapted to their specific environment. Calcifying organisms such as molluscs, corals, crustaceans and echinoderms, are directly affected by acid levels. Many species produce calcium carbonate (limestone) to create their shell structure. Increased acidity decreases the availability of the particles needed by these organisms to create their shells, leading to a decrease in calcification. Other studies have shown that when sea urchins fertilise in water where the pH is 7.7 instead of the current 8.1, reproductive success drops by 25%. Considering all the other natural factors that affect survival rates (predation, disease etc.) are still in place this is, in effect, a 25% reduction in the reproductive population. A pH level of 7.7 is estimated to occur as soon as 2100 – just 88 years away.

When water becomes even slightly more acidic, Sturgeon and Perch show a decrease in reproduction success. The eggs of other fish species become smaller in size and hatching is delayed. This is especially problematic for species that already face other threats to their population.

Plankton are the first animals on many marine food webs, they are very important in supporting other sea creatures. In acidic waters, plankton cannot generate the calcium carbonate they need, leading to fewer numbers available as food across the oceans, affecting sea birds, marine mammals, fish and other invertebrates.

Just off the coast of Naples, Italy there are naturally occurring volcanic carbon dioxide vents. These vents have become the focus of an in-depth study investigating the effects on flora and fauna of increased carbon in the water. The results are bleak. Species numbers of Formanifera fall from 24 on the edge of the


Photo by Riccardo Rodolfo-Metalpa

area where the vents occur, to just 4 species within the boundaries. Other estimations suggest a reduction of 30% in overall species. Calcified organisms begin to disappear and non-calcifying organisms start to take their place. Results suggested that unless ocean acidification is curbed there will be an increase in toxic jellyfish and algae.

TOP TEN MARINE SPECIES AT IMMEDIATE RISK DUE TO OCEAN ACIDIFICATION

At present, more marine species are at risk from extinction than at any other time in known history. There have been five mass extinctions in the Earth's history and in all five there have been three factors present: decreased oxygen, increase temperature, increased ocean acidification. Worryingly, all three are starting to show a presence in today's oceans.

Treehugger website recently released an article stating the 10 sea animals most at risk from ocean acidification. They are:

1. **BLUE SEA SLUG** | These colourful little creatures feed on the poisonous jellyfish, Portuguese Man of War. Less sea slugs means more jellyfish.

2. **PTEROPODS** | These microscopic creatures are the foundation of arctic food webs. Pteropods support everything up to polar bears and whales. In acidic waters they actually dissolve.

3. **BRITTLE STARS** | Both adults and larvae are vulnerable to acidification.

4. **SQUID** | When water is more acidic it makes it difficult for squid to absorb oxygen in their blood. Squid are not only an important food source for other creatures but they are a huge part of sea food markets around the world.

5. **SHRIMP** | Immediately affected by acidification and even more important to food chains and sea food markets than squid.

6. **OYSTERS** | Around the world, oyster farms have been experiencing massive die-offs in stock levels for no apparent reason. Investigations have led to ocean acidification being established as the cause..

7. **SEA URCHINS** | They play a vital role in maintaining ecosystems by eating algae and preventing blooms. They actively improve diving conditions in many places.

8. **ABALONE (SEA SNAILS)** | These important sea creatures may not survive the next 100 years

9. **CORAL** | Perhaps the best known victim of current environmental trends, already suffering from vast bleaching and destruction due to human activities. With the loss of corals comes the loss of some of the most diverse ecosystems in the world.

10. **CLOWN FISH** | perhaps the most charismatic victim of ocean acidification. When in more acidic waters, clown fish have been shown to go deaf and display more risky behaviour, making them more vulnerable to predators.

SO WHAT CAN BE DONE TO COUNTER THIS?

Ocean acidification is likely to be harder to counter than global warming, because water bodies as vast as oceans are very slow to respond to environmental factors. Even if we stop carbon emissions tomorrow, the oceans will continue to show the affects of acidification. Everybody needs to take measures to reduce the effect we all have on our earth, especially if we want to continue to enjoy our underwater world.

Obviously, the best way we can all help is by reducing our own carbon emissions. Walk or use public transport instead of the car, or at least lift-share. Avoid the air-conditioning. Turn lights off when not necessary. Make sure to put a full load on when using the washing machine – or better still, hand wash! These are all the little, everyday things we can do to reduce CO2 production, but what about when on holiday?

For many people, holidays away from every day life have become an important part of our well-being, so how can we make these holidays more environmentally friendly?

Firstly, go for longer. Instead of taking two or three week-long holidays a year, go for three weeks. This reduces the amount of flights you'll take, vastly reducing your carbon emissions.

Secondly, explore your own back yard! If you live near the sea, have you dived your own country? Places like Australia and Egypt have fantastic diving, for sure, but the Gulf of Oman also has fantastic flora and fauna including 4 of 7 species of marine turtles, whales, dolphins, sharks and rays. By diving in your own country, you don't have the restrictions on final dive times that occur when flying to your destination.

Thirdly, try a live-a-board. A live-a-board holiday can vastly reduce your emissions by cutting out the travel to the dive site every day of not just you, but the other divers as well. You may also get to see sites that you wouldn't be able to reach easily when traveling from the land every day.

The ultimate way to try and combat carbon emissions is through carbon offsetting projects. Carbon offsets are projects funded through the buying of 'Carbon Credits' which compensate the emissions we produce by funding projects that save the equivalent amount of carbon elsewhere. Funded projects include developing reusable energy sources, planting trees in various parts of the world, introducing energy efficiency measures to tourist resorts in the developing world and many, many others. Numerous websites have been developed which allow you to calculate how much carbon your lifestyle produces and compensate for it by donating to projects aimed at reducing emissions. A lot of these sites break down various aspects of life, calculating each part. For example, you can calculate how much you produce every day and donate for it, or you can just donate to balance out your holiday.


Photo by Kirsty J. Kroeker

THE DEGRADATION OF THE WORLD'S CORAL REEFS, THE EFFECT THIS MAY HAVE ON THE SURROUNDING COMMUNITY AND WHAT CAN BE DONE ABOUT IT

FEATURE AND PHOTOGRAPHY **GEORGE DALE**

Oceans cover 70% of our planet. Coral reefs cover less than 1% of our planet's surface, support over one million species of life and over one quarter of all the species in the world's oceans. This makes them one of the largest living structures on Earth. Humans place these "tropical rainforests of the ocean" under great risk of degradation on a daily basis, commonly without even being aware that they are doing so. Thirty percent of coral reefs are already damaged, some beyond repair.

If things progress the way they are, by 2050, 70% of the world's coral reefs will have disappeared. In the Indo-Pacific Region, where 75% of the world's coral reefs are situated, the coral reefs are being depleted at a shocking 1% a year. This may not seem much, but that is twice the rate at which the tropical rainforests of the world are disappearing. Six hundred species of reef-building corals, which is 76% of all existing reef-building corals, 300 species of seaweed and the 120,000,000 people who make a living off these reefs are all at risk.

WHAT IS CAUSING THIS PROBLEM?

There are three main processes at work to create these devastating effects. The first is coral bleaching. Rising sea temperatures, which are caused by global warming, directly cause stress on corals and induces bleaching. Global warming is a consequence of the process of the thickening of the ozone layer by the emissions of greenhouse gases, such as CO2 (carbon dioxide) that collect in our atmosphere, create a greenhouse effect and trap the suns low frequency UV rays, hence raising global temperatures. A rise in global temperatures results in a rise in sea temperatures. Most coral lives in partnership (symbiosis) with single celled forms of algae (zooxanthellae). This algae is what gives the coral its colour and provides the living coral with 80% of the nutrients required in order for the coral to live. The zooxanthellae has an optimal water temperature range in which it functions (different algae from different areas have different optimal temperature ranges). If the temperature of the surrounding water rises or falls the optimum temperature range, the coral will lose its algae, it is this process that causes the coral to lose the colour and turn white, hence the name bleaching. This means that, due to the lack of algae producing 80% of the food for the coral, the corals might die, and so will the fish that were supported by the coral.

The death of algae is also caused by stress on the coral for other reasons, such as, large swells, a change in the pH value of the water, a change in salinity etc. This escalates all the way up the food chain so even the top predators are either killed or forced to migrate due to the death of coral caused by stress. The lack of color is not what causes the issue, it is simply an indicator of a lack of algae, and hence a lack of nutrients to the coral. In Belize, the optimum water temperature for the algae is 78°F - 85°F (25°C - 30°C). Global warming has caused the temperatures of the water to rise well above 86°F and hence, coral bleaching occured. (More on Belize later).

The second of the main contributors is, quite simply, the carelessness and the lack of awareness of humans' actions: divers touching the coral, boat captains recklessly dropping anchors onto coral and chemicals being dumped by industries in the middle of the ocean. Cyanide and dynamite fishing is also a large cause of coral degradation. All of these causes are examples of physical harm that humans cause to the coral and all aid degradation on a large scale.

The third and possibly the most complicated and hardest to spot, is a process known as ocean acidification. An increase in the concentration of atmospheric carbon dioxide causes a significant decrease in the capacity of phytoplankton to absorb it. As well as this, it causes a decrease in the carbonate ion content in the water on the surface of the ocean, hence causing a fall in the pH. Carbonate is needed by corals in order to build reefs and even the smallest decrease in ocean acidity can affect the ability of a coral to grow a skeleton which, in turn, causes a lack of ability to create a habitat for reef biodiversity as a whole.

WHAT ARE THE EFFECTS OF CORAL DEGRADATION?

Reefs impact so many people's daily lives in ways that we don't even realize, and probably never will unless educated about them. A coral is a colony of single living organisms (coral polyps), and a large collection of corals makes what we call a coral reef. This habitat supports a vast diversity of marine life and nutrient cycle around it. In most countries, especially Indonesia and the Philippines, coral reefs provide income to a large proportion of the population through fishing, tourism, pearl cultivating etc. Coral reefs provide protection for coastlines in many places and lessen the effects of coastal erosion. Lots of today's medicines come from marine life and organisms that coral reefs support. Without reefs, there would be less income to growing countries, more coastal erosion, and a decrease in supply of certain medicines.

WHAT CAN BE DONE ABOUT THIS PROBLEM?

The easiest way to go about answering such a question is to use examples of different conservation efforts and projects that volunteers and scientists alike are undergoing all over the world in order to preserve the beauty and lifestyle that these underwater rainforests bring to their surroundings.

BELIZE CORAL WATCH PROGRAM

In Belize, a program called ECOMAR, fuelled by the university of Aberdeen, has started a program called 'Belize Coral Watch Program'

which uses volunteers from the public in order to spread awareness, educate people and log scientific data for a more accurate analysis of the scale of the problem. People known as 'marine guides' are selected and assigned as guardians of the program for their area by ECOMAR. In Belize, the optimum temperature for the coral is between 78°F and 85°F (25°C - 30°C), however, due to global warming the average temperature of the water is 86°F which is a full degree above the maximum optimum temperature. This is causing the algae to leave the coral, starve the coral of nutrients and thus leading to coral degradation. The primary goal of this program fuelled by enthusiastic but somewhat uneducated divers is to locate and protect the reefs. Volunteers that join the Belize coral watch program learn to identify different species of coral, identify coral disease and decay and how to monitor and report coral bleaching and hence become educated and can go on to educate others. Dive masters and instructors can also attend seminars and take courses to learn how to teach their tour groups about the damage caused to the dive sites! Both divers and snorkelers may volunteer and get to work straight after passing a short course. The program is partially funded by events and galas held by volunteers. There are also awareness seminars, free of charge, open to the public to spread awareness.

