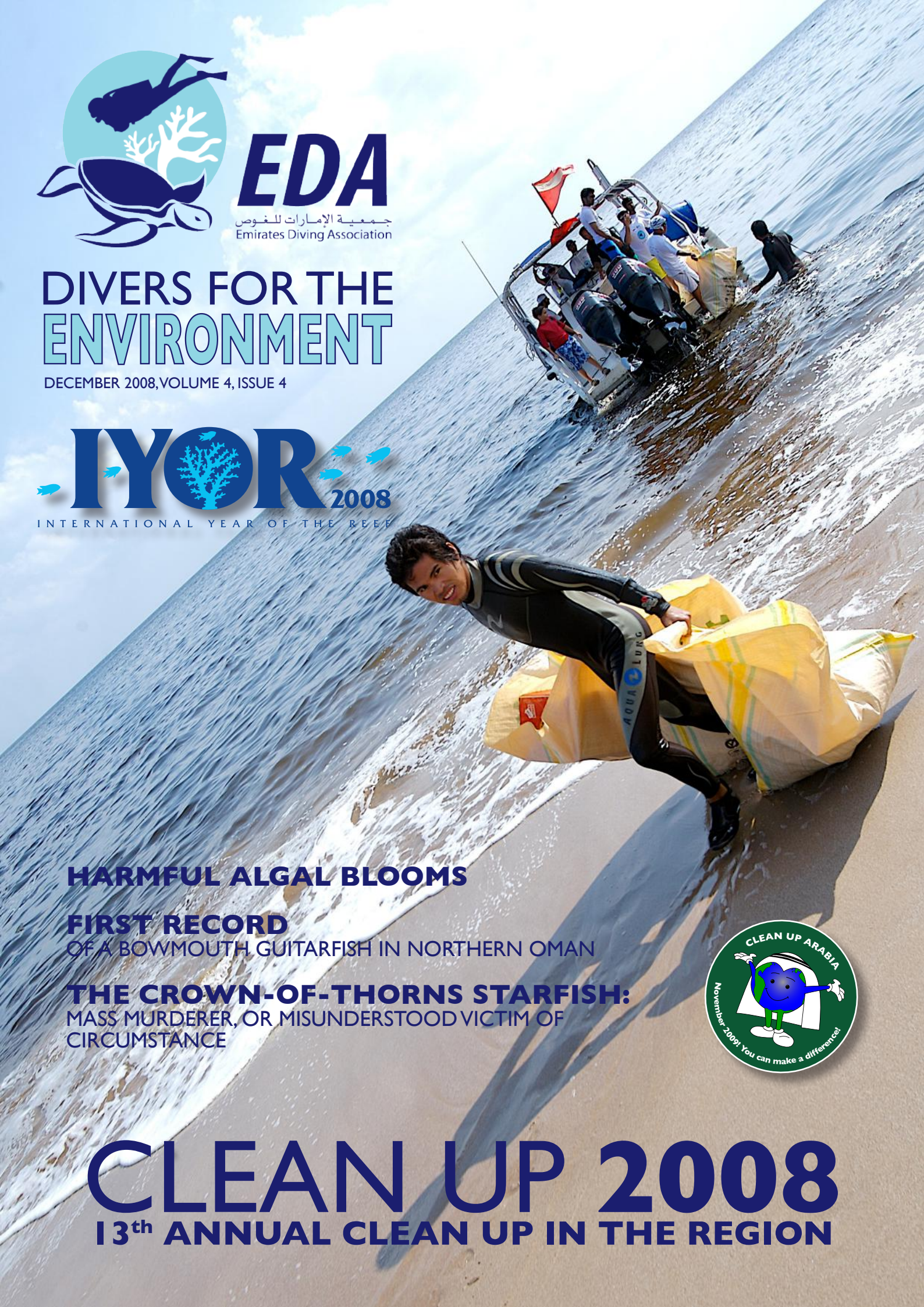

EDA

جمعية الإمارات للغوص
Emirates Diving Association

DIVERS FOR THE ENVIRONMENT

DECEMBER 2008, VOLUME 4, ISSUE 4

IYOR 2008
INTERNATIONAL YEAR OF THE REEF

HARMFUL ALGAL BLOOMS

FIRST RECORD
OF A BOWMOUTH GUITARFISH IN NORTHERN OMAN

THE CROWN-OF-THORNS STARFISH:
MASS MURDERER, OR MISUNDERSTOOD VICTIM OF CIRCUMSTANCE

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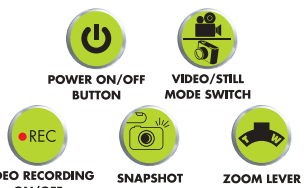

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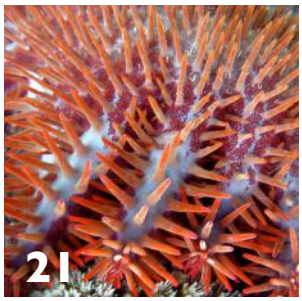
EDA
جمعية الإمارات للغوص
Emirates Diving Association

CONTENTS



REGULARS

NEWS

FEATURES

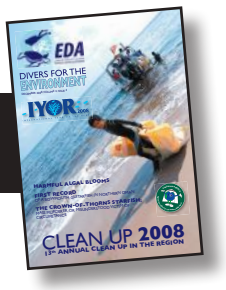
DIVING DESTINATIONS

HEALTH

DIVERS FOR THE ENVIRONMENT

Please note that EDA's magazine, "Divers for the Environment" includes articles written by individuals whose opinions, whilst valid, may or may not represent that of EDA. 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 March 2009. Send all articles/comments to: magazine@emiratesdiving.com.

EDA COVER
PHOTO BY NADINE AL KOUDSI



Please recycle this magazine after you have read it.

WHAT A **YEAR!!!**

IBRAHIM N. AL-ZU'BI
EDA Environmental Advisor

Emirates Diving Association
www.emiratesdiving.com
Tel: +971 4 393 9390
Fax: +971 4 393 9391
Email: diving@emiratesdiving.com

We all remember Kermit the Frog's famous song "it isn't easy being green"! Nowadays, being green is very fashionable, that it almost seems there is a whole ecosystem of Hollywood big stars competing to be more environmentally aware. Well this trend is not only felt in Hollywood, but it's a worldwide phenomenon, which has also reached the UAE.

This year was a busy 'green' year in the UAE with lots of environmental events that made the headlines in many local newspapers, from the new shark fishing regulations, to Sammy the whale shark's story. People including many divers started to advocate on how to be green. The trend of being concerned about the environment is definitely growing and being felt, as it is a genuine result of 'if we don't change our ways', the damage we inflict on our planet will render it incapable of sustaining the economy to which we have grown accustomed to, for future generations. Pressure is mounting for every potential polluter, every energy user and every conspicuous contributor to global warming to clean up their acts and adopt greener practices.

Although, we also had a tough year with oil spills and abundant algal blooms on the east coast, I do believe our Sea will recover if we give it a chance to do so, even with the present global credit crunch. If there could be a bright side to the current financial crisis, it might be the potential slowing down of the rapid development in the coastal areas and thus allowing the fragile marine ecosystems to regain strength. So let's always look on the bright side, even during bad times! I always like to be as positive as I can be when it comes to marine conservation and environmental protection, as sometimes this is the only hope you have to be the driving force behind effective projects that can help protect our planet.

The last few issues of this magazine, we did our best to share with you many of our activities, but most importantly we focused on transferring knowledge about our seas and the underwater life, and used the popular sport of diving to promote marine conservation. We also successfully revamped our website in both Arabic and English, and got more qualified full time staff to run researches and activities for EDA.

2008 was indeed a very busy year for EDA! We organized the movie premier of the "11th Hour"; previewed the documentary "Shark Water"; lobbied to get the shark fishing regulation in the UAE; monitored the oil spills on the East Coast of the UAE; hosted 'Clean Up Arabia 2008'; and many other events. But one of the most successful initiatives of 2008, was getting the financial support from the Emirates Foundation to fund our 'Coral Reef & Awareness Project'. The support doesn't only mean that we have the necessary funds for a full time scientist working on this project, but it also means that a respectful organization such as the Emirates Foundation recognizes EDA's efforts towards marine conservation and the importance of diving to protect our seas.

This year, we are also proud to announce that Mr. Adel Abu Haliqa, an EDA member, became the first Emirati to compete in a world championship for free diving, which involves plummeting to great depths on only one breath. Adel started free diving only two years ago, but his progress has been so rapid that he qualified to compete in the world championships in Eindhoven, in the Netherlands, setting 2 UAE records in the process. EDA sponsored Mr. Abu Haliqa's participation in the world Championship. Congratulations to Adel and to Ms. Sara-Lise Haith – Adel's' coach and EDA member. EDA is very proud of such achievements and is proud of its members who contribute to all our great successes.

I want to wish everyone a happy UAE National Day, Eid Mubarak, Merry Christmas and a Happy New Year. I am definitely looking forward to 2009, which I'm sure will be as exciting, fun and rewarding as this year.

"The sea, the great unifier, is man's only hope. Now, as never before, the old phrase has a literal meaning: we are all in the same boat." – by Oceanographer Jacques Yves Cousteau

Eco Regards,

Ibrahim Al-Zubi

WHALE SHARK SIGHTINGS IN THE GULF

Photo by Simon Rogerson

The Shark Trust is a UK based charity which works to advance the worldwide conservation of sharks though science, education, influence and action.

As part of this we work closely with many stakeholders and environment enthusiasts on a number of projects to gain a greater understanding of shark biology and distribution whilst improving awareness and understanding of shark research and conservation issues in the wider public.

Divers and other water users are often best placed to see sharks in their natural habitat. This puts them in a unique position to record valuable information on animals rarely seen by scientists or other members of the public.

We are particularly interested in information on sightings of Whale Sharks seen in both the Gulf itself and the Gulf of Oman. The Whale Shark is a free-ranging warm water shark reaching around 15 metres in length. There are even anecdotal reports that the largest Whale Shark ever captured was 21 metres in length and weighed a gargantuan 34 tonnes! Despite this enormous size Whale Sharks are docile plankton eating sharks that feed by using their gills to filter plankton – drifting organisms such as coral and fish spawn – out of the ocean.

Although very large, Whale Sharks are quite poorly understood and there is very limited information on their presence in Gulf waters. We are very keen to encourage divers to record their encounters with Whale Sharks and if possible take photographs of them too. Whale Sharks have unique spot patterns, much like a human's fingerprint, and we are compiling these images in a database that will be analysed to assess whether the same sharks have been seen elsewhere around the world.

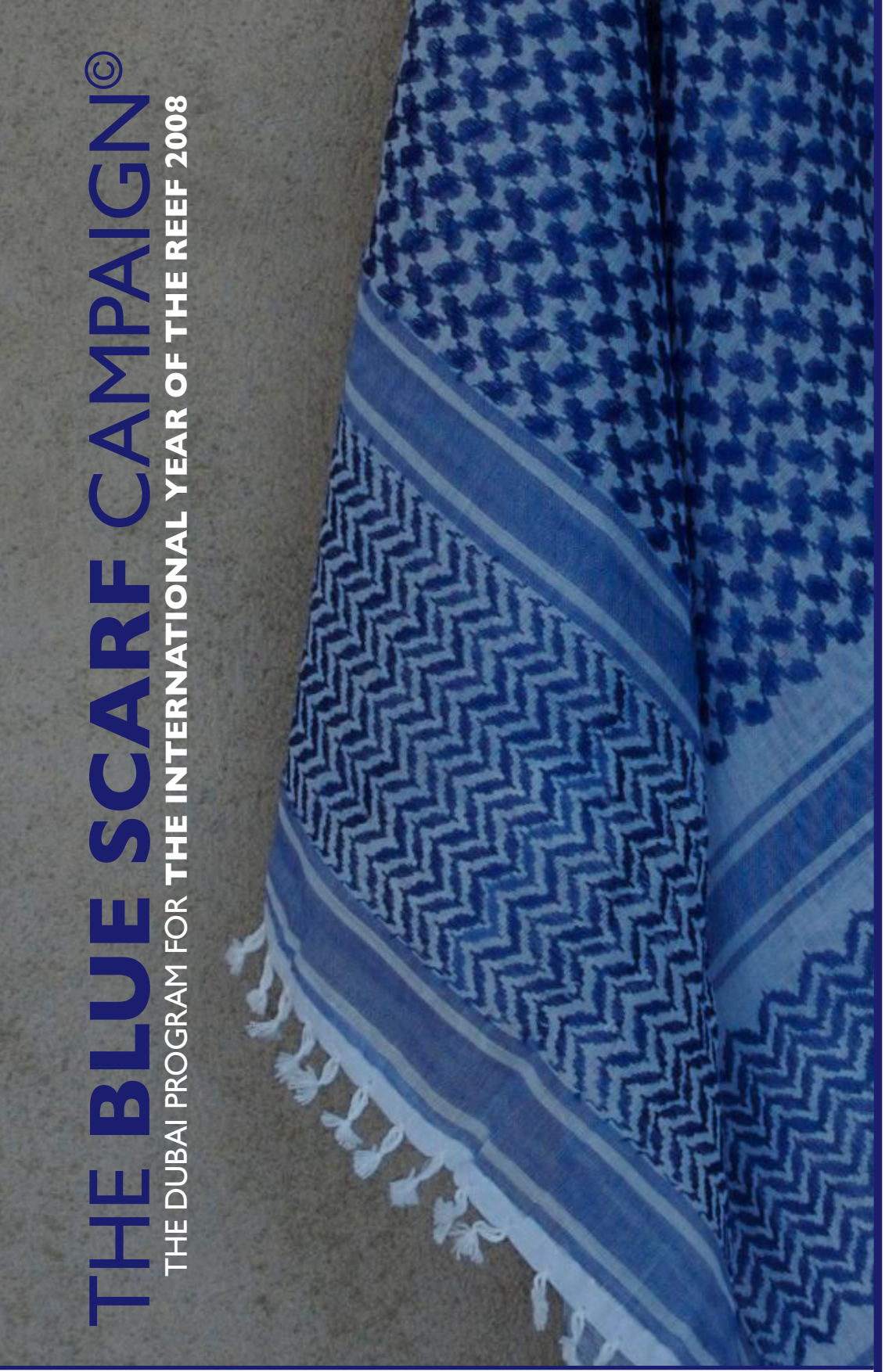
Should you see a Whale Shark, it is important to record the date, location and size of the animal-estimated as accurately as possible by comparing to, for example, boats or other divers. Photographs of the pelvic fins (on the belly of the shark) may help us to identify whether the shark is male or female.

Even if you have not got this information we are very interested to hear of any recent or historic news stories or fishing records about Whale Sharks in this area to help us build a picture of their presence in the wider Gulf region and how this has changed over time.

If you have any dive records, photos or other information we would be very interested to hear from you!

You can find out more information about Whale Sharks and our project here: **www.whalesharkproject.org**, you can upload sightings to our online sightings database here: **www.sharktrust.org/sd** and you can email any sightings to **sightings@sharktrust.org**.

Photo by Mark Boothman



THE BLUE SCARF CAMPAIGN©

THE DUBAI PROGRAM FOR THE INTERNATIONAL YEAR OF THE REEF 2008

IYOR 2008
INTERNATIONAL YEAR OF THE REEF

ICRAN
International Coral Reef Action Network

The ICRI (International Coral Reef Initiative) and IYOR 2008 (International Year of the Reef) is a worldwide campaign to raise awareness about the value and importance of coral reefs and threats to their sustainability, and to motivate people to take action to protect them. All individuals, corporations, schools, governments, and organizations are welcome and actively encouraged to participate in IYOR 2008.

Proceeds & donations to support Coral Reef Awareness and Monitoring Program in Dibba, East Coast run by EDA.

The Blue Scarf Campaign Sponsor

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HEALTHY **CORAL REEFS** PROVIDE:

HABITAT Home to over 1 million diverse aquatic species, including thousands of fish species
INCOME Billions of dollars and millions of jobs in over 100 countries around the world
FOOD For people living near coral reefs, especially on small islands
PROTECTION A natural barrier protecting coastal cities, communities and beaches
MEDICINE The potential for treatments for many of the world's most prevalent and dangerous illnesses and diseases

EDA
جمعية الإمارات للغوص
Emirates Diving Association

Emirates Diving Association
Heritage & Diving Village
Shindaga Area
P.O. Box: 33220
Dubai, UAE

Tel: +971 4 393 9390 | **Fax:** +971 4 393 9391
diving@emiratesdiving.com or projects@emiratesdiving.com
www.emiratesdiving.com

AL BOOM DIVING
OFFERS REGULAR DIVING ACTIVITIES

The weather is cooling off and it's a great time of year to get into the water! Al Boom Diving runs regular activities which you can join in on.

REGULAR ACTIVITIES

EVERYDAY:
Three dive trips daily from Le Meridien Al Aqah in Fujariah at 9:30am; 12 noon and 3pm.
Snorkeling trips at 9:30am, 12 noon and 3pm.
Divers meet at the Gonu Beach Bar after the second dive at around 3pm daily!

PRICES:
Snorkelling/Boat ride: 250 Dhs
Dive (own equipment): 300 Dhs
Dive (tank and weights): 350 Dhs

EVERYDAY: Bus transfers from our dive centre on Al Wasl Road to our dive centre at Le Meridien Al Aqah, and back again. 150 Dhs per person.

EVERYDAY (EXCEPT MONDAY): Speedboat dive trips in the Musandam. Depart Dubai at 6:45am; depart Dibba harbour at 9:30am; dive at 11am and 2pm; return to the harbour by 3pm and return to Dubai by 6pm.

EVERY WEDNESDAY EVENING: Join us for a night dive in Dubai and see the aquatic nightlife of Dubai. Meet at the dive centre at 5:30pm.

EVERY THURSDAY EVENING: Start the weekend off on the right note by leaving the city and going over to Fujairah. Join our night dive on Dibba or Sharm Rock at the dive centre at Le Meridien Al Aqah. Meet at the dive centre at 5:30pm.

EVERY FRIDAY: Join the Dhow trip in the Musandam!
6:30 - Depart Dubai in the Al Boom Diving shuttle bus.
9:30 - Arrive at Dibba port in Fujairah and board onto a Dhow. Tea, coffee, water and muffins served.
10:00 - Set sail into the Musandam on the traditional Dhows. All Dhows are shaded with seating and cushions and there are washrooms on board. The Dhows will sail in the Leema area stopping for snorkeling and swimming near small beaches. Snorkeling equipment will be provided.
12:30 - Buffet lunch is served on board – Chicken Biriyani, salad, hummous, Arabic bread, tea, coffee and soft drinks.
13:30 - Sail back towards the Dibba harbour, stop for more snorkelling and swimming.
14:30 - Tea, coffee and biscuits served.
15:00 - Arrive back at Dibba harbour, board buses and return to Dubai.
17:00 - Arrive in Dubai.

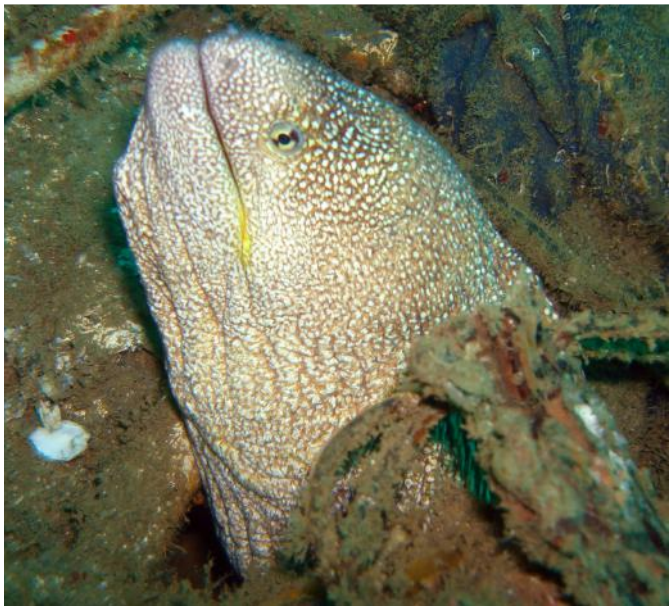
COST PER PERSON:
Snorkelling / Boat ride: 300 Dhs
Dive (own equipment): 350 Dhs
Dive (tank and weights): 400 Dhs

SPECIALITIES OF THE MONTH

There are a lot of holidays in December!
Al Boom Diving is running Dhow trips offering diving, snorkeling and sun tanning, in the Musandam on UAE Day 2nd and 3rd. We will also be running Dhow trips over Eid daily from the 10th December to the 13th December.

11th DECEMBER: The Al Boom Christmas BBQ will be held at the dive centre at 7pm. The winner of the 2nd Annual Photo Competition will also be announced! Bring a buddy and a bevvie to the BBQ!

Contact AL Boom Diving on: **04 342 2993**
Email: **abdiving@emirates.net.ae**
Or visit our website at: **www.alboomdiving.com**



ADVANCED AND RESCUE COURSE

Al Boom Diving has a special offer for all that sign up for their PADI Advanced Open Water Course before 31st March 2009. Sign up for your Advanced Course, and you can sign up for the Rescue Course at 50% off. This excludes the Emergency First Response Course.

If you have completed your Open Water Course, and are ready to take the next step, then this is the time to do it! With the UAE Day and Eid holidays coming up, it is a great time to enjoy the cooler weather and take the next step with PADI.

In the PADI Advanced Course, you will complete five adventure dives. Al Boom Diving offers the following schedule for the Advanced Course:

OPTION A
Thursday: Scuba Tune Up and Navigation Dive - every Thursday at 8am or Saturday at 1pm, in Dubai.
Friday: Search and Recovery Dive - every Friday at 1pm in Dubai
Friday: Deep and Wreck Dive - every Friday in Fujairah

OPTION B
Thursday: Scuba Tune Up and Navigation Dive - every Thursday at 8am or Saturday at 1pm, in Dubai.
Friday: Deep and Wreck Dive - every Friday in Fujairah
Saturday: Peak Performance Buoyancy and Underwater Photography Dives - every Saturday in Al Aqah.