REEF BALLS

A reef ball is an artificial structure, designed to be a synthetic coral. Ted Barber and Laura Shellhouse created Reef Ball in 1990. The reefs in Florida were degrading at a rapid rate during the late 1990's through to the early 2000's. They were being destroyed by fertilizer runoff from local chemical plants, careless anchor drops by boats and divers recklessly touching and hitting the coral with dangling equipment. Lots of people had tried to create artificial reefs however, due to their chemical composition or, more simply, their basic structure, they were not heavily inhabited by a large array of marine species and hence, were deemed a failure. Reef Balls progressed in a successful manner in a small time frame due to a couple of well thought through unique features that all models possess. They are built with a rubber inflatable bladder, which fills the central cavity of the ball and hence allows it to achieve neutral buoyancy, therefore the Reef Balls are easily maneuvered and positioned underwater. Three divers can move, by hand, an 1800lb boulder even after it has reached the seabed. There are different sized models each with different sized holes built to accommodate different scales of biodiversity. These have been created in order to mimic, as accurately as possible, the features of a natural reef.

The Reef Balls, unlike their competitors, are completely inert underwater; hence, biodiversity is not deterred by chemical deposits or a slight positive or negative charge in the water. Competitors of the Reef Ball gave off a slight charge in the water, and hence they did not support a full range of species. This caused a gap in the food chain, leading to depletion of certain species. To make sure that it is nutrient rich and can support a large spectrum of species to its greatest potential, scientists have carefully formulated the chemistry of the concrete. This means that coral, and hence marine life, inhibit the Reef Ball within one short month.

Fifty six countries already possess artificial reefs made by Reef Ball and a further 16 are in the process of having them built. A company or organization can purchase Reef Balls online to create their own artificial reef. One such company that has done this is Al Boom Marine Diving in Dubai, UAE. They have created two artificial sites of Reef Balls along the coastline of the UAE. Any local companies in Dubai can 'Sponsor a Reef Ball!' for just AED200 (approx. £35-£40). This creates good 'green' publicity for the company, which is hard sought after.

MIAMI

For years the state of Miami in the United States of America has been warranting the deployment of artificial reefs. None of these seemed to work so, after receiving funding from the Florida Fish and Wildlife Conservation Commission Grant, the Miami-Dade County Artificial Reef Program invested in limestone boulders and concrete to create more effective artificial reefs in a desperate attempt to save their reefs. They have now made 4 artificial reefs and all four are thriving impressively, hosting a very diverse pallet of species.

EDA REEF CHECK

Emirates Diving Association (EDA) is an organization that has been set up in Dubai to oversee and legislate all diving actions off the coast of the UAE. In 1997 they joined the Reef Check program and started to contribute data about the UAE waters to the vast bank of data already collected by other communities and associations around the world. Any qualified diver may join the EDA program and undergo a course in which candidates are taught to collect data such as: a description of each dive site based on more than 25 individual pieces of data about environmental and human impacts; percentage covering of live and deceased coral; invertebrate indicator species counts and fish indicator species counts. All of this can be learnt in just 3 days. EDA has already trained over 80 divers all of whom are fully capable of collecting vital data that could make a difference. The volunteers focus mainly on Marine Protected Areas (MPAs) of the East Coast and dive sites in Abu Dhabi.

THE GREAT BARRIER REEF

Finally, I would like to address the way in which this large-scale problem is also affecting the largest heritage site in the world. I am talking, of course, about the Great Barrier Reef. It covers 348,000 square kilometers and spans a whopping 2000km in length, all of which sits within the Great Barrier Reef World Heritage Area (GBRWHA)! This titan of a reef shields the North East coastline of Australia. This vast area consists of coral, lagoons, sea grass, mangroves and estuaries. The Great Barrier Reef supports thousands of endangered and rare species, such as the dugong; a large marine mammal, a close relative to the manatee.

The GBRWHA is being controlled by a 25-year step-by-step regime that focuses carefully on each element that promotes coral degradation in such an important and iconic area. Over 60 members of interest groups, indigenous peoples and government agencies devised this plan. Its primary goal is to ensure that indigenous peoples, scientists and tourists are all able to co-exist, as they believe that if this is possible it will lessen the effects of coral degradation. This will be achieved through the process of space zoning. Overfishing was a large issue that the coral had to face. Hence, all trawlers must now be fitted with a GPS tracking chip so that the authorities can track any vessel and make sure that they are fishing where the government allows them to fish. They must also all be fitted with an electronic device to reduce bycatch (the catch that is not wanted).

Tourists are also threatening the condition of the reefs. Tickets for boat tours of the reef now include a small fee/tax that goes towards funding conservation techniques that are being implemented on the reef. This reduces the number of tourists and hence, less stress on the coral and means that there is funding for conservation. Organizations have put in place more moorings, markers and buoys to decrease the need to drop anchor. Species; there are now 16 protection areas for dugongs in the area. The government has put in place policies that legislate mannerisms that people must display when in the presence of a whale, dolphin or turtle. The number of crown-of-thorns starfish is being controlled at some high tourist use areas of the reef. (A crown-of-thorns starfish is a large nocturnal sea star that eats coral polyps).

I sincerely hope that this report will have a positive effect on it's readers and open their eyes as to the scale of the problem. Something needs to happen to reduce the factors that cause coral degradation and it needs to happen soon.

VIVE **LA REVOLUTION!**

FEATURE **PAUL CUNNINGHAM, PADI COURSE DIRECTOR, TECHNICAL DIVING INSTRUCTOR TRAINER, REBREATHER INSTRUCTOR TRAINER** PAUL@ATLANTISDIVECENTRE.COM

Throughout history, Revolutions have been a catalyst for change. From social revolutions, which changed the way we think, to political revolutions, which have changed the way, we live – Revolutions have inspired us to think differently about the things around us and have given way to new ideas and innovation.

Diving is now in the midst of a Revolution. The way we think about diving, the way we plan our dives, and the equipment that we use for diving have all undergone changes over the past number of years. This change has caused us to look at the ways in which we dive and to strive for safer and more efficient ways to maximize our experience underwater.

With modern technology developing products with more capability, diving has come of age. The use of dive computers is commonplace, software programs give greater accuracy in planning dives – both recreational and technical, and regulator design and machining have produced regulators which are durable, safe and reliable. Whether we have realized it or not, diving has changed!

Now, we are at the forefront of a new technology in diving. A technology that offers us greater flexibility in how we dive, greater time to stay underwater, and greater safety while we do it. A new technology that changes how we dive and how we think about diving – a Revolution! The Rebreather Revolution is born!

Rebreather, you may ask? How is this new? Haven't they been around for a while? The answer is yes. Rebreathers have been around since the beginning of diving. In fact, Rebreathers were the first form of scuba diving. The early Assyrians were noted to swim underwater breathing from pig-skin bladders as early as 900 BC. In the essay, Problemata cir. 360BC, Aristotle describes problems associated with diving underwater using such devices. In the siege of Tyre (332 BC), Alexander the Great was noted as having dove in a rebreathing type bell to observe divers at work during the invasion.

The Italian mathematician and physicist, Giovanni Alfonso Borelli (1608-1679) is credited with having designed a rebreather prototype which used a metal helmet sealed around the divers neck and a hose from the helmet running to a leather bag via a curved metal tube then back to the helmet. Many other attempts were made over the next many years. However, it was Henry Fluess who devised the first practical rebreather in 1878 (only 105 years after Carl Scheele and Joseph Priestley discovered "oxygen" as being a vital element in the air we breath).

The great wars of the 20th Century saw rebreathers in use in military operations and their development has continued to the present day. SCRs (semi-closed Rebreathers) were popular in the 1980s and early 1990s with recreational divers, but a few problems and the strong development of Open circuit regulators and equipment saw them lose popularity.

2011 REBREATHER REVOLUTION

A NEW AGE IN DIVING

Today, there have been many changes in rebreather design and function. Rebreather diving as of late has been popular in the technical diving arena, with technical divers seeing the advantages a rebreather offered for longer stays and deeper depths with reduced decompression times. However, the technical nature and operation of rebreathers was restricted to divers with experience in diving and systematic training for handling the unit and any problems that occurred underwater.

Further developments in this market saw rebreathers becoming more electronically controlled with computer and CO2 monitoring. This increased the safety of the units and provided a reduction in task loading for the diver. With computers now monitoring the vital parameters in the rebreathers, alerts could be given to the diver, which would warn of an impending problem, allowing prompt action to be taken before a problem occurred.

Now – Enter the Age of the Recreational Rebreather. Using the latest technology in rebreather design, units are being produced which are aimed directly at the recreational diving market. Now, the recreational diver has access to rebreather technology, which will offer increased bottom times, greatly reduce gas supply and a quieter diving experience to observe marine life more closely.

Long time and highly esteemed equipment manufactures have began modifying and producing electronically controlled recreational rebreathers using the latest technology in rebreather diving.

These units offer ease of assembly, automated essential pre-dive checks and continuous monitoring and control of dive parameters throughout the dives, with alerts and safety features to warn the diver if it suspects a problem may occur. This is all designed to allow the recreational diver the chance to simply move one, simple lever and return to Open-circuit (without removal of the mouthpiece) and end the dive safely.

The units are light-weight (weighing less than your open-circuit dive gear), rugged, and allow for ease of traveling.

TRAINING RECREATIONAL REBREATHER DIVERS

WHAT IT TAKES TO MAKE THE CHANGE

With these new rebreathers coming on the market, training must evolve to provide the essential skills to recreational divers in the use of Recreational Rebreathers.

Now, there is a good point to elaborate on for a moment – training for Recreational Rebreathers. It is important to understand that Recreational Rebreathers (and its training) are different from Technical Rebreather training and diving. The practices and procedures we use in Technical Rebreather diving are not suited for the Recreational Rebreather divers. Allow me to explain:

In Technical Rebreather diving, decompression obligations do not permit a direct access to the surface – such as in recreational, no-decompression diving; therefore, the Technical Rebreather diver must learn skills which allow them to manage the rebreather underwater. This would not be suitable for a Recreational Rebreather diver.

As in all recreational no-deco diving, direct access to the surface is available. This philosophy is adopted in the Recreational Rebreather training. With the ease of use and design of the Recreational Rebreather, all the diver need do if there is a problem, is to move a lever, which is located in the mouthpiece, downwards a quarter turn and they are breathing from an Open Circuit gas supply. Then, as is always taught in recreational courses, they signal to their buddy, and end the dive, making a S.A.F.E. ascent and safety-stop (if required – but always recommended). That's it. There are only a few essential skills, which need to be mastered by the diver to operate the unit, and some of them are the same as in Open Circuit diving.

Some may ask, "What about buoyancy control?". Well, that is always a skill to master in any diving circumstance and is no different in rebreather diving. It doesn't matter how good you are on an Open Circuit, you will need to re-learn it for a rebreather. However, it's not difficult to learn and it actually can enhance your Open Circuit buoyancy. You don't need to be a master of buoyancy to start on a rebreather – it humbles us all.