The Rescue Course is held in the third week of each month in the evenings during the week with the pool sessions and final scenarios over the weekend.

The normal costs for the courses are:
Advanced Open Water: 1,850 Dhs
Rescue: 2,350 Dhs
EFR: 800 Dhs
Total: 5,000 Dhs

This offer gives you the same bundle for just **3,825 Dhs**

For more information, contact Al Boom Diving on email: **abdiving@emirates.net.ae**
Or call: **04 342 2993**

Rescue scenario

08

HONG KONG
2008 AUTUMN SALES
香港秋季拍賣

CHRISTIE'S

Important Watches
Wednesday, December 3rd - 11am and 2pm
Hong Kong Convention & Exhibition Centre

The sale featured a wide range of over 500 rare and noteworthy wristwatches and pocket watches valued in the region of HK$70 million. Of note among the top lots offered from Rolex is the Submariner Ref. 5513 Military wristwatch made for the British Royal Navy (illustrated below, estimate: HK$500,000 – 700,000 / US$63,000 – 88,000). The Military Submariner was adapted following the specifications requested by the British Ministry of Defence as part of the equipment of some military corps including the British Royal Navy, and is therefore a much rarer and more desirable model than the standard Submariner Ref. 5513. The watch cases of the Military Submariner were soldered with fixed bar lugs rather than standard spring bars, allowing for a more secure military nylon wrist strap. The easily readable dial is equipped with 'sword'-type hands, and on the face is the international symbol for tritium, the encircled 'T', which indicates the presence of tritium in the luminescent coating of the hour markers. The back of the case of the present example has a series of engraved markings – '0552' indicating the British Ministry of Defence, '923-7697' corresponding to the NATO code, '680' indicating the issue number, '77' for the issue year, and the Broad Arrow which characterizes all watches issued by the British Army.

The watch sold for US $64,805.

The next sale of Jewels and Watches in Dubai will be held by Christie's at the Jumeirah Emirates Towers Hotel on Wednesday April 28th, please see the website **www.christies.com** for more details.

NOBEL PRIZE FOR FLUORESCENT JELLYFISH PROTEIN

BY NOBEL PRIZE IN CHEMISTRY 2008,
ROYAL SWEDISH ACADEMY OF SCIENCES

8 OCTOBER 2008

Moon Jellyfish. Photo by Allison Finch.

The remarkable brightly glowing green fluorescent protein, GFP, was first observed in the beautiful jellyfish, Aequorea victoria in 1962. Since then, this protein has become one of the most important tools used in contemporary bioscience. With the aid of GFP, researchers have developed ways to watch processes that were previously invisible, such as the development of nerve cells in the brain or how cancer cells spread.

Tens of thousands of different proteins reside in a living organism, controlling important chemical processes in minute detail. If this protein machinery malfunctions, illness and disease often follow. That is why it has been imperative for bioscience to map the role of different proteins in the body.

This year's Nobel Prize in Chemistry rewards the initial discovery of GFP and a series of important developments which have led to its use as a tagging tool in bioscience. By using DNA technology, researchers can now connect GFP to other interesting, but otherwise invisible, proteins. This glowing marker allows them to watch the movements, positions and interactions of the tagged proteins.

Researchers can also follow the fate of various cells with the help of GFP: nerve cell damage during Alzheimer's disease or how insulin-producing beta cells are created in the pancreas of a growing embryo. In one spectacular experiment, researchers succeeded in tagging different nerve cells in the brain of a mouse with a kaleidoscope of colours.

The story behind the discovery of GFP is one with the three Nobel Prize Laureates in the leading roles:

Osamu Shimomura first isolated GFP from the jellyfish Aequorea victoria, which drifts with the currents off the west coast of North America. He discovered that this protein glowed bright green under ultraviolet light.

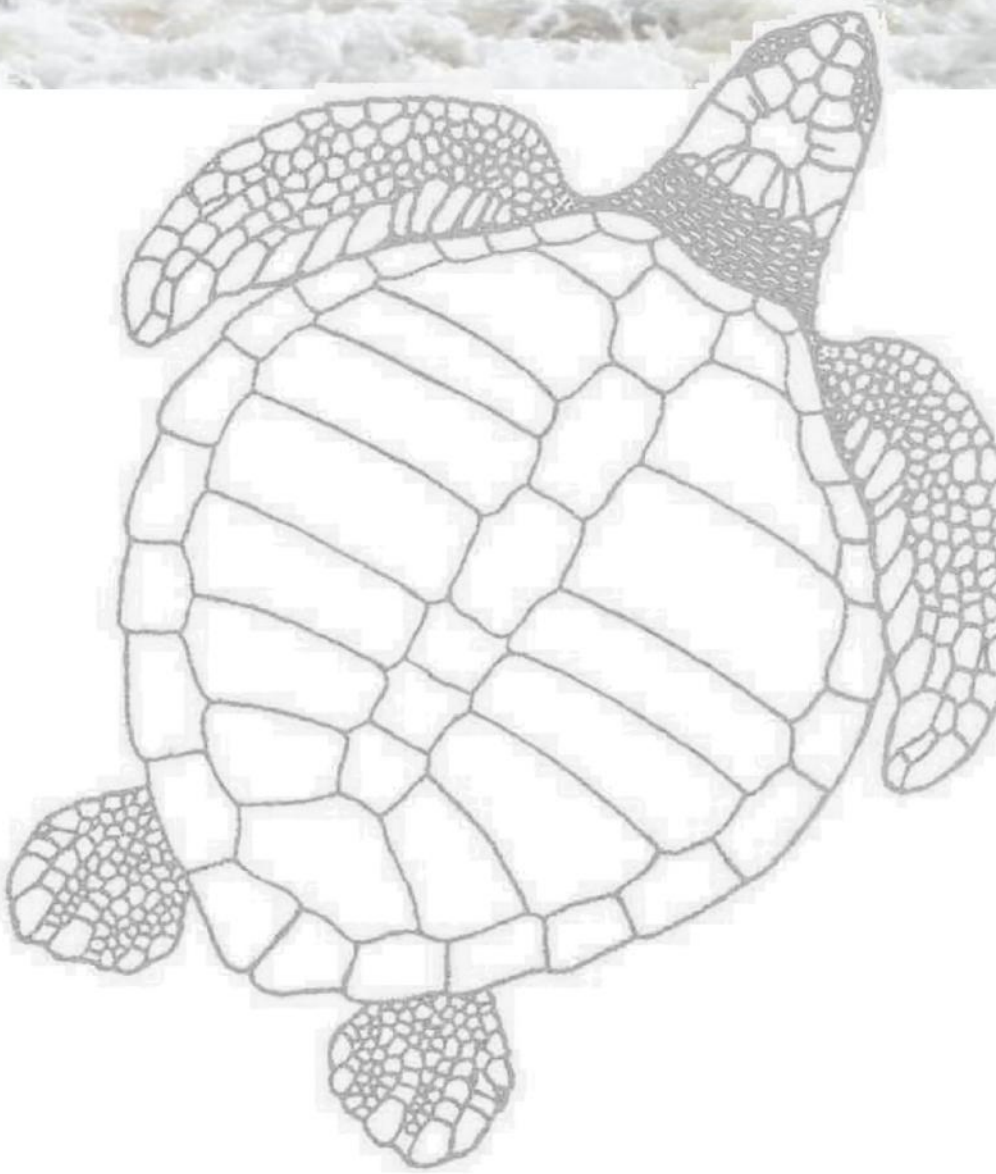
Martin Chalfie demonstrated the value of GFP as a luminous genetic tag for various biological phenomena. In one of his first experiments, he coloured six individual cells in the transparent roundworm Caenorhabditis elegans with the aid of GFP.

Roger Y. Tsien contributed to our general understanding of how GFP fluoresces. He also extended the colour palette beyond green allowing researchers to give various proteins and cells different colours. This enables scientists to follow several different biological processes at the same time.

Indian Ocean Turtle Newsletter

The Indian Ocean Turtle Newsletter was initiated to provide a forum for exchange of information on sea turtle biology and conservation, management and education and awareness activities in the Indian subcontinent, Indian Ocean region, and south/southeast Asia. The newsletter also intends to cover related aspects such as coastal zone management, fisheries and marine biology.

The newsletter is distributed **free of cost** to a network of government and non-government organisations and individuals in the region. All articles are also freely available in PDF and HTML formats on the website.



Objectives of the newsletter

- To serve as a forum for discussing issues regarding the conservation and management of sea turtles and their habitats in south Asia and the Indian Ocean;

- To disseminate information in a timely manner about sea turtles and their habitats to government departments and other involved government agencies, voluntary organisations, NGOs, fisheries cooperatives, community groups, universities and students as well as other institutions and individuals involved with the conservation and management of sea turtles and their habitats;

- To provide a mechanism through which awareness about the status of sea turtles and their habitats can be disseminated to a wide audience;

- To communicate with the international community (researchers, conservation organisations, and other interested parties outside the region of study) about sea turtle related activity in south Asia and the Indian Ocean.

www.iotn.org

Editors

Kartik Shanker
Centre for Ecological Sciences,
Indian Institute of Science, Bangalore, India
Email: kshanker@ces.iisc.ernet.in

Chloe Schäuble
Burdekin Dry Tropics NRM,
Queensland, Australia
Email: Chloe.Schauble@bdtnrm.org.au

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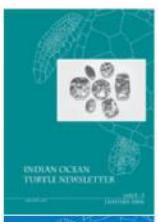
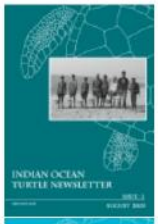
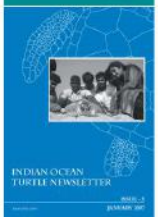
Country Representatives





IOTN publishes articles, notes, letters and announcements. We also welcome casual notes, anecdotal accounts and snippets of information.

To donate, subscribe or submit manuscripts, contact:

Kartik Shanker
Centre for Ecological Sciences,
Indian Institute of Sciences,
Bangalore 560012. India.
kshanker@ces.iisc.ernet.in, kshanker@gmail.com

FREEDIVING EINDHOVEN:
THE **FIRST UAE** FREEDIVING NATIONAL RECORD

FEATURE **ADEL ABU HALIQA** PHOTOGRAPHY **GUY KEULEMANS**

Adel, the first UAE freediving National record holder with the EDA flag, the official sponsor of Adel's participation.

Freediving, the sport of holding one's breath underwater. No matter how deep you go with that single breath or how long you hold it in, it would still be free diving.

In history, freediving was a way of making a living for many civilizations, among them are the pearl divers in the Arabian Gulf, and especially here in the Emirates. Abu Dhabi was the most famous area for "Herat" or the pearl oyster underwater beds, divers came from all around the Gulf and of course from Abu Dhabi town itself to harvest the oysters and sell the pearls in the local market to the pearl merchants who would then sell them worldwide.

Nowadays Freediving is a sport practiced by thousands of fans around the world as well as spearfishers. It has international federations with qualified instructors to teach it and freediving competitions take place several times a year all around the world.