Other skills learned in the course include: How to activate the switch to 'bail out' to Open Circuit – this is as simple as scratching your nose and almost as much fun; How to perform proper descents, ascents and swim in a neutral, controlled position – no different than your Open Circuit stuff, but you look much more stylish; How to retrieve an Alternate Air Source from a buddy – charges for borrowed air are settled on the surface. How to use a Bail Out Cylinder to provide you with more gas supply in the event you need to end the dive due to a unit problem – excess gas is not always a bad thing. How to deploy and use a DSMB – for those who just like to be noticed. How to plan a rebreather dive and execute a safe dive plan – it's easier than balancing a checkbook (for those who remember what that is). But overall, it's about learning to dive with the unit and have an enjoyable time whilst doing it.

The PADI Rebreather and Advanced Rebreather courses require a minimum of 440 minutes with the unit in order to qualify. There are several practical exercises which cover dive planning and unit assembly, disassembly and how to use the manufacturers literature and guidelines for the unit.

The PADI standards require mastery of all skills prior to certification, so if a student has any difficulty in achieving the performance requirements, extra dives/sessions will be applied.

THE PADI REBREATHER AND ADVANCED REBREATHER DIVE COURSES

WHAT DRIVES IT ALL?

PADI has teamed up with advisors from several of the other agencies which teach technical and rebreather diving and have developed a Recreational Rebreather program which uses the most up-to-date information on rebreathers and rebreather design to develop a course which is sure to impress even the staunchest of nay-sayers. Many of the advisors sit on the boards of other training agencies and have participated in the design of these courses, so information covered in the PADI courses will be consistent with the latest trends.

The PADI Rebreather course materials once again lead the industry in design and educational adaptation. Colorised diagrams, Knowledge reviews and structured chapters all assist the diver in learning and

retaining the important concepts of Recreational Rebreather diving. The manuals also include insets on accident analysis with rebreathers and developing the proper attitudes and characteristics to become a safe Recreational Rebreather diver. The manuals are supplemented with a full key skills video, which allows the student to review the skills before the training sessions.

The programs use the Type R (Recreational) Rebreather, which is a standard that stipulates the design requirements for the rebreather used in Recreational Rebreather diving.

Currently, there are two models approved for use: Ambient Pressures Inspiration/Evolution (recreational version) and the Poseidon Discovery unit. More units are being evaluated from other manufacturers and we may see a few more which will fall into this category soon.

PRODUCT OF CHANGE

WHY MAKE THE CHANGE

Why make the change? Well, ask yourself, why did you learn to dive? What was the reason that compelled you to get out of bed on a weekend, trek down to the dive centre, endure countless sessions of mask removal and fin pivots, weight down and jump into the vast expanse of ocean? I am sure most of you would answer, it is the "adventure" of diving. To see new things, to explore new worlds (and yes, "to boldly go where no man has gone before"…I knew you where thinking it). So then, I ask you, what do you want out of your diving? Answers vary but mostly the ability to stay underwater for longer, to become more natural in diving (though less equipment), and to increase your boundaries. This is what rebreather diving can do for you.

A rebreather will give you longer bottom times. How? Well, the Rebreather works to maintain your PO2 (partial pressure of oxygen) and a given set-point (usually 1.2-1.3 ATA). This is what your Enriched Air does for you on the bottom. However, on an Open Circuit, your PO2 will change and it will only be at its highest when at the deepest part of your dive. The rebreather can be thought of as a Nitrox mixing machine – and that's what it does throughout the dive. It keeps the PO2 set so that you always have the most beneficial gas to reduce nitrogen. With the reduced nitrogen you get longer no decompression limits. The recreational rebreather is great for all ranges to 40m, but it's greatest benefit comes in the 28m and above range.

Also, because the rebreather 'cleans' the air you exhale (rather than exhausting it into the water), you are mostly breathing the same supply of air. It only needs to top off the oxygen you use through metabolism, so your gas supply on the small, lighter cylinders lasts for much, much longer – usually more than you have no decompression time (and that's the newly acquired extension to the no decompression time you have with the rebreather). In fact, with certain recreational dive plans, you won't even need to change tanks in between dives.

There are limits in Recreational Rebreather diving and the deeper you go, the less NDL you have, but you still have the safety of gas supply – which on a rebreather is not depth dependent.

WHO CAN CHANGE?

IS IT SAFE FOR RECREATIONAL DIVERS?

You don't need much to become a recreational rebreather diver: a positive attitude, a willingness to learn and to accept the guidelines, and a minimum of experience.

Why such low experience requirements? Isn't rebreather diving for divers with more experience? Well, this is where the revolution of thought comes in. In many great revolutions, there have been elements of doubt and concern, but that doesn't mean that change is bad.

As I mentioned earlier, these courses are aimed at the 'Recreational Diving Market", so the design and standards have closely evaluated the methods that must be taught for safe diving.

The Recreational Rebreather is a fully electronic device, which requires very little input from the diver. It does the essential Pre-Dive Checks and will not allow the diver to dive the unit if there is a problem. It also monitors all of the parameters of the dive including constantly calibrating the O2 sensors and will alert the diver and his buddy if there are problems. If an alert is given, the diver simply need switch the lever to Open Circuit, signal the buddy and end the dive. It really does make it very simple. You don't need to be an expert diver to learn a Recreational Rebreather and the safety factor remains the same.

So, join the Revolution! See the difference Recreational Rebreathers make and start early with the new trends in diving. Become a part of the change. It's a great way to have fun and, well, be a rebel – Vive la Revolution!

For more information about the PADI Rebreather Courses please contact the Atlantis Dive Centre
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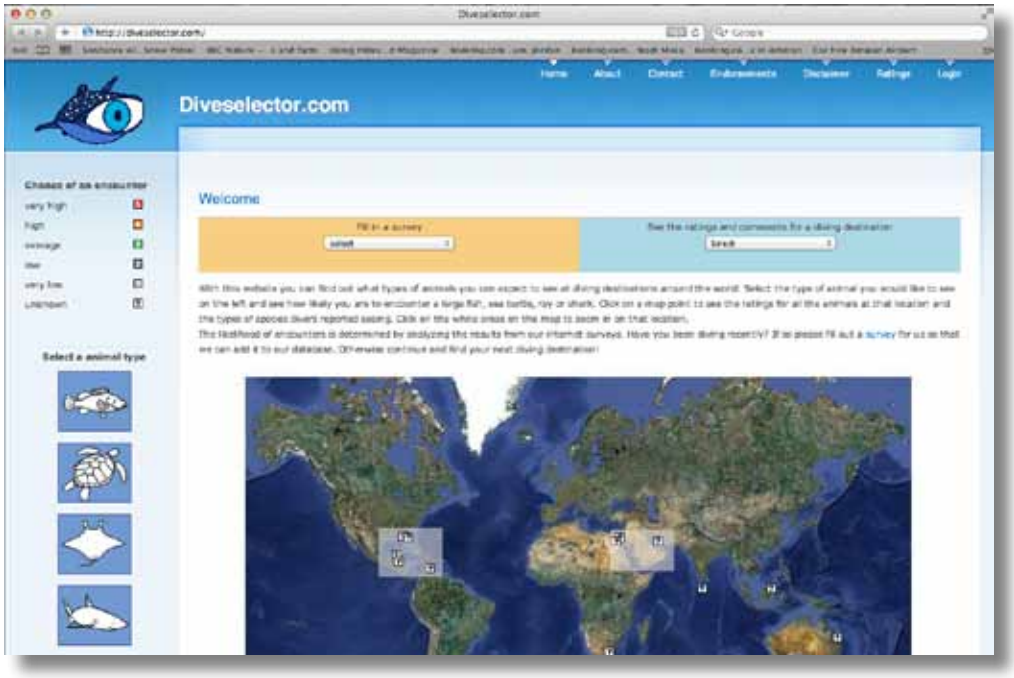
Telephone: 04 426 3000
www.atlantisdivecentre.com

DIVESELECTOR.COM

FEATURE **BASTIAAN VERMONDEN**



THE BEGINNING, A BASIC QUESTION

The idea behind diveselector.com began with the question, why doesn't the tourism industry invest more in marine life conservation and hold politicians accountable when they fail to provide sufficient resources for marine life protection? This is a relevant question to ask especially considering that the annual value of coral reefs alone through tourism and recreation has been estimated to be up to $9.6 billion, yet only 0.08% of the world's oceans are truly protected in no take marine parks (those which ban all forms of fishing.)

A BASIC ASSUMPTION

So how could this be? I believe an important reason is that there is a basic economic failure. What we expect in a proper economic market is that the demand and price for a good are related to the quality of that good. To use sports cars as an example, we would expect to pay more for a sports car that accelerates from 0 to 100 kilometers per hour in 5 seconds rather than a car that takes 30 seconds.

When we compare diving destinations however, we rely on anecdotal information such as "divers see a shark here occasionally" or "divers see sharks here regularly", but almost never quantified information with which to compare. Based on those 2 examples, could you with confidence decide which of the two destinations you would prefer in order to see sharks? What are the differences between occasionally, regularly, often, sometimes etc?

So in an anecdotal information system, a diver has to take a chance. If a diver has to choose between 2 destinations without good data, he has a 50% chance of picking the best place and a 50% chance of choosing the worst as if flipping a coin.

WHY IS THIS IS BAD NEWS FOR MARINE CONSERVATION?

Well lets imagine a Marine park that wants to start a conservation initiative to increase the abundance of sharks and needs the tourism industry to contribute financially. When there is no (strong) link between diver demand and shark abundances, then why would the tourism sector pay?

In this situation any conservation costs would hurt the sectors profits and even worse, any necessary price increases to fund the conservation activities, would actually make the local tourism sector less competitive on the international tourism market. As long as divers are choosing destinations based on chance, the tourism sector has no or very little incentive to invest in marine conservation.

SO WHAT IF DIVERS COULD COMPARE?

Well if divers can compare, then they would consequently choose the locations with the highest abundances of animals then rationally the tourism industry would be willing to pay any amount where the increase in profits from additional demand is more than the costs for extra marine life conservation.

So for example, if divers are willing to pay 10 dollars extra to dive at a location where the chance of encountering a shark is 20% rather than 10%, then it would make sense for the tourism industry to pay any amount that is less than 10 dollars per diver to increase the chance of an encounter with sharks from 10% to 20%.

BRINGING THEORY INTO PRACTICE WITH DIVESELECTOR.COM

So with the theory that comparing diving destinations could incentivize better marine life conservation, it is now necessary to put that theory into practice. With diveselector.com, I intend to do just that.

With a standardized survey targeted to divers and statistical analysis, it is possible to collect lots of data and then compare diving destinations. This information is provided on diveselector.com to divers using interactive maps which allow for an easy and fast overview of the differences between diving destinations. Diveselector.com shows ratings with which divers can quantitatively compare how likely they are to encounter big fish, turtles, rays and sharks.

CREATING COMPETITION

The most important reason for me to create diveselector.com was not simply to correct a market failure, but to try to harness one of man's greatest motivators, competition! It was the competition of the cold war that put a man on the moon, it is market competition that brings us faster, cheaper computers and gadgets every year, it is competition that motivates man to advance.

I hope that by comparing destinations, we will give the tourism sector the tools necessary to compete with one another like a stopwatch for runners or scores in football. Hopefully, when big fish, turtles, rays, sharks and seahorses are the focal points, diving destinations will have tons of goals.

So I want to say let the competition begin!

3 WAYS YOU CAN HELP

In order for this project to succeed, I require massive help from divers all around the world, but the amount of effort required from each individual diver is small. What you can do:

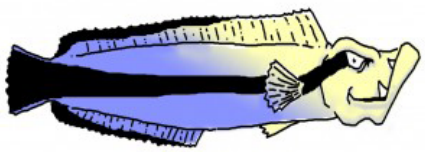
1st Please fill out a survey on the site when you have been diving so that it can be used when calculating the ratings.

2nd Use the website when deciding where to go diving so that your choice will incentivize good marine stewardship.

3rd Inform other divers about my website so that this initiative grows and fulfills its true potential.

HIGH STREET CLEANERS

FEATURE **MAGNUS JOHNSON, CENTRE FOR ENVIRONMENTAL & MARINE SCIENCES, WWW.HULL.AC.UK/CEMS**



Fangblenny, drawn by Robin Springett

The story of the cleaner fish provides an insight into complex interspecific behaviours and an early warning of the state of our coral reefs.

Mr *Labroides dimidiatus* (the blue streaked cleaner fish) lives on the corner of Reef Crest. He runs a little business, the fish equivalent of a dentist or hairdresser. He (or she) is a professional skin doctor and makes a decent living removing parasites, displaced scales and necrotic tissue from eager client fish.

Evolution has ensured that Mr *Labroides* has a strong and recognisable brand. Fish all over the world recognise the black stripe outlined in vivid blue that runs the length of his body in the same way that a young child instantly recognises the McDonald's logo.

Mr *Labroides* is an astute businessman and considers all the aspects necessary to run a successful operation. He chooses the location for his cleaner station with care, ideally somewhere prominent on the reef such as over an obvious plate coral or tabulate *Acropora*. He spends some time performing an eye-catching zig-zag dance around the area to advertise the fact that he is in business and drawing potential clients into his surgery.

Clients visit him either because they have been there before and appreciate the good service he delivers or because they happen to be passing and recognise his advertisement. He treats his clients as individuals; he spends most time with those that he values because they are large or have lots of parasites, and he occasionally offers an economy or lower level of service to those that are less profitable.

His favourite clients are parrotfish covered in mucus and debris from their night spent holed up in their mucus sleeping bag; large and old groupers; goatfish that have spent the day grubbing around in sediments; and jelly-fish covered fusiliers. He is less inclined to spend time dealing with smaller species such as dascyllus, damsels or other wrasse.

He's a busy little chap; some folk have estimated that he may take 1,200 parasites from clients a day and that some clients may spend up to a third of their day in his salon. He is in such demand that clients will often queue for lengthy periods awaiting his attention.

When he begins his ministrations with a visual and tactile inspection, peering closely and brushing his pectoral fins over the surface of the client, they will stop moving and open their mouths and operculae in order to facilitate his activity.

There is a mutual trust between Mr *Labroides* and his clients: they trust him not to nibble at delicate gill tissues; he trusts them not to eat him while he cleans their teeth. The trusting atmosphere extends beyond the relationship between cleaner and client – those that are queuing up waiting their turn appear abnormally quiescent, and you will rarely see one potential client fighting with or eating another. About 80% of photographs of fish that you see in coral reef guides will have been taken at cleaner stations, where the calm and unafraid behaviour of the clients gives the photographer ample time to approach their subject.

Cleaning visit. Photo by Adam Powell.

Mr *Labroides* is not an altruist though and seeks to make profit wherever he can. Occasionally, if he thinks he can get away with it he may take an extra little nibble of tissue or scale, perhaps hoping that his misdemeanour may be considered accidental by his client. He has to be careful though as other clients eavesdrop on his activities and a step too far may lose him a valuable client and even damage his reputation. A client that feels he has been cheated is likely either to seek the services of another branded cleaner fish or to retaliate.

Mr *Labroides* has to deal with the fact that there are often several other similar operations to his own, sometimes run by his many girlfriends, that will compete for client fish. He tolerates the operations of juvenile cleaner fish around his cleaning station, allowing them to pick up trade that he can afford to ignore as it is less profitable. Juvenile cleaners concentrate their efforts on smaller clients, probably benefiting from the advertising activities of the adult fish.

Mr *Labroides* may slip up now and again but he is nothing to the evil, nasty, sneaky, devious

Bluestreak cleaner fish drawn by Robin Springett

fangblenny (Ms *Plagiotremus*) who may lurk around the fringes of his territory. These horrid little fish can choose at will to adopt a colouration similar to that of juvenile cleaners and mimic their activity, even dancing like a cleaner. Her intention is not to dupe the client fish, who are often wise to her activities, but to get close enough to the cleaner's operation so that they can take advantage of the high densities of clients in the area.

The lepidophagous (scale-eating) fangblenny strikes like lightening, from behind its victim and using its specially modified protruding teeth, rips a scale and some tissue from unsuspecting passers-by. They may strike from anywhere, behind a rock, the middle of a shoal of small fish loitering over a coral head, or from their burrows (usually a hole once inhabited by a polychaete). They are merciless, and if two potential victims are squabbling they will take advantage of their lack of attention, zooming in to seize a chunk of flesh from one of the unfortunate combatants.

When there are fangblennies in the area, it is possible that cleaner fish modify their behaviour and offer an exemplary service to their clients who will only suffer a certain level of cheating before they move off in search of another, less dangerous, cleaner station.

Studying the workings of cleaner fish, clients and mimics on reefs gives us more than an interesting story to tell. It gives us a real insight into how interspecific behaviours may have evolved and quite how complex the relationships among reef fish are.

These highly complex interactions exist on healthy reefs and it is likely that, because of their dependence on a broad range of species, they are of the utmost fragility. Cleaner wrasse can, to some degree, be regarded as the miner's canary of coral reefs.

FOR FURTHER INFORMATION SEE:

- Côté IM (2000) Evolution and ecology of cleaning symbioses in the sea. Oceanography and Marine Biology Annual Review 38: 311-355
- Côté IM, Cheney KL (2005) Choosing when to be a cleaner-fish mimic. Nature 433: 211-212
- Johnson, ML & Hull, S (2006). Interactions between fangblennies (Plagiotremus rhinorhynchos) and their potential victims: fooling the model rather than the client? Marine Biology 148: 889-897
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THE **SHUTTER BUG**...

FEATURE AND PHOTOGRAPHY **NICOLA BUSH**

WHAT: Underwater Photography Club
WHERE: The Atlantis Dive Centre
WHEN: 1st Tuesday of every month
TEL: +971 4 426 3000

Whether you are an award winning underwater photographer or someone who just wants more colour and less backscatter, the Atlantis Underwater Photography Club certainly does have something for everyone.

10 months ago I was invited along to the monthly club meeting at the Atlantis Dive Centre and was quite unsure of the evening that was planned. As someone who has always taken photos above the water in auto mode and never really understood the technical side to taking a good picture, I was quite convinced that no good would come of sharing my fuzzy washed-out underwater pictures with a group of passionate perfectionists and semi pros!

As I stood at the front of the group and introduced myself as the clueless newbie, it was nice to be reassured that everyone has to start somewhere. While sharing a few of my shots taken with my Sony point and shoot, suggestions were given from various members on how I could make slight adjustments to settings or lighting and how that would reflect in my image, most of which at the time went straight over my head. After a few club meetings I started to ask more questions and didn't keep quiet when I didn't understand something (which was most of the time), however with my persistence and encouragement from the more advanced photographers, I quickly started to see improvements to my images.

Monthly meetings usually follow a monthly theme such as editing, lighting or shooting angles and the club also encourages each member to share six of their best photos from their month of diving. Now 10 months on, not only am I quite pleased with my 6 best pictures, I actually have 6 pictures to show!

Underwater photography can certainly be an expensive hobby as individually, the housings and strobes often cost more than the camera itself. However I have learned that even with an inexpensive point and shoot camera and a few great mentors, you can get some pretty good pictures simply by understanding the manual settings and lighting without breaking the bank.

3 reasons why you should join the Atlantis UW Photography Club:

1. You will meet both amateurs and professionals who are there simply to learn from others and share their knowledge. A photo is only as good as the photographer.
2. You can join in photography focused dives and club competitions.
3. The club is free and open to all.

My Camera Set Up in all pictures:
Sony Cyber Shot WSC-300 and IKELITE AF35

THE **SMILING SEAHORSE**

FEATURE **GINNY NAISH**

Nestled between the Bay of Bengal and the Andaman Sea and flanked by some of Asia's most famous destinations, Burma is one of the world's best-kept secrets. The Republic of the Union of Myanmar, or Burma as it remains better known, was opened up to tourism in 1997. Since then, the Burmese government has worked hard to develop its tourism industry and more and more visitors are arriving to experience the country's turquoise waters and palm-fringed white sand beaches.

With development forging ahead in neighbouring Thailand, Laos and pretty much everywhere else on the continent, the natural marine wonders that drew people to some of those better-known destinations are losing their exclusive appeal. In contrast, Burma's Mergui Archipelago offers over 800 islands sprinkled throughout 12,000 square kilometres of crystalline waters just begging to be discovered. Since Burmese waters were opened up a few boats have begun to appear, yet the islands remain almost entirely uninhabited save for the odd Burmese sea gypsy fishing from his boat amongst the mangrove glades. The vastness of the area means it is possible to spend weeks here without coming across another human being, with just the kingfishers, wild pigs, monkeys and a whole host of marine life for company.

Burma's diving is almost entirely accessed by live-aboard boats, which offer the most effective means of exploring the outer reaches of the Mergui Archipelago. Most of the dive boats arrive from major resorts such as Phuket in neighbouring Thailand. But for something a little bit different and for the best access to the area, try Ranong, the Thai border town across the strait from Burma on its South East coast. Ranong itself is home to various natural attractions. It is blessed with hot springs and unspoiled mangrove forests and makes a great base for a few days of relaxing and exploring before joining your live-aboard. But it won't take too long before you are hankering to discover the diverse marine ecosystem of the Mergui Archipelago. New magical dive sites off deserted islands are being discovered and added to a few lucky itineraries every year.

Divers are spoilt for choice in Burma's virgin waters. Visibility is incredible here and the coral gardens that cover the seabed like a blanket are absolutely teeming with marine life. Mantas, dolphins and whales patrol the crystalline waters and the area was once famous for its many sharks. On this stage though, little creatures enjoy equal billing with the big boys. Lobsters, crabs, cuttlefish and shrimps scurry around the sea floor providing plenty of action and keen underwater photographers are spoilt for choice, with pipefish, frogfish, nudibranch and seahorse all jostling for position against the coral heads and myriad colours of the untouched seabed.

There is something magical about Burmese diving that is hard to put your finger on, but it pervades every minute you spend here exploring. Nearby Thailand offers breath-taking dive experiences on an enormous scale, with many well known dive sites, and yet if you stack them head to head the Mergui Archipelago wins hands down. Perhaps it is due to the remoteness of its sites and their naïve beauty, completely untouched by commercial tourism. Or maybe it is just down to the sheer scale of the surroundings and the diversity of marine life on offer. Whatever it is, it sets Burma apart.