There are many disciplines in freediving, among them are the following:*

1. Constant Weight Without Fins (CNF)
2. Constant Weight (CWT)
3. Dynamic Without Fins (DNF)
4. Dynamic With Fins (DYN)
5. Static Apnea (STA)
6. Free Immersion (FIM)
7. Variable Weight (VWT)
8. No Limit (NLT)

The purest and most difficult discipline is the Constant Weight Without Fins, while the most fancy and well known one world wide because of its extreme depths, is the No Limit.

Adel Abu Haliqa, an Emirati from Abu Dhabi, the General Manager of Abu Haleeqa Stores, a PADI Master SCUBA Diver and Dive Master, came to know about freediving in 2006 from an article about Patrick Musimu upon his historic dive down to 200 meters on a single breath (No Limit discipline). He searched for the word freediving on Google and came across DeeperBlue, the largest freediving forum on the internet, signed up and checked for freediving activities in the UAE. He found a post from Sara Lise-Haith a PADI IDC Staff Instructor and AIDA Freediving Instructor (not yet a freediving instructor by then) looking for people interested in practicing freediving in Dubai. They started their battle to organize the first freediving course in the UAE and after about a year, Sara succeeded to invite Emma Farrell , an AIDA Instructor Trainer, the Head of Freediving Education and Author of the book, 'One Breath – A Reflection on Freediving'. It has been about 18 months since then, Adel participated in several AIDA freediving courses and came by the chance to go to a freediving competition to be the first Emirati to participate in a freediving competition and hoping to get the first UAE National Record in three disciplines: Static, Dynamic with fins and Dynamic without fins, which he actually achieved!

Here is Adel's report about his participation in the 4th Dutch Apnea Open in Eindhoven, Netherlands on 22nd and 23rd of November 2008:

First and before saying anything about my participation, I have to draw everybody's attention to the fact that freediving is a great sport as long as it is practiced with safety in mind. If you don't want to follow any restrictions, then please follow at least the following points:

1. NEVER, EVER DIVE ALONE.
2. Take proper freediving courses with a qualified instructor BEFORE practicing any freediving activities.
3. When doing freediving activities, you must be under the supervision of a qualified freediver (buddy) even if you want to do a static attempt in your private bathtub, asking a swimming safeguard (with no freediving background) to have an eye on you is not sufficient AT ALL! Irresponsible acts might result in serious injury or DEATH!
4. By following those basic rules of thumb, you will relatively and safely immerse yourself into the most inspiring experience of your life…Enjoy!

I didn't have any intention of participating in Freediving competitions this year ! Not before the end of 2009 at least, as I didn't see myself ready for it, but on one of the training sessions with the freediving team here in Abu Dhabi Sara Lise-Haith mentioned the competition in Eindhoven and the possibility that we (all of us) participate, especially me. I could set the first UAE National records in the history of freediving sports! I wasn't sure I was ready, but all the team encouraged me and so I decided to go ahead with it.

I started taking up freediving seriously a year ago, taking swimming lessons especially with the mono fin and the breast stroke (for the no fin disciplines). I also enrolled in Yoga, practicing freediving twice a week with the freediving team and practicing dry static tables three times a week at home (dry refers to practices outside the water), all this made it easier for me to decide on participating in the competition that was two months ahead, then.

I was surprised and highly grateful when I got the EDA proposal to sponsor me in this competition, it was really wonderful of them to do so and a great help for me.

I was in Eindhoven – Netherlands, on the 22nd of November, at the National Swim Stadium of Tongelreep and they have state of the art Olympic pools. One is a 25 meter pool with an adjustable depths starting from 1.5 meters to 5 meters and another 50 meter Olympic standard swimming pool. That's all I was looking for in a pool. Pim and Susan from Immersion Freedive Academy and Shop were the organizers of the event, very professional, friendly staff and Judges. The official top list came out with my name on top being the first to perform my DNF attempt in the 25 meter pool with a 3 meter depth. I had 45 minutes to warm up. I did dry static and dynamic warm ups and was in the water ready for the attempt only 30 seconds from the official top! I did a clean 33 meters DNF and so achieved the first UAE National Record in history.

On the 23rd November, in the same wonderful 25 meter pool, but this time at a depth adjusted to 1.2 meters for the static attempt, I did a wet static warm up and moved to the performance area. I did an easy and clean 3:31 STA (three minutes and thirty one seconds breath hold) and so set the second National Record. I then had a short break before starting a dry warm up for the last attempt, the DYN. Again, I entered the water 30 seconds to the Official Top, took a couple of breaths and dived in the 50 meter long 3 meter deep Olympic pool to record a clean and easy 73 meter third National Record for the UAE.

I am so happy to have been given the chance to be the first Emirati to represent my country in an international freediving competition. I

hope this would drive more Emiratis toward participating in this wonderful sport of freediving, a sport that by default got to be our national sport (the descendants of the best pearl divers in history).

I am now training again, as hard as ever with the freediving team in Abu Dhabi to prepare for better performances in the upcoming freediving events. I would surely participate in the 5th Dutch Apnea Open in 2009 in Eindhoven, that naturally beautiful town. I would also love to compete in the World Freediving Championship for Individuals in the STA-DYN-DNF disciplines in Eindhoven in 2011 that Pim let me know about. Let's hope it gets confirmed as it is yet to be voted for.

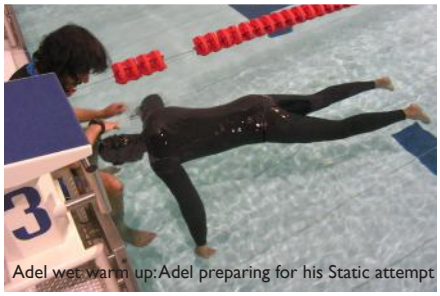
* For more information about freediving sport and regulations, please visit AIDA International's website: **http://www.aida-international.org/**

SOME ADDITIONAL USEFUL LINKS:
http://www.emiratesdiving.com/
http://www.divasindubai.com/
http://www.emma-freediver.co.uk/
http://www.patrickmusimu.com/
http://www.dutchapneaopen.com/
http://www.deeperblue.com/


25 meter pool: a general view of the 25 meter pool with freediving action going on


50 meter pool: a picture showing a dynamic attempt in the 50 meter pool


Adel dry warm up : Adel preparing for his Dynamic attempt


Adel wet warm up: Adel preparing for his Static attempt

ABU DHABI **DRAGON BOAT RACE**

EDA participated in this year's 200 metre Abu Dhabi Dragon Boat Race which was held on Friday 14th November 2008. 14 EDA paddlers made up the EDA Dragon Boat Team, they did really well and most importantly they had fun.

UAE CLEAN UPS
EAST COAST

PHOTOGRAPHY **NADINE AL KOUDSI**

EDA has been organizing the Clean up Arabia campaign annually since 1995 as a regional event. Clean Up Arabia is part of the Clean Up the World program that is promoted and managed by the United Nations Environment Program (UNEP) (**http://www.cleanuptheworld.org/**)

EDA is the organizer of the Clean Up Arabia campaign in collaboration with UNEP YouthXchange West Asia (Shabab) (United Nations Environment Programme – Regional Office of West Asia / UNEP – ROWA). It is backed by the Australian's 'Clean Up the World' campaign, the USA-based 'International Coastal Cleanup' and PADI PROJECT A.W.A.R.E. All these organizers have years of experience around the world, coordinating groups from all walks of life to join together for the good of the earth.

CLEAN UP ARABIA 2008

An annual voluntary campaign that aims to clean up the dive sites and beaches of the UAE. Campaign objectives are:

- Engage the community and involve people from all walks of life to make a difference.
- Clean the marine environment from pollution.
- Direct people toward positive attitudes in maintaining a clean and sound environment by practice and participation.
- Supporting continuous clean up activities (donating re-cycle containers on site).

The campaign is regional, covering the UAE, Kuwait, Qatar, Oman and Bahrain which is driven and mobilized by EDA. It is all about making a difference, and spreading awareness – supporting to build environmental libraries in local schools. Part of the campaign is to record the quantities and types of 'refuse' collected – data collected is reported to International Coastal Cleanup (ICC) and used in educating the public, business, industry and government officials about the marine debris problem.

PARTNERSHIP OPPORTUNITY

The Clean Up campaign is made up of EDA members and sponsors that participate in the dive site and beach clean ups, which should help shape their consciousness concerning littering.

The Emirates Diving Association carries this work out, along with volunteers and members who are provided with T-shirts and caps, as well as the tools needed to achieve a high level of clean up.

EXECUTIVE TEAM BUILDING

The campaign is designed as an excellent executive team building exercise. The program is advised by the regional management expert and the partner organization team learn together, work together, and play together, and together with EDA volunteers, make a difference.

This year, Al Futtaim Carillion and Dubai Properties Group decided to allocate a whole day for their staff other than the Clean up day for team building and to spend a day with the EDA team to learn more about the marine environment and enjoy team building activities.

CLEAN UP ARABIA 2008 BEACH VOLLEYBALL TOURNAMENT

Eight teams participated this year and the tournament was competitive, exciting and fun and the crowd enjoyed all the matches. The winners were as follows:

1st place: Le Meridien Al Aqah Beach Resort – Fujairah
2nd place: Knowledge and Human Development Authority – Government of Dubai
3rd place: Emirates Diving Association

CLEAN UP ARABIA 2008


National Fodder
PRODUCTION & MARKETING
Wheat Bran

"It was really fun this year…See you next year for Clean Up Arabia 2009!"

ITEMS COLLECTED SHORELINE/RECREATIONAL ACTIVITIES	UNDERWATER CLEAN UP	BEACH CLEAN UP	GROUP TOTALS	TOTAL UW
Bags	75	1100	1175	75
Balloons			0	0
Bevergae bottles(plastics)	50	500	550	50
Beverage bottles (glass)	25	150	175	25
Beverage cans	259	558	817	259
Caps(lids)	12	112	124	12
Clothing	8	25	33	8
Cups, plates, forks, knives, spoons	2	500	502	2
Food wrapper, containers	3	983	986	3
Pull tabs		2	2	0
6-pack holders			0	0
Shotgun shells, wadding			0	0
Straws, stirrers		5	5	0
Toys	2	8	10	2
OCEAN,WATERWAY ACTIVITIES				0
Bait container, packing			0	0
Bleach, cleaner bottles			0	0
Bouys	1	2	3	1
Crabs, lobster, fish traps	1		1	1
Crates			0	0
Fishing line	3	8	11	3
Fishing lures, light sticks			0	0
Fishing nets		5	5	0
Light bulbs, tubes			0	0
Oil,lube bottles	3		3	3
Pallets			0	0
Plasticssheeting, tarps		3	3	0
Rope		3	3	0
Strapping bands	1	2	3	1
SMOKING-RELATED ACTIVITIES				0
Cigarettes, cigarette filters		1455	1455	0
Cigarette lighter		7	7	0
Cigar tips			0	0
Tobacco packaging, wrapper		67	67	0
DUMPING ACTIVITIES				0
Appliance (refrigerators,washers,etc)			0	0
Batteries			0	0
Building materials		46	46	0
Cars, car parts			0	0
55 gal drum			0	0
Tires			0	0
MEDICAL,PERSONEL HYGIENE				0
Condoms			0	0
Diapers		30	30	0
Syringes			0	0
Tampons, tampon applicators			0	0
Others: styrofoam items			320	0
TOTAL PER TEAM	445	5571	6016	445
DEBRIS ITEMS OF LOCAL CONCERN				
Barbed wire				
Football				
Barbeque grill				
Barbeque sticks				
Solar panel				
Car exhaust pipe				
NUMBER OF BAGS OF TRASH	100	45		

DUBAI

PHOTOGRAPHY **MARC VILORIA**

Congratulations Dubai Divers! On the underwater and beach clean up operations at Russian Beach on Saturday 6th December 2008 celebrating 13 years of the Clean Up Arabia Program.