It would be impossible to list every dive site and in this unique archipelago, new adventures are discovered as frequently as new marine species. But here we take a look at five of the best to give you an idea of what's in store on your Burmese diving adventure.

Western Rocky is one of the archipelago's southernmost dive sites and perhaps one of its most exciting in terms of the breadth of diving on offer. Western Rocky itself is a small island, sporting a diveable passage right through its heart that just manages to be lit by daylight all the way through. A guest appearance by a three-metre nurse shark is not uncommon and there are good chances of seeing other shark species including the famous whale shark, bowmouth guitar fish, harlequin shrimp, frogfish and sea horse, while the anemone-lined cavity is full of oversized lobsters and crabs. The four islets off shore are worth a dive on their own, their walls blanketed with clams and colourful sponges, and busy with big reef squid and chevron barracuda. Canny divers who plan their itinerary well can enjoy a spectacular night dive on the south wall where the red and orange coral are lit to perfection by the moonlight.

The islet of Black Rock is a small rock in the middle of the ocean. It provides a steep wall drop to over 100 metres, characterised by rugged boulder formations and fine soft coral. A shallow section of tube corals is home to a bevy of miniature sea creatures, where sea urchins bask and busy crabs and shrimps clatter about their business. Many consider Black Rock to be the finest dive spot in Burma. Its crystal clear waters offer 35-metre visibility, providing breath-taking views past the rock walls to the on-going procession of barracuda, tuna, mackerel, rays, reef sharks, whale sharks and eagle rays.

Die-hard shark spotters will not be disappointed in Burma. Underwater cave systems provide plenty of opportunity to see nurse sharks basking amongst the crustaceans and clown fish in the privacy of their sheltered homes. Shark Cave is home to a group of nurse

sharks up to four metres long. Its entrance is loyally guarded by grey reef sharks and sweetlips, but take the time to look beyond the cave's obvious attractions if you dare and you will also see a floor covered in yellow sponges, a ceiling of marigold cup corals and a whole host of marine delights, from Durban dancing shrimps, clams and sea stars to moray eels, cowries and sea slugs.

Few live-aboards make it to the northern extreme of the Mergui region, but those that do are in for a delight. Tower Rock features breath-taking topography with walls studded with corals and fans providing shelter for spiny lobsters, banded shrimps, oysters and clams, while manta rays and schools of modulas glide silently past the impressive backdrop.

Several miles off shore, North Twin offers a dive experience that is quite unique within the archipelago, typified by large granite boulders covered in gorgonian sea fans and soft corals. This is the place to spot schools of goat fish, bat fish and snapper in the shallow waters and a popular manta cleaning station at around 22 metres, giving way to yellow tail barracudas, big eye trevally, tuna and eagle rays appearing from the deep blue depths.

The dive sites in the Mergui Archipelago are spread far and wide and access via land is complicated and restricted. The only way to really get the benefit of exploring the Burmese waters is by live-aboard safari. Most live-aboards depart from the busy tourist centres of Phuket and Khao Lak and travel north through the attractive Similan Islands. While some make it as far as Burma, it leaves little time for really exploring the deserted tropical islands and virgin waters that are waiting for you over the border. To throw you unreservedly into the unique Burmese diving experience, the border town of Ranong is undoubtedly the place to start.

We met up with Franck and Camille, French owners of The Smiling Seahorse dive company in Ranong to find out more about diving in the area. Franck and Camille operate the MV Thai Sea, a comfortable live-aboard for small groups of up to twelve, dedicated to exploring the top rating dive sites around the Andaman Sea. From their base right on the Thai/Burmese border, they are well positioned to explore some of Thailand's best-known sites such as Richelieu Rock and Suring Island. But the real jewel in the crown of their dive offering is their unparalleled access to the pristine dive paradise of the Mergui Archipelago.

The pair met through their mutual love of diving, so it seemed natural that they would make their passion their future. "Each holiday was an opportunity to discover a new piece of water", explained Camille, "and we quickly discovered that live-aboards were the best way to reach unspoiled dive sites. But Burma took it to a whole new level and this is where we really discovered the wonder of diving with no other boat in sight". Camille and Franck settled on Ranong as their base and established themselves as one of the only dive companies offering trips up to the deserted island seas off the Burmese coast.

At 20 x 6m, the MV Thai Sea is the perfect size for a live-aboard – large enough to accommodate up to 12 divers, yet small enough to create a cozy, home-away-from-home feel. The boat was completely refurbished at the end of 2011 and as Camille showed me around I could see that the couple had really taken care to create a high standard live-aboard experience. Plenty of comfort to rest and relax at the end of an exciting day of diving, and friendly staff to see to their every need. Barbecues and tasty meals are prepared by a talented on-board chef and served in the large dining area against the stunning backdrop of some of the most exquisite marine geography on the planet. Having lived in the UAE for the last six years before coming to Thailand, the couple understands Muslim needs and will happily prepare halal food onboard if requested in advance.

The large dive deck and dive platform is well equipped with high quality diving kits, onboard compressor and Nitrox station, and provides plenty of storage space if you have brought your own.

Franck is an MSDT PADI Instructor and is keen to share with his clients his passion for the marine world while keeping a keen eye on safety. The team delivers personalised PADI training to suit its clients' needs, from Open Water accreditation through to Divemaster, with a whole raft of specialist dive experiences in between. The boat is equipped with nitrox as well as standard tanks to help experienced divers get the best out of the varied dive sites.

A live-aboard adventure with the Smiling Seahorse team delivers up to four dives per day but the time you spend drifting from one breathtaking spot to the next is nearly as special as the time you will spend underwater. So when your dive time is over and your sea legs are ready for a rest, there is plenty of time to explore. The islands are full of exciting treasures, from jungle bird-spotting and playing with the monkeys in the mangrove glades, to simply dropping anchor and relaxing on the powder white sands of a deserted palm-fringed beach.

The main dive season in Burma is from October to May, with optimum conditions in the Mergui Archipelago from December to April. For the best manta ray and whale shark sightings, aim for the second half of the season.

Bangkok offers regular domestic flights into Ranong or you can fly to Phuket, where you will be met and transferred to the live-aboard by one of the Smiling Seahorse team.

And who can blame them for smiling? As Franck summed it up for us, "I could never get bored of diving", he explains, "but diving here, this is something else. Every trip we make, I see something new, something unexpected. This is paradise".

See it for yourself and I am sure you will agree.

If you want to go diving in Burma or explore the best diving sites in Thailand, the smiling seahorse has just what you need; friendly staff, a comfortable boat, exceptional service and breathtaking diving.

The Smiling Seahorse's itineraries are exclusive, they don't like to dive on busy dive sites and know you don't either. On Burma trips, you will find it hard to spot another dive boat around.

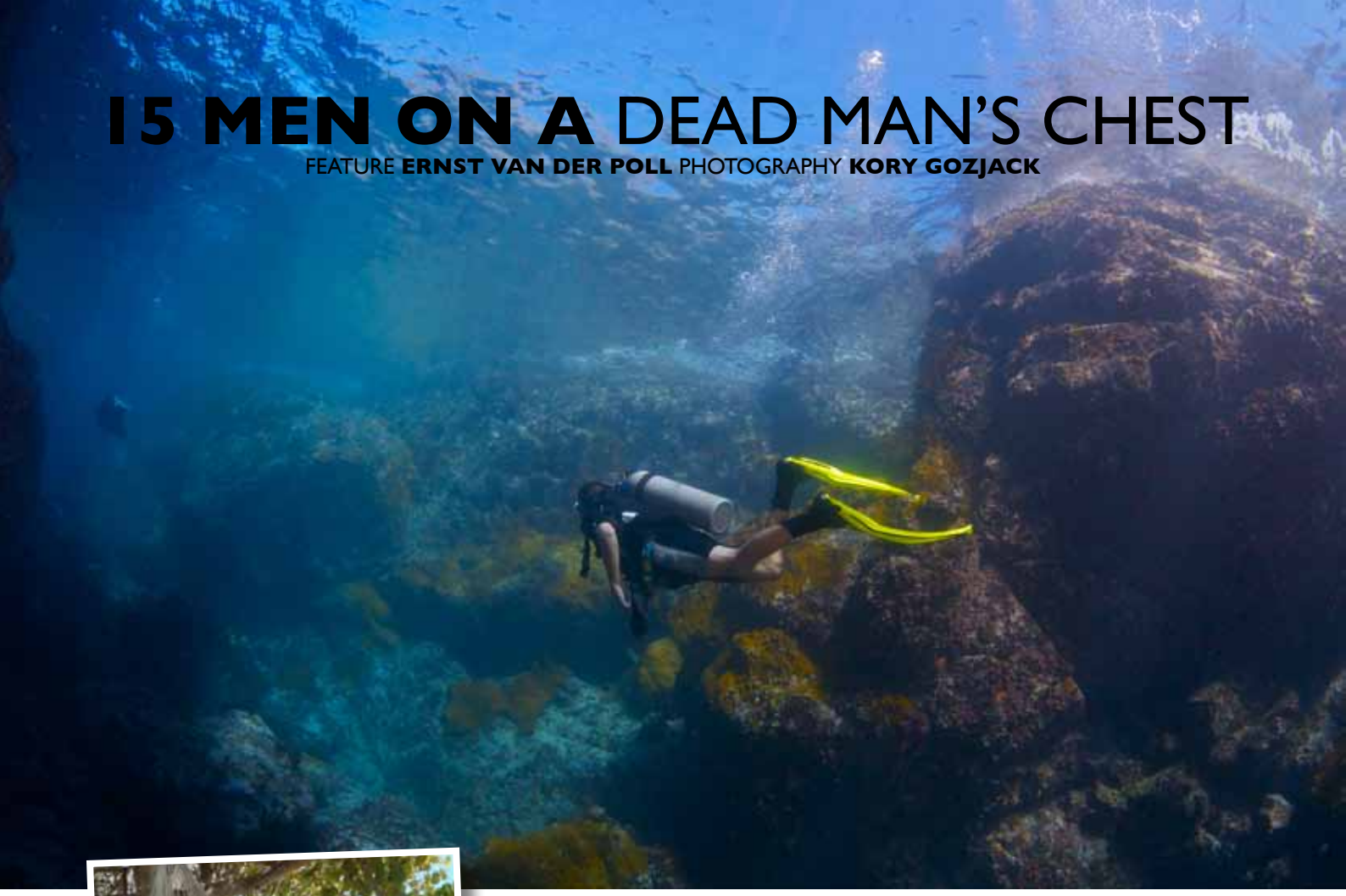
Besides the amazing diving, you can expect exceptional services on board the 20 meter long MV Thai Sea, the cook is amazing, the number of guests limited to 12 and there are other extras for entertainment (BBQ, kayak, movies…)

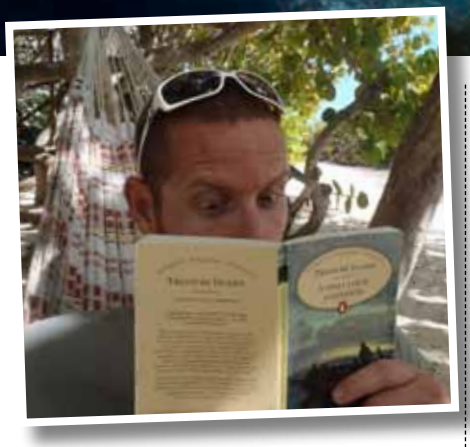
Get more info: **www.thesmilingseahorse.com**



15 MEN ON A DEAD MAN'S CHEST

FEATURE **ERNST VAN DER POLL** PHOTOGRAPHY **KORY GOZJACK**





15 men on a deadman's chest…yo ho ho and a bottle of rum…I remember reading this in the classic novel, 'Treasure Island' by Robert Louis Stevenson when I was 10 years old. Never in my wildest dreams would I ever have thought that I would one day be working and living and diving the very Islands that were described in this classic book. I think every young boy's imagination runs away with them when they think of pirates and treasure and that is exactly what the British Virgin Islands are… a little bit of treasure.

So where exactly is the British Virgin Islands? For more detailed information you can check out the official BVI welcome guide online at **http://www.bviwelcome.com**:

"Just a 30 minute ferry ride from St. Thomas in the USVI, or a 30 minute plane ride from San Juan, the stunning 50-plus islands and cays that comprise the British Virgin Islands have two great assets – accessibility and virgin beauty. Known for years as a "sailor's paradise", yacht cruisers were among the first to realize this was indeed one of "Nature's Little Secrets".

Tortola is the largest island and seat of government of this mountainous archipelago of gemlike isles. Tortola is named after the amounts of turtle doves that were found on the island and you can see reminisce of both British and Dutch settlers in the architecture of old forts, churches and houses around the island.

Virgin Gorda, where my wife and I live, is the next largest Island. The Island has the most amazing beaches and is a favorite stop over for the big cruise ships to come and visit a spectacular boulder formation called the Baths.

Ginger, Cooper, Salt, Peter and Norman lie to Tortola's south, while Guana, Camanoe and Jost Van Dyke to its north. All of them have colorful history of privateering, Norman Island probably the most famous with Spyglass Hill and the Caves right out of the pages of Treasure Island. By 1595, the famous English Privateers Sir Francis Drake and Jack Hawkins were using the Virgin Islands as a staging ground for attacks on Puerto Rico and Spanish Shipping. In the wake of Drake and Hawkins, came French Corsairs and Dutch Freebooters, all attracted to the secure and unattended harbours of the Virgin Islands.

In 1720, the Virgin Islands saw Edward Teach use the Islands as a hide out, you might know him better as Black Beard. It is Black Beard that left 15 of his marooned crew on Dead Chest Island with nothing but a cutlass and a bottle of rum for 28 days…from there came the song in Stevenson's classic:

15 men on a dead man's chest,
Yo ho ho and a bottle of rum!
Drink and the devil had done the rest,
Yo ho ho and a bottle of rum…

Few of these 15 survived and some say that the ones that did, were driven to canabalism; others say they all drowned after the rum finished and they tried to swim to Peter Island.

Dozens of smaller islands, some with resorts, some unpopulated, lie between; Anegada, the only coral atoll in this island chain, is to the northwest. Anegada's name derived from the Spanish word "ahogado" which means to drown. Anegada has the 4th largest barrier reef in the world and the biggest in the Caribbean. The actual Island is below sea level and therefore "drowning". In addition to this, Anegada also has over 300 wrecks of sailors that got lost in the maze of reef. Billy Bones, the infamous pirate also used Anegada as his hide out.

The BVI is a picture of contrasts. There are protected anchorages in quiet palm-fringed coves with spiraling sheer rock faces that plunge to the ocean. From island to island the vegetation can be dramatically different due to rainfall, soil composition and sun exposure. Lush areas support palms and tropical fruit trees such as bananas, mangos and key limes, along with flowering hibiscus and bougainvillea. A hike up a hill may reveal varieties of cactus, wild tamarind and fragrant frangipani.

The surrounding waters are deep shades of liquid blue, but on Anegada, the waters take on an ethereal aquamarine shade. A varied and intriguing environment on land and on sea makes these islands appealing to divers, boaters, hikers and those desiring to just relax in a soft rope hammock overlooking a white sand beach.

DIVING IN THE BVI

Suitable for all from the newest diver to the saltiest sea dog! From the healthy star coral reefs of Great Dog to the fish-filled currents flowing around West Dog and Cockroach Islands, from the history of the wreck of the RMS Rhone (voted best wreck in the Caribbean by Skin Diver magazine), to the pelagic treats to be found at the Chikuzen, you are sure to find what you have been looking for in diving. Recent results from the readers at Rodales Scuba Diving magazine have put the BVI on the world diving stage. Top Wrecks, Top Snorkeling, and Top Beginner Diving awards for 2005, 2006, 2007, 2008 and 2009 show that the word has gotten out.

New divers can take comfort from the sandy sea floor surrounding our islands which limits the vast majority of our dive sites to a maximum depth of 80 feet.

More experienced divers will be rejuvenated by watching huge schools of fish feeding on the nutrient rich currents at Dry Rocks East or the Visibles. We have rich coral reefs like Great Dog and Ginger Island, undersea pinnacles at The Visibles and The Invisibles, reefs built on huge underwater boulders such as Flintstones or Joe's Cave, plus wash rocks at Dry Rocks East and Dolphin Rocks, and wrecks including The RMS Rhone, Chikuzen, Marie L/Pat, and the Inganess Bay. The sheer size of the BVI make for a great variety of topography and conditions at our many dive sites.

So…if you are ready for your own Caribbean Adventure, take the plunge and get yourself out here! You won't be sorry!

For more info on the diving, check out the website: **www.divebvi.com** or you can email Ernst van der Poll at: **ernst@divebvi.com**

For bookings, contact Discover Orient Holidays:
Tel: +971 4 360 7177
Mob: +971 55 916 2639
Email: info@dohdubai.com

PUERTO GALERA, PHILIPPINES

ASIA DIVERS STAYING AT THE EL GALLEON RESORT

FEATURE AND PHOTOGRAPHY **ALASTAIR MCGREGOR**

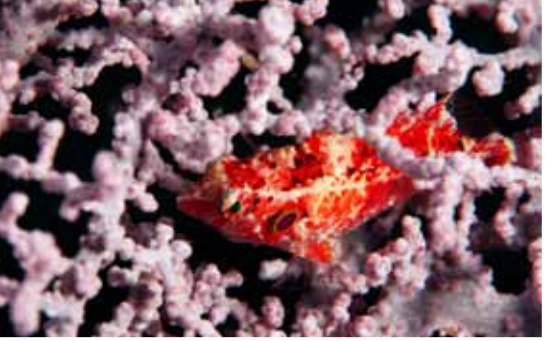
Returning to Puerto Galera is always a bit of a special occasion for me. I have now been to the El Galleon Resort some five times and my trip this February will be my sixth to the area but only my third as an underwater photographer. On my previous trips I had completed my Advanced Nitrox and Normoxic Trimix courses with Tech Asia and had then returned to do pleasure technical diving, which in PG it truly is a pleasure with clear warm water and secondary reefs and some wrecks to explore. The trip always starts with clearing customs, locating the resort organised mini-van to take us to Batangas to pick up the Banca to Oriental Mindoro. The pickup is slick and efficient and the boat is always waiting for you. The journey to Batangas takes about three hours depending on the traffic heading out of Manila and once there, the hustle and bustle of Manila is a distant memory. All the gear is loaded onto the boat and off we go pulling out of the busy port area then out to the Manila channel and as the lights fade away into the distance, a sense of calm prevails and all that is left to do is enjoy the ride and relax until we bump up against the El Galleon's pier, check in, have a cold one and head to bed.

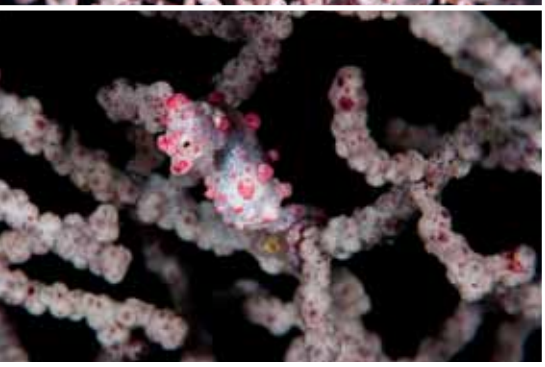
The resort itself is really laid back and accommodating. The restaurant produces nice fresh meals, good breakfasts and everything is clean. There are different levels of accommodation from the poolside rooms to the suites that overlook the neighboring Sabang Bay and are really nice – if a little bit of a trek up a winding stair case from the ground floor to the room, which is ok except when carrying a heavy camera, but it is worth it!

Asia Divers is the El Galleon's in-house dive shop which is situated under the Point Bar with the pier stretched out in front. On the pier, there is an equipment room and changing room. When you arrive all of your equipment is stowed in boxes ready for the diving. Once you have setup your gear on the first day, the crew remember your preference so that every day you are signed up for the dives that you want and your gear is loaded onto the boat or setup for you to analyze your tank if diving on Nitrox, which is the norm in Puerto Galera. On the pier there are tanks for rinsing gear and also two camera rinse tanks. The dive briefings are done on the pier before everyone gets on the Banca's ready to go diving. El Galleon have just expanded the floating portion of the pier to make things even easier. For those not familiar with Bancas, they are essentially narrow canoe like boats with outriggers on either side and powered by a truck engine. They are surprisingly comfortable for diving from.

All my trips to Asia Divers follow the same pattern; wake up, briefing, dive, back for breakfast, briefing, dive, lunch, dive, night dive, dinner and a few San Miguels, sleep and then repeat the pleasurable cycle!