The combined efforts of dedicated volunteers around the UAE have helped to make a difference to our shared environment. Thank you for your support!

SPECIAL THANKS TO THE DIVE CLUBS REPRESENTED:
Al Boom Diving Club, Filipino Scuba Divers Association, Royal Scuba Divers Club International and Emirates Diving Association, and to all the individual volunteers young and old who gave their time.

All in all, 80 participants collected sack load upon sack load of detritus ranging from plastic bottles, plastic bags, wine bottles, beer bottles, aluminium cans, cement and construction bags, pens, fishing lines, fishing nets and carpets! Plastic cups, knives and forks and disposable barbeque equipment in abundance.

An inventory was made of all the rubbish collected and photographs were taken for future reference.

Disappointingly, people continue to use the sea and the beaches as a dumping ground instead of taking their garbage with them and disposing of it properly. One particular observation in the water was that the rubbish was mainly located at the coral clusters with a substantial amount of construction debris choking the coral.

In thirty years, the Dubai coastline has grown from 7km to 140km. The impact of this expansion to the marine life and coral is currently under investigation. The Emirates Diving Association sponsorship of coral reef instructors due to begin in early 2009 will be a tremendous benefit to the marine biologists surveying the impact of construction and landfill projects in the Arabian Gulf.

My recommendation is simple, divers take pictures and leave only bubbles. Let's not wait for the next Clean Up of Arabia program to make a difference. Every time we dive endeavour to collect rubbish, every little bit helps. Dive safely!

John Nelson
PADI IDCS 480910

ABU DHABI

This year's clean up in Abu Dhabi drew 147 enthusiastic volunteers to clear the marine debris from the Abu Dhabi Corniche to Meena Zayed covering 1.8km distance of sea and land. The successful operation was supported by the Environment Agency Abu Dhabi. (EAD) The drive was part of the 13th Annual Clean Up Arabia campaign which was also conducted across the UAE, Kuwait, Bahrain, Oman and Qatar. Abu Dhabi volunteers were from EAD, GASCO Diving Club, ADCO , ADMA , Girl Scouts from American Community School and GEMS American Academy (Grade 2, 3 and 4's). The campaign was also supported by the Abu Dhabi Municipality, Abu Dhabi Marine Police, Abu Dhabi International Marine Sports Club and Veolia-ES.

During the cleanup, a wind storm came up and the divers and beach volunteers braved the gusty winds and collected 72 bags of trash in which 60 bags of trash were recycled into the Veolia-ES recycling containers located at the new Abu Dhabi beach. A total of 4745 items were collected and the most abundant trash again was cigarette butts and smoking related items with a tally of 1007 pieces. The most unusual item collected from the seabed was a remote-controlled helicopter toy.

Volunteers were extremely pleased to recycle many of the plastics, cans, papers and glass items and also their gloves, collection bags and water coolers. Most participants brought their own water bottles and refilled them from the water stations provided. This was a great demonstration of reusing and making an effort to reduce the trash.

EDA Abu Dhabi committee would like to extend special thanks to GASCO Diving Club who provided two dive boats and a scrumptious light snack buffet and beverages for all the volunteers after the cleanup, to Abu Dhabi Beach management, staff and Veolia-ES crew whom assisted in the beach logistics and to the enthusiastic Girl Scouts who cleared most of the land debris.

The information collected will be used to promote greater awareness on the detrimental effects of marine debris along the coastline and waterways. A summary of the items collected is found on page 18.

SPONSORS:
- Dubai Properties Group
- Al Futtaim Carillion
- Majid Al Futtaim Group
- Emirates NBD
- Le Meridien Al Aqah Beach Resort

OTHER SUPPORTERS:
- Australian "Clean Up the World" campaign
- International Coastal Clean Up (US based)
- PADI Project A.W.A.R.E.
- Bahrain Women Society
- EDA members in Kuwait (Kuwait Oil Company)

OFFICIAL PARTNERS:
- United Nations Environmental Programme
- Ocean Conservancy
- UAE Ministry of Environment and Water
- Environment Agency – Abu Dhabi
- Abu Dhabi Municipality
- Dibba Municipality

OTHER PARTNERS FOR ABU DHABI:
- GASCO Diving Club
- Abu Dhabi International Marine Sports Club
- Abu Dhabi Marine Police

ORGANIZATIONS THAT PARTICIPATED IN THE CLEAN UP EVENT IN ABU DHABI:
- EDA Divers
- ADCO Divers
- Total ABK
- Girl Scouts and Brownies from American Community School (grade 2/3 &4)
- Girl Scouts from GEMS American Academy (grade 2/3)
- VEOLIA –ES
- Abu Dhabi Government and private school students

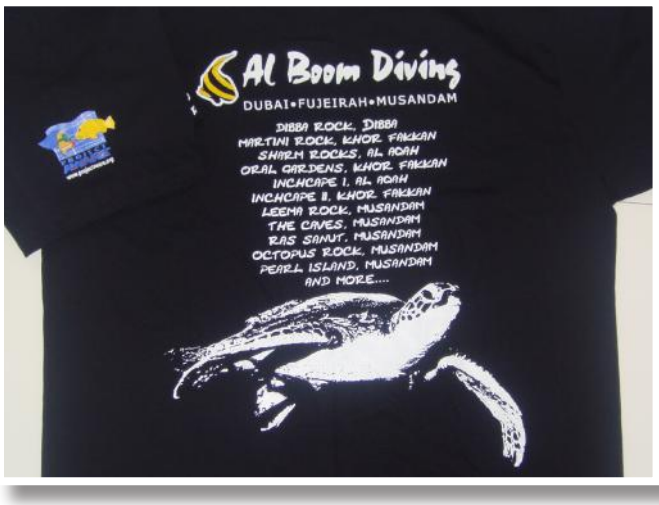
AL BOOM DIVING CONGRATULATES NEW PADI INSTRUCTORS

Congratulations to the new PADI Instructors who passed the recent PADI Instructor Exam held in Dubai in October.

"I am extremely proud of our candidates who all worked very hard in the Instructor Development Course held at Al Boom Diving", said Francis Uy, Course Director at Al Boom Diving in Dubai. "They are all certified to work in their dream careers now!"

The newly certified instructors, making a 100% pass rate are: Rashid Mohamed, Soren del Castillo, Christiaan Roelofs, Mark Villoria, Guy Nadvornik, Michael Rall, Hani Halfawi, Ken Atkinson.

A special thanks to our IDC staff instructors John Nelson, Steve Wright, Ryan Todd and Big Mo.



PROJECT AWARE T-SHIRTS

Al Boom Diving has been appointed as a PADI Project Aware centre and is retailing T-shirts, the proceeds of which will be donated to Project Aware.

The T-shirts list the local Fujairah and Musandam dive sites, making them a great souvenir or gift. Retailing at just 60 Dhs, they are an ideal 'stocking stuffer' for the festive season.

The t-shirts are available in store at Al Boom Diving on Al Wasl Road and at Le Meridien Al Aqah in Fujairah.

Contact Al Boom Diving on: **04 342 2993**.

THE **CROWN-OF-THORNS** STARFISH: **MASS MURDERER,** OR **MISUNDERSTOOD VICTIM** OF CIRCUMSTANCE?

FEATURE **CATHERINE VOGLER**

Geographical distribution of the four different crown-of-thorns starfish species (each colour represents a different species where sampled, piecharts indicate the frequency of each species per location).

Sampling tube feet from a crown-of-thorns starfish, Kenya. ©Kevin Ransom

The blue curtain of water opens on a nightmarish vision. They are crawling up from unknown depths in thousands. Slowly but steadily, like an unstoppable army. Each individual armed with hundreds of poisonous thorns, pointing straight up to the surface. Eating everything on their passage, they leave only white skeletons behind. They stay months, even years, and then, as suddenly as they came, they disappear again. The only trace of their passage, the sad memory of a once beautiful coral reef.

PERSPECTIVE SWAP

The roar of an engine disturbs the calm of the reef. Loud splashes disrupt the blue surface of the ocean as threatening humans storm down to the reef armed with weapons ranging from knives to spikes, chemical injectors to compressed air. All with the same purpose: kill these creatures in thousands throughout the Indian and Pacific oceans. The preferred method is live burial on land. Millions of euros invested in this mass murder, millions of dead starfish.

No, unlike what you might be thinking, this is not the scenario of "Gremlins of the Sea". This is the reality of a fascinating but disturbing phenomenon that has been occurring on coral reefs throughout the Indo-Pacific for several decades now. Two principal groups of actors: an animal you might already know, the crown-of-thorns starfish, and us humans. This starfish undergoes a phenomenon known as outbreaks, where unbelievably high numbers of individuals devastate entire reefs. Are these outbreaks natural, or due to human impacts to the sea? Are we to act, or just let it happen? To start addressing these questions, lets follow the initiative of scientists when they first encountered this phenomenon, and dive a bit deeper into the problem, to try and understand what could have brought us to this doomsday scenario.

The animal in question is rather different from the image that probably pops into your mind when you think of a starfish: usually about the size of a large frisbee, It can grow up to a meter in diameter, and have anything from eight to 21 arms. Called the crown-of-thorns starfish, it certainly carries its name well. Indeed, this unusual starfish is covered in hundreds of thorns, a strong armour against assaults from ever-looming predators. The poisonous mucus that covers it renders it rather untasty, and discourages most animals from trying to nibble at it. Humans should also keep clear of it, as repeated contact can result in loss of sense of touch, and piercing by the thorns can cause very serious infections. Yet as outwardly threatening as they might seem, up close they are an amazing festival of colours. They can range from green dotted with purple to deep blue punctuated by red, can sometimes be a combination of shades of orange, and many, many more variations.

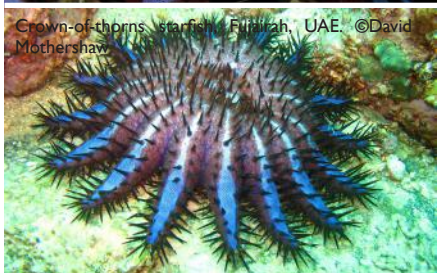
Now you might be thinking: if they are poisonous, dangerous, and destroy the reef, then why don't we get rid of them? In short, because they are essential to coral reefs. Usually, you will only find a handful of them on a reef, if you are lucky. And there, they achieve the same purpose as most predators: by consuming the more common, faster growing species, they allow the slower growing species to find their place in the ecosystem. In the case of corals, which are the crown-of-thorns starfish's preferred diet, they keep branching corals in check. This way, massive corals that grow slowly but steadily for hundreds of years also have a chance to settle on the reef. And these can then form structures essential for the protection of reefs against wave action, and harbour entire communities of fish and invertebrates. In other words, without the crown-of-thorns starfish, coral reefs would probably not look the same.

And they are very efficient predators. By everting their entire digestive system and wrapping it around the coral they aim to eat, they can extract all the living tissue by sending in a battery of strong digestive juices, and then just suck the whole cocktail back up. They leave only the white skeleton of the coral behind, soon to be recolonised by algae. Not many animals can stop them. Some crabs, associated with corals, will defend its host by cutting any arms or tube feet it can reach when the starfish first tries to wrap itself around the coral. This will discourage them, make them move on and try their luck with another coral patch. Some molluscs, such as the giant triton shell, directly attack the starfish. Boring straight through their external carapace with their modified tongue, they will then just empty the starfish from the inside. But not many other animals can attack the crown-of-thorns starfish, except at more vulnerable stages of its life cycle.


Crown-of-thorns starfish, Kenya. ©Kevin Ransom


Crown-of-thorns starfish feeding on coral, Kenya. ©Kevin Ransom


Crown-of-thorns starfish armtips, Daymaniyat Islands, Oman. ©Gert Wörheide


Crown-of-thorns starfish, Fujairah, UAE. ©David Mothershaw


Sampling tube feet from a crown-of-thorns starfish, Fujairah, UAE. ©David Mothershaw

The life of a crown-of-thorns starfish starts as sperm and egg meet in the sea. Multiplying the number of cells, it will go through several larval stages over the next month, as it travels through the oceans, carried by currents. At this stage, it does not look any different from the larvae of other starfish. But predators can tell the difference. This tiny little larva already produces some chemicals that render it untasty to most fish, protecting it from being eaten. During this time, it eats plankton, so it can survive the long voyage through the ocean.

When it has reached its last larval stage, the starfish settles on the reef, where it can find algae to feed on. Hidden amongst rocks and rubble, it will turn into a juvenile starfish within a few days. What happens during the next two years of this little starfish's life is still very mysterious, since it is extremely hard to find. Turning into an adult, its diet switches to corals, and it will go about its business for about five years, keeping fast-growing corals in check. Males and females will repeatedly reproduce by releasing millions of eggs and sperm into the ocean. This can work, as they communicate using chemicals, to make sure the individuals of the opposite sex that are present in the area release their eggs or sperm at the same time. And the cycle can start again when an egg finally meets a sperm. The crown-of-thorns starfish can live for about seven years, after which it will mysteriously disappear. Indeed, recently dead, decomposing starfish have yet to be found on reefs.

So now you know more about what the individual starfish looks like and how it behaves, you're probably wondering about the bigger scheme of things. Well, you can find it on coral reefs all the way from the Red Sea, through the entire Indian Ocean, into the Pacific, and then from the Great Barrier Reef through the Central Pacific islands to the West coast of the Americas. Why it is completely absent from reefs in the Atlantic Ocean is still a mystery.

During the month long larval phase, it is estimated that the starfish can travel about a thousand kilometres, easily moving from one reef to another. So what about the adults? Do they stay on the same reef their whole life, or can they travel over sand patches from one reef to another? Distinguishing individual animals in the field has proved to be impossible, nor has attaching tags to these animals allowed answering this question, as they are experts at getting rid of any kind of tag, dropping entire arms if necessary. So this question still remains to be answered…

But one thing is for sure: the crown-of-thorns starfish is an extremely efficient predator, important to coral reefs. Yeah, great story… But that doesn't really do for a good plot. You are probably wondering what all the fuss is about anyway. Well, you won't have to wait much longer.

FLASHBACK

1957, Ryukyu Islands, Japan: instead of the usual handful of crown-of-thorns starfish, thousands of starfish are eating everything alive. Not just fast-growing corals, but also slow-growing corals, sponges, other starfish, and even each other when there is nothing else left to eat. What is happening? Why have these animals seemingly gone mad?

1962, Green Island, Australia: the same phenomenon occurs on the Great Barrier Reef. Within two years, 80% of Green Island's coral is gone. And progressively, over the next 15 years, outbreaks pop up from the very north of the Great Barrier Reef to the south. Reef after reef, a wall of starfish rise from the depth, systematically killing everything on their way. When there is hardly anything left to eat, they disappear again, as mysteriously as they came. The remains of the reef are slowly overgrown by algae. The physical structure of the entire reef is weakened. The equilibrium of the ecosystem is completely disturbed. No food left for the other residents of the reef. Only the algae feeders remain.

Fast-forwarding through the next forty years, the same scenario repeats over and over again, throughout the Pacific and Indian Oceans, as well as in the Red Sea. The end of the coral reefs is predicted.

And this is where our second groups of actors enter the scene. Man decides to act. Scientists decide to try and understand this starfish, or rather these huge numbers of starfish. Where do they come from? Where do they go? And mostly, why are they here in these huge numbers? What has gone wrong?

But while scientists try to answer these questions, many fear that by the time answers are found, there won't be many reefs left to save.

No reef, no reef fish. No reef fish, no food for many people in this world.

No reef, no divers. No divers, no more money from tourism.

No reef, no protection for coastal villages from storms.

No reef, no reef ecosystem. The rainforests of the ocean lost.

The issue is economical, political, demographical, environmental…

Something has to be done.

So the mass murder starts. The aim is to destroy them all. Many methods are tested. In the early days, chopping them up is attempted. Quick and dirty. And a very bad idea, as some experiments show the crown-of-thorns can survive if cut in half, and even sometimes

regenerate into two living starfish. So instead, people start collecting them, and burying them alive on land. But this is time consuming and labour-intensive, so options to this method are searched. Most involve the injection of toxic substances. Not only are these not always successful, some of them turn out to be harmful to the reef as well. Underwater fences are built. But to little purpose, as they can only stop adults, larvae flow straight through and can still settle in the protected area. Some people suggest using biological control methods, for example by introducing a virus into populations of the starfish. But biological control often backfires, killing other animals than the target or disrupting entire ecosystems. So the idea is dropped.

Turns out the most efficient method is still collecting and burying them on land. In this fashion, over 20 millions of starfish are collected throughout the Indo-Pacific between the 1960s and the 1990s. The Australian government alone spends several million euros on control programs. So much money. So many dead starfish. But still so many unanswered questions.

On the scientists' front, more and more is understood about the biology of this animal. Outbreaks are studied, and hypotheses are investigated. Especially to answer a crucial question:

Why do outbreaks occur?
Two main causes are put forward.

The first one, that this is a natural phenomenon. That outbreaks have been occurring forever, and that we have only just started observing it. That it is a cyclic phenomenon regularly occurring, and that we have only discovered it now because this is the first time that depths at which crown-of-thorns starfish occur are accessible to man. Indeed, the discovery of the first outbreaks coincides with the rising popularity of scuba diving, both in the context of marine biology and as a sport.

The second point of view is that man is to be blamed for these dramatic increases in starfish numbers. That our impact on oceanic ecosystems is to be blamed. And this could be through many different means.

For example, the removal of one of the only animals that kill crown-of-thorns starfish adults, the giant triton shell. By collecting those, mostly for decorative purposes, we might be removing the only animal that could keep starfish populations in check. But many argue giant tritons are not very common animals anyway, and absent from some areas where crown-of-thorns starfish are present and not outbreaking.

Another argument that is put forward is that outbreaks occur because of increased larval survival. Indeed, this is the phase in which these animals are most vulnerable. Of the huge numbers of larvae that get produced each time crown-of-thorns reproduce, very few will actually make it to the adult stage. So anything that would allow them to survive this dangerous phase of their life could result in big increases in adult numbers.

It has been suggested that the rise of sea temperatures through global warming could be responsible for better survival conditions. Organic pollution has also been blamed. Indeed, outbreaks were first observed in areas of intensive coastal development and agricultural activities. The coast of Australia opposite the Great Barrier Reef is famous for its production of sugar cane, and part of the fertilisers used in this context end up in the ocean. As a consequence, the algae in the plankton bloom, and the larvae of the crown-of-thorns starfish have more to eat. If many more survive and become adults, this could be another potential cause for outbreaks.

But although many of the first records of outbreaks were in areas close to human development, over the last 40 years many more occurred in areas far from any human influence. Could these have been consequences of other outbreaks, also known as secondary outbreaks? If outbreaking populations reproduce, they would produce much more offspring than normal populations, and potentially release incredible amounts of larvae, free to resettle on other far-off reefs depending on where the currents take them. But this still remains to be understood, and as the larvae and juveniles are extremely hard to find, this proves to be very tricky.

So far, the question of the cause of outbreaks thus remains unanswered. But this question is crucial. If humans are responsible for the onset of these outbreaks, then we probably have a responsibility to act and try to manage them. But if they are natural phenomena, then who are we to take the right to kill so many starfish? Maybe such events are part of the natural dynamics of coral reefs. Then who are we to take the right to interfere?

To answer these disturbing questions, we need to understand more about this fascinating animal. Hopefully, new developments in biological research techniques will allow us to comprehend more about the crown-of-thorns starfish and make informed decisions for both coral reef conservation and management.

"Gremlins of the Sea" might then have a happy ending for all the actors after all.

Breaking news: coral-killing starfish really a gang of four.

To complicate the issue, the crown-of-thorns starfish (COTS) phenomenon has just reached a new level: together with an international team of researchers, we discovered that COTS are not a single widespread species as previously appreciated, but instead four distinct species. Using a genetic approach, we found that these species are located in the Pacific, the Red Sea, the Northern and the Southern Indian Ocean (see map). This discovery could be very important for coral reef conservation. Until now, all research and management strategies have come from the Pacific, because the crown-of-thorns starfish is a serious threat to the Great Barrier Reef. But this could mean we are not dealing with the other three species adequately. They could for example have different food requirements, or the larvae might behave differently. And if the causes of outbreaks vary between the four species, we might have to research and manage them differently.

An interesting area in relation to this discovery is the Gulf of Oman, because both the Northern and Southern Indian Ocean species are found here. I was able to collect samples for my research in Fujairah earlier this year, in collaboration with Maral Shuriqi from the Environment Protection and Development Department of Fujairah Municipality and Dr. Christophe Tourenq from the Emirates Wildlife Society (EWS) in association with the World Wide Fund For Nature (WWF), as well as in Oman, in collaboration with Five Oceans LLC. And the results turned out to be really quite surprising, the Gulf of Oman being one of the "hot" areas in this context. Indeed, mixing areas of two COTS species are very important for future research, because this is where direct comparisons between species can be made. And hopefully this will help us find out if COTS in different areas of the world require individual conservation strategies.