The diving in Puerto Galera is pretty diverse; you have sea grass in front of the resort which has all sorts of critters hiding in the muck and the same is true for Sabang wrecks – a series of small fishing boats that are covered in all sorts of cryptic critters hunting and hunted. You can then have a turbo charged drift dive on the canyon dive site with a chance to see sleeping White Tips and the occasional Manta Ray or Whale Shark. Puerto Galera has been protected since the 70's and it shows as the reefs are a riot of colour with small reef fish, Anthias, Angelfish, Sweetlips and Wrasse that we all dream about when we imagine a coral reef. The coral is healthy with a mixture of hard and soft corals and worth a closer look for the small commensal's that inhabit a lot of these corals and crinoids. Sinidigan Wall stands out as Nudibranch heaven as everywhere you looked there was another brightly coloured slug crawling across the landscape. I have heard that it is possible to spot some twenty to thirty different types on a single dive and I saw an average of 8-10 on my dives. Another fantastic macro dive is the Hills or Giant Clams which is a short boat ride from the resort and you are normally dropped on top of the Giant Clams at about 9am and you then explore the rubble area looking for small camouflaged creatures hiding in the small coral mounds and rubble. I have found here Sea Moths, Sea Horses, Leaf Fish, Waspfish, Ornate Pipefish, Roust Ghost Pipefish and Frogfish. At Monkey Beach and Japanese Wreck, I have found Pygmy Sea Horses (*Bragibanti*) and I have seen photos from other UW photographers of the Denise Pygmy Sea Horses here and at the right time of the day the dappled sunlight coming through the water makes for a memorable dive. The



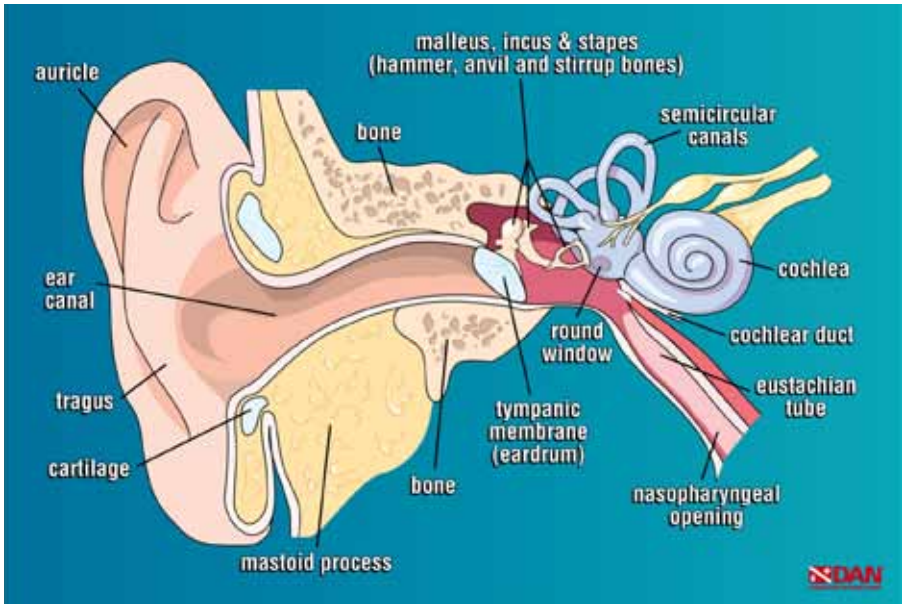


Alma Jane Wreck makes a good morning dive and is always covered in schooling Batfish and Jacks and you can also find small critters hiding in wait. For people with a passion for walls and wide angle photography, there are day trips to Verde Island and they are not to be missed. On my next trip I plan on spending more time here with my Tokina 10-17 mounted on my camera.

The diving in Puerto Galera has a bit of something for everyone, especially if you like your critters. It doesn't have the big crowd pleasers like my previous trip to Malapacua with its Thresher Sharks, but it has a certain something that keeps me coming back. I am sure that it is in equal parts the diving and the warm and friendly atmosphere at the El Galleon. I am sure that my next trip will not be my last.

UNPLUGGED. THE USE OF EAR PLUGS IN SCUBA DIVERS

FEATURE **WESLEY HYATT AND JOEL DOVENBARGER**



Q: I have had trouble clearing my ears, and recently had an eardrum (tympanic membrane) rupture. My ENT (ear, nose and throat) doctor found no problems that would lead to clearing trouble. I never had a broken nose, nor suffer from allergies or ear infections. Even though my eardrum has healed completely, he has advised caution in returning to diving. Is this something that I should consider using an earplug for in the future? If I have another ruptured eardrum, can I dive if I use an earplug?

A: Once a ruptured tympanic membrane (TM) has healed, a diver can usually return to diving. Divers with this injury should exercise caution however, because a small scar is left in the layer of tissue that makes up the TM. Forceful clearing could cause repeated problems with the membrane. Although your doctor found no ENT problems, it is possible for you to irritate the eustachian tube when you're trying to clear your ears and sinuses. You may even have a small eustachian tube, sensitive to rapid pressure changes. Descend slowly, clearing often, and you may avoid future injury. As for the use of earplugs, opinions differ on their use in scuba diving. In general, they are not recommended. However, some divers use earplugs in special situations. Dr. Allen Dekelboum, an ENT and DAN consulting physician in California, reiterated the common view that earplugs create an air pocket in the ear canal, preventing equalization and resulting in differences in the pressure between the water and a diver's ear canal. This situation could lead to serious injury. "With an intact tympanic membrane, the increasing water pressure against the earplug and the decreasing volume of air between the plug and the tympanic membrane would have a tendency to drive the plug against the TM," Dekelboum said. "The increasing water pressure could also wedge the plug in the ear canal. If this occurs, there is risk of external ear barotrauma."

To address these concerns, some manufacturers promote the vented earplug, which has a small hole for venting between the water and the ear canal. The holes typically have a valve for pressurization without letting water enter the ear canal.

Dr. Robert Scott, creator of Doc's Proplugs, said his vented earplugs are safe for divers to use. It has one chief advantage, he said: "They make pressurization easier." Doc's Proplugs website (**www.proplugs.com**) recommends that divers, to maintain proper pressurization, clear their ears frequently while wearing the earplugs. According to the website, those having trouble clearing with the plugs should check if earwax is pushing against the plug vent or blocking the canal. The website also says that if the vent is fouled by debris while a diver ascends, it is best to remove the Proplug, and if it is fouled during ascent, there is no problem: the air and water under pressure can escape around the Proplug.

However, Scott acknowledged that these assertions have not been proved scientifically, that no outside medical authority has endorsed the product or tested it under laboratory conditions to prove the veracity of its alleged capabilities. Scott said the claims are backed up through the use of plugs with hundreds of divers.

Longtime DAN consulting physician Dr. Cameron Gillespie said divers could wear vented earplugs, yet he has significant reservations. "I believe earplugs can be used in diving, if vented, but I see little value in using them," he said. "Perhaps earplugs could arguably keep warmer water in the ear canal for comfort and, by reducing thermal conductivity, reduce chill to the canal walls, drum and semicircular canals."

However, Gillespie noted, "A wetsuit hood vented over the ear canals would accomplish the same things, and more (such as a significant conservation of the core body temperature), while not reducing surface hearing more than about 5 decibels (dBs) by eliminating the gain normally provided by the external ear."

Gillespie added that "earplugs make surface communication more difficult, because the small vents tend to retain water in the canals, causing up to a 35-dB conductive hearing loss. This could adversely affect safety."

Dr. Ernest Campbell, webmaster of Diving Medicine Online, said he had had several divers write to him, saying the Proplug allows them to dive comfortably after years of difficulty with equalizing and many episodes of middle ear barotrauma. "I have no personal experience, and the only reason that I can see that they would be beneficial is that they might slow the rate of pressure change on the external surface of the eardrum. It certainly has no ability to alter the pressure inside the middle ear or the eustachian apparatus."

Campbell said that one diver claimed that he was even able to dive with a perforated eardrum, an activity that is not recommended, since the possibility of middle ear infection is great. "The usual vertigo from water in the middle ear is not as severe – apparently due to the warming effect of the external ear canal on water between the plug and the eardrum," he said.

Dr. Shannon Hunter, an ENT physician at Duke University Medical Center, N.C., also expressed reservations. "I have reviewed the limited information on the vented plugs, and it appears that there is too much of a chance for failure. If the plug vent is occluded by wax or debris, it should be removed – at depth? In cold water, where the temperature in the ear canal is warmed by the presence of a plug? An influx of cold water to the vestibular system is a setup for vertigo, nausea and even vomiting. A similar situation at depth is possible if a fouled earplug were removed and allowed for an abrupt influx of cold water into a warm ear canal. The resultant effects of nausea, vomiting and vertigo could be deadly.

I concur with Dr. Dekelboum in that there is just not enough data or evidence to recommend the use of plugs for divers. The risks of complications underwater from malfunction or removal of an earplug are real and can potentially place the diver at increased risk for injury."

ARE YOU **READY?**

PUT DIVE SAFETY TRAINING ON YOUR "TO DO" LIST

FEATURE **JEFF MYERS**

The motivation for most scuba diving neophytes varies. Some seek the adventure, others look to connect with marine life, and still others might look to break out of their 9-to-5 lifestyles and try something new in a fresh setting.

Even if I'd like to think otherwise, the motivation that drives most individuals to learn the sport is probably not the desire to know the best dive safety procedures. It is likely in the back of their minds, however.

But if safety isn't a key motivator for taking up diving, when is it time to learn about it?

RETAINING INFORMATION

We're often asked such questions because of the DAN courses we offer; all are geared toward dive safety. Classes like the DAN Oxygen First Aid for Scuba Diving Injuries, First Aid for Hazardous Marine Life Injuries and On-Site Neurological Assessment for Divers are not required topics for divers when they're learning how to equalize their ears or clear their masks; they're designed for use "after the fact", or following a dive injury.

Generally, recreational scuba diving courses, regardless of certifying organization, include important in-water safety skills development throughout the courses. Entry-level divers, for instance, learn how to handle out-of-air situations, equipment entanglement and leg cramps, among other things. In advanced courses, divers learn more detailed navigation and how to dive under different conditions, such as diving at night or at greater depths. It's not until later courses such as rescue training that divers learn about searches for lost divers, how to deal with panicked divers and develop skills for emergency evacuations. Educators will tell you that breaking up training into small bits, or building blocks, promotes greater retention of information. This means the so-called "know-it-all", or all-inclusive, courses are things of the past. It's generally agreed now that diving neophytes should to hone their techniques on skills critical to every dive they make, and then build slowly on this as they progress through continuing education courses.

So when is the optimum time for divers to begin dive safety training?

THE RIGHT TIME FOR DIVE SAFETY TRAINING

Many educators and professional aligned with diving believe that rescue diver training is the most important level of education for every diver and that all divers should strive to attain this level of certification. This training de-emphasizes the individual diver and places the emphasis on others, teaching divers to be better buddies in and out of the water.

This would seem a natural time to incorporate other dive safety training – those "after the fact" of the dive injury DAN courses. Some divers have taken this traditional approach. But what about the divers who never make it to the rescue diver level? Do they simply avoid diving unless paired with a rescue diver? Or, should they just continue diving in hopes that they will never have any problems?

Of course, neither is the right answer: divers need to be aware of their limits and choose their buddy, dive plan, locations and diving conditions accordingly. Being afraid isn't the answer, but neither is complacency.

Avoid becoming careless about what you'd do in the event a dive emergency occurs. Diving is a safe activity but relying on the philosophy that "it just won't happen to me", may leave you with gaps in your preparedness.

All divers – yes, even entry-level divers – should have a solid grounding on the appropriate steps to take in a dive emergency. This should include basic CPR and first aid training, oxygen administration, the use of automated external defibrillators, handling hazardous marine life injuries and performing basic neurological assessments on injured divers.

But why stop with entry-level divers? Imagine this scenario.

After a long day of diving, you and your buddy pack up your gear, say good-bye and head your separate ways from the local quarry. You're looking forward to a big dinner and relaxing in your favorite chair. You hit the road after stopping by the first gas station you find to pick up a giant soda for the hour-long drive home.

During dinner, your spouse notices that you seem to be moving slowly and that you're favoring your shoulder, like it's hurting. You explain that you are just tired from making three dives and hauling tanks to and from the dive site earlier in the day, adding that some time relaxing will surely help. Your spouse, who is not a diver, frowns, shrugs and continues to enjoy dinner.

Later that night as you toss and turn in bed, your spouse asks if you think you'll be able to settle in and fall asleep. You're just trying to get comfortable, you say, but not to worry: once you fall asleep you're sure that you'll be fine. Though you don't mention it, you notice that the dull ache in your shoulder from "lifting tanks" has not subsided, either.