As Christophe points out, "adding to the fact that such discoveries can have direct implications for conservation and management purposes, these findings once more illustrate that the East Coast of the UAE is a hotspot for marine biodiversity in the region and that research and conservation efforts should be concentrated there. It comes as a great complement to the current projects on coral reefs conservation initiated by EWS-WWF in association with the Fujairah Municipality and partners such as the Emirates Diving Association (EDA) and the National Coral reef Institute (NCRI) on coral reefs."

Reference: *Vogler C., Benzie J., Lessios J., Barber P. and Wörheide G. 2008 A threat to coral reefs multiplied? Four species of crown-of-thorns starfish. Biology Letters 4 696-699.*

Sampling tube feet from a crown-of-thorns starfish, Daymanyiat Islands, Oman. ©Gert Wörheide

GOING DEEPER
INTO HIS PASSION…FOR DIVING

FEATURE **AL BOOM MARINE**

Marc Anthony Viloria 's remarkable journey to becoming a Dive Instructor.

For more than a few, SCUBA diving entails more than sharing photos, meeting new friends, traveling to different places or just another experience. They venture a bit deeper and go a bit farther than most.

Marc Anthony Viloria, a visual artist, engineer, community leader and all-around nice guy shares a few words of his journey into becoming one of the select few who has challenged themselves to become a PADI Dive Instructor.

When did you start SCUBA diving and how did you get hooked?

It was in September 1994. The company I worked for sent us for the basic water safety and first aid training conducted by the Red Cross in Batangas, Philippines. In the resort where we stayed, I met a few divers and became very interested in their stories about their dives. My mom usually enrolled us in swimming camps during summers. Unfortunately, I was a drop out of the swimming team during high school, which tells that I really love water sports (laughs).

Where did you acquire your entry-level license?

In the Philippines, a month after the safety training I signed up with Aquaventure Philippines, which was at that time under the sanction of NAUI. I acquired my Open Water SCUBA Diver I certification in October 1994.

How did you move on from then?

I just dove whenever I had the chance. I got to travel a lot around the Philippines due to my work but I was busy with my professional career at that time. Diving then was "come whenever" – it was not really important in my scheme of things. It was only later that I came to realize that I missed a lot of diving opportunities.

How long did it take for you to level up?

When I moved to Dubai, I was introduced to a small group of Filipino divers. I met Joe Acosta (a dive instructor) who explained to me how I can move up to Advance Open Water Diver and at the same time crossover from NAUI to PADI. That was about 5 years after my entry-level certification. Two years after my Advance Open Water, I took the Rescue Diver course.

What motivated you to get a further diving education?

In 2005, I volunteered for the Tsunami Clean Up Operation in Thailand organized by EDA. I was moved by the aftermath of the disaster and how the people got stripped off of their bread and butter – tourism. They relied so much on their country's natural resources and yet nature itself took it away from them. I felt that I had a responsibility to help them and save whatever was left for them to use. I knew then that moving to a professional level in diving would help me get involved in more ways. That was when I decided to become a Divemaster.

How involved were you in terms of diving before and after this volunteer work in Thailand?

We (me and my wife) try to travel twice a year if possible. Before Thailand we've concentrated on visiting Europe, majority of which was in the Eastern part. I also had a few dives in Polynesia. But after Thailand, most of our travels were to diving destinations like Maldives, Sri Lanka, Egypt, Northern Caribbean, the United States, parts of the Gulf Regions and the Philippines. I usually share my Thailand experience with people/divers that I meet and encourage them to be more than just a fun diver.

You were a Divemaster for quite some time, why was that?

Oh, yes, as you can see I tried to upgrade every two years, from one level to another. I had my hands full heading the Filipino Scuba Divers Club. Being the leader of the club last year until August this year made me very busy. I enjoyed doing that though; I found it very rewarding and fulfilling in serving a community passionate about diving.

It looks like you enjoyed being a Divemaster; did this help you decide to become a dive instructor?

Partly yes, but I guess I can credit my decision more to my experiences and to the interaction I've had with people in the diving industry, like yourself. Plus of course, the concerns about the greater awareness in diving in this changing world. I remember I was offered to work as a college professor right after I graduated but that wasn't my career dream, so I declined. But diving is another story - I realized that with the knowledge I have for something I love to do, it would be a pity not to share it with other people.

How was the IE?

Well, we're not supposed to mention the "IE" acronym during the IDC, remember? So let us move back in time a bit.

Right! So tell us more about the IDC experience.

IDC is the IE itself per se. That is how I see it at least. Honestly speaking it was tough, not because you are not sure of what you are learning or getting into, but personally, it was because of the time constraints. That aside, the IDC is actually a very rewarding challenge, an experience worth remembering in one's lifetime. Just imagine the challenge of meeting, or even exceeding your expectations, the joy of making new friends, and making a connection with them. There was a commonality amongst you, and as always, at the end of a tiring day, you come home like a renewed diver with much more professionalism and knowledge that you are ready to share. And I'm very thankful to a lot of people who patiently guided me all throughout the course.

This is the time to thank them… go ahead.

I thank Joe Acosta, who has been my mentor since I moved up from being an open water diver. My AI course with him was very good because I got the best of both worlds – classic teaching methods combined with the new techniques. Joel Acosta, who from time to time gave valued advice and motivation. Then of course, there's my FSDC family… for always believing in what I can do. The Al Boom Diving staff – they have been very supportive with all our IDC needs, especially with the logistics. To John, Mo and Steve, thanks guys! Your professionalism preceded your reputation. To

my wife and son for extending their patience with all my lost time with them. And of course, to you Sir Francis Uy, for being a supportive Course Director and a good friend, all the tips and education you provided during this IDC/IE played a big role to our group's success… thank you again.

Now we can talk about the IE, how did it go?

Intense…very extreme – that is the only way I can describe it. You were also tense at some point (Definitely – Francis). Acing the written exams part was the biggest challenge for all of us. The teaching presentations and skills performance came naturally, I even needed to buy a basketball, remember? I felt immense relief after the first day's success. All I thought after that was to show up the next day and give the same level of performance. Through it all, I felt energetic and ready for anything.

Congratulations Marc, it's a well-deserved achievement. Any parting words?

Thanks again Sir Francis and to everyone (you know who you are), I'll be seeing you more when I move forward with my teaching education. And to all dive enthusiasts, the learning should not stop – continue your diving education. I know we have different reasons for diving, but the bottom line is we dive because we love nature, we love being a diver and education will help us understand all of it better. Motivate yourself to become a diving professional or an instructor. In this way, you can be able to make (as what Bruce, the PADI Examiner, said) more PADI babies. But honestly, it is not all about growing numbers but sharing your knowledge and bringing the awareness and beauty of diving to those who less know. The IDC/IE is always a win-win course, a very rewarding experience indeed. I encourage you to reach this level and find out for yourself what I'm talking about. Have a good day!

EDA QUIZ
SHARKS

ANSWERS FOUND ON PAGE 42

1. Scientists believe that sharks have been around for up to:
   a. 1 or 2 months
   b. 50 million years
   c. 200 million years
   d. 400 million years

2. The largest shark in the world is the:
   a. Whale Shark
   b. Basking Shark
   c. Empire State Building Shark
   d. Great White Shark

3. Which is the smallest shark in the world?
   a. Shrimp Shark
   b. Midget Shark
   c. Dwarf Shark
   d. Minor Shark

4. Sharks are great at maintaining neutral buoyancy
   a. True
   b. False

5. All sharks must swim continuously to respire or else they drown
   a. True
   b. False

6. Sharks have more senses than humans
   a. True
   b. False

7. All sharks are warm-blooded
   a. True
   b. False

8. Most of the sharks eat a lot
   a. True
   b. False

9. Sharks go through up to _____ teeth in a lifetime.
   a. 100
   b. 1,000
   c. 3,000
   d. Infinity

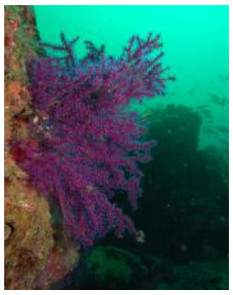
10. Which of these sharks is considered the most dangerous to humans?
    a. Skora "the Gentle" Shark
    b. The Whale Shark
    c. The Blue Shark
    d The Bull Shark

11. Shark populations are threatened by:
    a. The fishing industry
    b. Hunting for their fins, meat, and oil
    c. Habitat destruction
    d. All of the above

12. What was the first piece of fiction to note the great white shark?
    a. Twenty Thousand Leagues Under the Sea by Jules Verne
    b. Before the Dawn of History by Charles R. Knight
    c. Blue Meridien by Peter Matthiessen
    d. Jaws by Peter Benchley

RECONNAISSANCE EXPEDITION IN THE MUSANDAM PENINSULA, OMAN

FEATURE **RITA BENTO & BIOSPHERE EXPEDITIONS**



Between the 3rd and the 7th of October a reconnaissance expedition was made in the reefs around the Musandam peninsula, Oman. This all begun by a contact that I received from Mathias Hammer, the managing director of Biosphere Expeditions (**www.biosphere-expeditions.org**) and from Gregor Hodgson, the Executive director of Reef Check Foundation (**www.reefcheck.org**). They wanted to do an expedition in Musandam and were asking if EDA was willing to help. And of course we were!

The main objective was to test the methodologies and logistics of what will be a Biosphere Expeditions dive project in the same location, beginning in October next year. During 4 days at sea we revolved around collecting data on the current biological status of the reefs and of population levels of protected species within the area, in developing a survey methodology based on Reef Check, but also incorporating local indicators and methodologies as required, and in identifying suitable dive sites for this project.

The team consisted of local and international scientists, the directors of the Biosphere Expeditions and a representative of HSBC Bank, the sponsor for this expedition. Conjointly with me, Matthias and Gregor, we had the company of Jonathan Shrives from Oxford University, Michel Claereboudt a marine scientist from Muscat University, Kathy Wilden also a director of Biosphere Expeditions, Suhail Batook a diver from corporate sponsor HSBC and Udo, our dive guide in this expedition from Extra Divers Musandam. So in total we were 7 divers, anxious to discover what the Musandam peninsula would show us of its splendour.

We embarked on our mission in a traditional Dhow out of Khasab. The weather was amazing; with a serene sea, no wind and an outstanding view of the vast dry mountains rising in to the sky. These remote and rugged mountains, which rise straight out of the sea creating fjords and stunning landscapes, have had isolated communities for centuries. Many coastal villages can only be reached by boat, as there are no roads on much of the peninsula. The population of approximately 29,000 is concentrated in the capital, Khasab (18,000 in 2004) in the north and Dibba (5,500) on the east coast.