You begin to wonder if you may have a dive injury, but unwilling to accept the possibility that something might be wrong, you roll over and spend the night trying to get some sleep, occasionally waking, and still looking for a comfortable position.

The next morning you awake, still groggy from interrupted sleep, to the same pain in your shoulder. Now, some 18 hours after your last

dive, you finally admit to your spouse (and to yourself) that there may be something wrong. Your spouse looks at you and says, "What do we do now?"

IDENTIFYING DCI

The annual DAN Report on Decompression Illness, Diving Fatalities and Project Dive Exploration indicates that symptoms of arterial gas embolism (AGE) are rapid, most often within the first few minutes of surfacing. There will be little doubt that immediate action is called for, assuming you've been trained to respond to these symptoms.

Symptoms of decompression sickness, however, are often delayed a little more – in some rare instances more than 48 hours after the last dive. They may be subtle or even go unnoticed. Also, because of the stigma that being "bent" carries, divers are often reluctant to admit that they may have a problem.

But there's help in numbers. Experiencing – and discussing – an injury at the dive site, where other divers are available, may help an injured person to get more immediate recognition and subsequent care.

If divers are reticent about their symptoms, or if the discomfort begins later at home well after the dive, the situation becomes more problematic, especially if your spouse is not a diver. Your nondiving spouse or friend may not know what to look for or what care should be given; preferably that would be breathing 100 percent oxygen, contacting DAN and then seeking immediate medical care – even if you have received emergency oxygen.

Learning to dive may not be what your nondiving spouse is interested in, but he or she should learn about dive injuries and the proper care: if you experience a problem and no other divers are around to respond, your spouse will be better prepared to help you, even if that means simply encouraging you to call DAN. Recognizing these symptoms could decrease the time between recognition and seeking definitive care, something that may improve the outcome of an injury.

DEFINING THE TERMS

Decompression illness, or DCI, is a term used to describe illness that results from a reduction in the ambient pressure surrounding a body. A good example is what happens to your body when you're surfacing after a dive.

DCI encompasses two diseases, decompression sickness (DCS) and arterial gas embolism (AGE). DCS is thought to result from bubbles growing in tissues and causing local damage. Bubbles may also enter the venous circulation. AGE results from bubbles entering the lung circulation, travelling through the arteries and causing tissue damage.

SINUS PROBLEMS IN DIVERS

FEATURE **DR. KARIN VELA, MD** AND **DR. SASA JANJANIN, MD**

WHAT ARE SINUSES?

Sinuses are air-filled cavities that are located within the bones of the skull and face. They possess various functions – including lightening the weight of the head, humidifying and heating inhaled air, increasing the resonance of speech, and insulating sensitive structures like dental roots and eyes from rapid temperature fluctuations in the nasal cavity. There are four main groups of sinuses: maxillary sinuses – located under the cheek, frontal – in the forehead area, ethmoid sinuses – situated between the eyes; and the sphenoid – the hidden paranasal cavity, located approximately in the middle of the head.

Sinuses are connected to the nasal cavities by narrow channels called the osteomeatal complex. These channels permit air to flow from the nose into the sinuses and allow drainage of mucous from sinuses into the nose. We are normally not aware of this process because the mucous is thin and watery and the osteomeatal complex connections to the nose are completely permeable.

The osteomeatal complex – channels from sinuses to the nose – can in different people substantially vary in its length or width. Sometimes, this difference can impact greatly on the ability of these channels to function properly. They may be very narrow or tortuous and therefore easily become blocked by swollen tissue which occurs with inflammation. The inflammation mucosa becomes very thick and can form round masses called polyps.

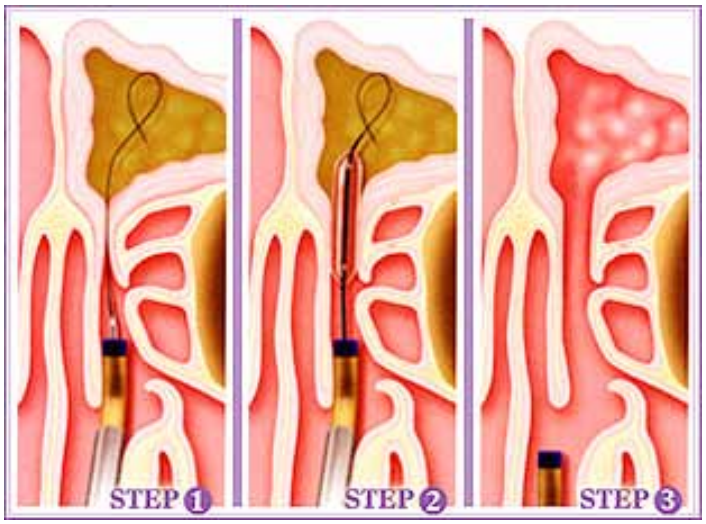
SINUSES AND DIVING

In your diving courses, you learned about diving physics. You learned that there is an inverse relationship between pressure and the volume of gas in gas-filled spaces. Increasing pressure on descents reduces the gas volume and decreasing pressure on ascents increases the gas volume proportionately. Unless you equalize pressure in your sinuses on descent or allow the expanding gas on ascent to escape from your sinuses, problems related to barotrauma can occur. The same may happen for the ears, as well as other gas-filled spaces.

SINUS SQUEEZE, FACIAL PAIN AND NOSE BLEEDS

Sinus squeeze – also known as sinus barotrauma – commonly occurs when a diver cannot equalize sinus pressure due to nasal congestion. In the case of a blocked nose, there is almost always associated blockage of the sinus openings, and there is no gas flow between the nose and sinuses. The bony structure will not collapse under the pressure changes, but the lower pressure in the blocked sinus will draw blood into it. Blood vessels in sinuses will engorge and leak. In more severe cases, the squeeze results in a blood-filled sinus, which will drain during ascent when the air in the sinus expands. You can recognize a sinus squeeze by pressure or pain in the forehead or around the teeth, cheeks, or eyes; or from a nose bleed. Pressure and pain regularly increase with depth.

The most common reasons for nasal congestion and sinus squeezes are colds and allergies which should be treated with proper medications. Until the congestion and sinus problems heal, you need to stay out of the water.



WHAT IF YOUR PROBLEMS DON'T GO AWAY?

If you are constantly experiencing these symptoms or they get worse over time, it might be prudent to see a doctor who specializes in chronic nose and sinus problems – an ENT doctor. In some people, the channels that connect sinuses to the nose may become blocked by swollen tissue. The causes of swelling may relate to allergy, viruses, bacteria, or fungus. In addition, certain structural conditions – such as a deviated nasal septum – may be further responsible for persistent sinus complaints. All of the above factors will eventually cause thickening (hypertrophy) of the nasal and sinus lining tissue which can only be detected by nasal endoscopy and CT scans – modern diagnostic techniques performed by the ENT specialist. If thickening persists it can become permanent, and eventually polyps will be formed.

NOVEL TECHNIQUES IN TREATING CHRONIC SINUS BLOCKAGE

Previously, severe or resistant sinus problems in divers were treated by endoscopic sinus surgery only – a procedure where bone and tissue around sinus openings have been drilled and cut in order to re-establish proper drainage and ventilation of the sinuses. This type of surgery is still successfully performed – and is still inevitable in severe cases of sinus disease – but the procedure is tricky as it often involves drilling larger holes in the delicate bone close to the brain and the eyes to improve drainage.

Balloon sinuplasty is a novel, safe and effective procedure for chronic sinusitis patients who are not responding well to medications and are seeking relief from uncomfortable and painful sinusitis symptoms. With balloon sinuplasty, ENT doctors open inflamed sinuses in the same way that heart surgeons open up blocked arteries during balloon angioplasty: a tiny balloon is fed on a guide wire from the nose into the blockage in the outflow from the sinus. Once safely anchored in place, the sausage-shaped balloon is gently inflated displacing the fine bone at the sinus junction without damaging the delicate membrane lining it. The balloon is then deflated and removed.

The procedure is less invasive than traditional sinus surgery, and effective at relieving symptoms of obstructed sinuses. Unlike conventional sinus surgery, it does not include removal of bone or tissue from the nose. Balloon sinuplasty also allows patients to go home on the same day and to quickly return to normal activities.

Acclarent Balloon Sinuplasty™ Technology, source: **http://www.balloonsinuplasty.com/** and **http://www.acclarent.com/**

DR. KARIN VELA is a Diving Medicine physician EDTC/ECHM IIa and works in the Dubai London Specialty Hospital.

DR. SASA JANJANIN is double European Board-certified in ENT and Facial Plastic Surgery. Besides being a highly talented surgeon, she is proficient in curing problems related to sinus and snoring complaints, allergies, headaches, sleep and ear disorders. Dr. Janjanin's particular expertise, is in sport-related ENT problems – acting many years as an ENT consultant for several professional and national sport teams and athletes, some of them Olympic medal and European championship winners.

UPCOMING **EVENTS**

DMEX 2012 (DIVE MIDDLE EAST EXHIBITION)

13-17 March held at Dubai International Boat Show, Mina Seyahi

EDA MARKET DAY

March (Date and Venue TBC)

WORLD WATER DAY

22 March

STORY OF STUFF WORKSHOP

April (Date TBC)

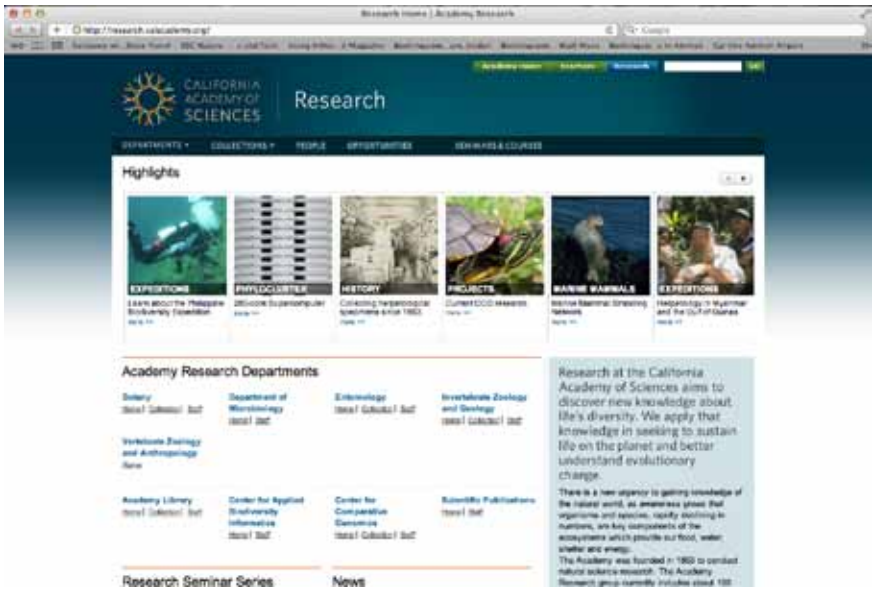
MOVIE SCREENING

April (Date TBC)

INTERESTING **LINKS AND RESOURCES**

FISH INFO

- http://www.fishwisepro.com/
- http://research.calacademy.org/
- http://biogeodb.stri.si.edu/sftep/



EDA
جمعية الإمارات للغوص
Emirates Diving Association

MISSION STATEMENT

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

LEGISLATION

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

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

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