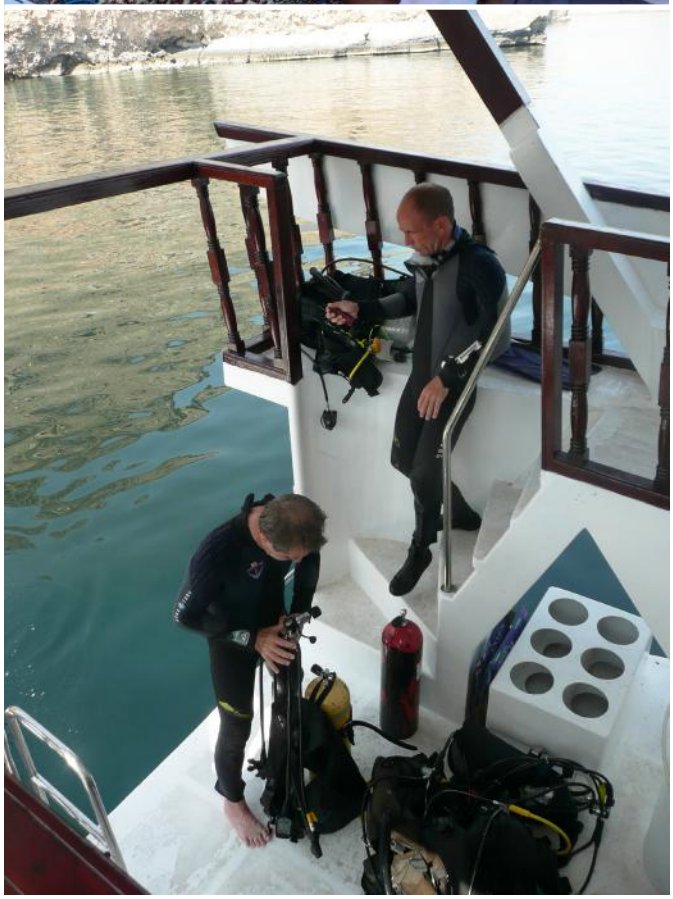
During the four days at sea, science, the environment and life were discussed every day, we managed to explore 40 dive sites, and a few more with the manta-tow. In every new location a list and abundance of fish and coral families was made, together with the identification of some invertebrates. Gregor was amazed by the diversity and health of coral; and Michel was glowing with the collection of corals that he was taking to Muscat to identify.

BIOSPHERE EXPEDITIONS

Biosphere Expeditions is an award-winning, non-profit-making organisation offering hands-on conservation volunteer expedition work as an adventure with a purpose for everyone. They bridge the gap between scientists at the forefront of conservation work in need of funds and helpers, and enthusiastic laypeople, who during their holiday time, through their hands-on assistance and with their expedition contribution want to support them.

Their three key themes are safety, science and satisfaction. The volunteer holidays are open to all, there are no special skills (biological or otherwise) required to join as all necessary skills will be taught as part of the expedition, and there are no age limits whatsoever. Their conservation volunteering team members are people from all walks of life, of all ages, looking for an adventure with a purpose. Teams are small and there is a dedicated expedition leader with the teams at all times.

At the moment Biosphere Expeditions has four offices around the world: the main office in the UK, the German office since 2002, followed by France in 2004 and North America in 2006. This organization has recently been rewarded in style by winning the "Best Volunteering Organisation" award at the internationally



acclaimed "First Choice Responsible Tourism Awards" in London and coming in "Highly Commended" in the "Best for Protection of Endangered Species". To date Biosphere Expeditions has sent thousands of people into the field and continues to grow.

This Biosphere Expeditions dive project in Musandam, which will start in October 2009, will work with local scientists and as part of an international coral reef monitoring programme, called Reef Check.

"We are proud to send people from all over the world on expeditions across the globe, making a small but significant contribution to conserving our biosphere." – Biosphere Expeditions

REEF CHECK

Reef Check is the name of both the most widely used coral reef monitoring protocol and an international coral reef conservation programme. The Reef Check programme brings together community groups, government departments, academia and other partners to educate the public about the coral reef crisis, create a global network of volunteer teams which regularly monitor and report on reef health, scientifically investigate coral reef ecosystem processes, facilitate collaboration among academia, NGOs, governments and the private sector, and stimulate local community action to protect remaining pristine reefs and rehabilitate damaged reefs worldwide using ecologically sound and economically sustainable solutions.

Scientists have been monitoring coral reefs since the time of Darwin. The 1993 Colloquium on Global Aspects of Coral Reefs was a turning point for many reef scientists who met to discuss the health of the world's reefs. At the end of the meeting, it was clear that there was not enough information available to form a picture of the status of coral reefs on a global scale. A group of coral reef scientists felt that part of the problem lay with some of the standard monitoring methods scientists have used. These detailed methods were designed to investigate community ecology and included measurements of many parameters that may not be affected when coral reef health is damaged. The scientists felt that more specific methods should be designed to investigate human impacts on coral reefs, because those are the impacts that are preventable. It was recognized that another problem with the conventional approach to coral reef assessment and monitoring was that there are only a small number of reef scientists, most of whom are only able to carry out surveys periodically. Thus, the database of coral reef conditions was incomplete and the data that existed was not easily comparable. The solution was to organize a global survey effort that would take place annually over a defined period using one standard method – a synoptic survey of the health of the world's reefs, with help from non-scientists.

The Reef Check concept grew out of this initiative and was developed in early 1996. The methods were drafted and subsequently posted on the internet and peer-reviewed by many reef scientists. Reef Check was launched in 1997 and during that year conducted the first-ever global survey of coral reef health. The results provided scientific confirmation that coral reefs were facing a major crisis.

In the 1980s, many scientists thought that the major threats to coral reefs were primarily pollution and sedimentation. The Reef Check results demonstrated for the first time, that overfishing was a major threat to coral reefs on a global scale. Since then, hundreds of Reef Check teams have been monitoring reefs every year in more than 60 countries. The results of the first five years of monitoring were presented in a major report, "The Global Coral Reef Crisis – Trends and Solutions" at the World Summit on Sustainable Development in Johannesburg, South Africa in September 2002. The report documented the continuing global decline in reef health, but also included coral reef conservation success stories from around the world. Monitoring was carried out on over 1500 reefs in the Atlantic, Indo-Pacific and Red Sea. Following quality assurance procedures, 1107 sites were accepted for analysis, and amongst them the expedition study site.

FIRST RECORD OF A **BOWMOUTH GUITARFISH** IN NORTHERN OMAN, WITH AN UP-DATE ON **ELASMOBRANCHES (SHARKS AND RAYS)** STATUS IN **UNITED ARAB EMIRATES**

FEATURE **CHRISTOPHE TOURENQ, MARAL KHALED SHURIQI, KRISTI FOSTER, GREG FOSTER, CHRISTOPHE CHELLAPERMAL, AND DEBRA REIN**

Bowmouth Guitarfish or Shark Ray (Rhina ancylostoma) caught by Omani fishermen in the Musandam Peninsula (Hormuz Strait) and landed in Dibba-Oman port on the 8 August 2007. Photo C. Tourenq.

On 8 August 2007 one of the authors was alerted by the presence of a strange "ray" on the docks of Dibba-Oman port (25°36', 56°17'E). It was a female, measuring a total length of 180cm, with a broad, rounded snout, two dorsal fins of which the first being above the pelvic fins, large high pectoral fins, and remarkable ridges of spiky thorns over the eyes and on the back and shoulders. Its colour was olive-grey above with numerous white spots on fins, upper body and tail, and white below. A faded black band could be seen between the two prominent spiracles behind the eyes. At first sight, it was identified as a species of "Angelshark" (Squatinidae). But unlike most of Angelsharks, its pectoral and pelvic fins were not overlapping and its gills were located at the insertion of the pectoral fins to the head. Its mouth with teeth in undulating rows was situated well behind the snout, indicating bottom dwelling feeding habits. After consultation of published references and the scientific online source "FishBase", the species was quickly identified as a Bowmouth Guitarfish or Shark Ray (Rhina ancylostoma). This benthic species inhabits coastal areas close inshore where it lives on sand and mud feeding mainly on crustaceans and molluscs. Its distribution in the Indo-West Pacific ranges from the Red Sea and East Africa to Papua New Guinea, north to Japan, to south to New South Wales, Australia. Being taken as bycatch of demersal trawl fisheries, this species is classified as "Vulnerable" by IUCN (2007). The Bowmouth Guitarfish is said to be rare in the region and is even absent from published local fish fauna lists. Interviewed Omani fishermen mentioned that some individuals are caught from time to time, but that only the fins are used for human consumption.

The previous day (7 August 2007), a female Tiger Shark (Galeocerdo cuvier) of 225 cm total length (from tip of the snout to tip of the tail) and 3 female Spinner Sharks (Carcharhinus brevipinna) of 220cm each, had been observed on the docks of Dibba-Fujairah port, Fujairah Emirate, United Arab Emirates. As one of the most widespread species of sharks in temperate and tropical waters in the world, the Tiger Shark has already been mentioned in UAE waters. It is mostly considered a coastal species, found near the surface to depths of 140m, occurring on, or adjacent to, continental and insular shelves, frequenting river estuaries, harbours, coral atolls and lagoons. Caught in target and non-target fisheries, this species is classified as "Near Threatened" by IUCN (2007). Tiger Sharks from the Arabian Gulf and Oman Sea are said to reach up to 750cm in total length. Interviewed local fishermen mentioned that an individual of 600cm had been caught in the same waters the week before. The Spinner Shark is a common coastal-pelagic shark species of the continental and insular shelves, near and offshore warm-temperate, subtropical and tropical shallow waters, from a depth less than 30m to at least 75m. This species is classified worldwide as "Lower Risk/near threatened" by the IUCN (2007) and is frequently captured in recreational and commercial fisheries, its meat being valuable and fins marketable. Spinner Sharks are said to be amongst the most common sharks fished by deep sea sport-fishermen offshore of Musandam and in the Arabian/Persian Gulf.

Except a book, mentions in some fields and technical guides, and one article, few has been published on Elasmobranches of the region. Based on this scarce published literature, the official website "UAE Interact" (**http://www.uaeinteract.com**) supported by The National Media Council, and unpublished reports from Environment Agency – Abu Dhabi (EAD), Emirates Marine Environment Group (EMEG) and local deep sea fishing companies (Ocean Active Ltd.), there should be at least 46 different species of sharks, guitarfish and rays present in the waters of the Arabian/Persian Gulf and Eastern Coast of UAE. The occurrence of the Sicklefin Lemon Shark (Negaprion acutidens) in the region needs to be confirmed, as well as the report of a White Shark (Carcharodon carcharias) by EMEG that would constitute the first observation for the Arabian/Persian Gulf of this species, observed from Sri Lanka to the Red Sea, and in the tropical Western Indian Ocean. The Sandtiger Shark (Carcharias taurus) has been recorded in Kuwait but so far there is no mention of this species in UAE-Northern Oman waters.

Because of their particular biology and ecology, sharks and rays are very sensitive to overfishing and bycatch of commercial fishing. Populations of Elasmobranches are declining dramatically worldwide and most of the species mentioned in this paper are classified endangered by the IUCN. Catching and trading sharks and rays is legal in the region with the exception of the Whale Shark (Rhincodon typus) which is listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), that refers to international trade issues only. ANDERSON & SIMPFENDORFER (2005) mentioned even that the Whale Shark was not targeted by local fishermen in the region. However, observations of young whale shark for sale at the Sharjah fishmarket were reported to the authors. The interdiction of trawl-net practices in UAE and Oman territorial waters may considerably reduce the risk for Elasmobranches locally. Between 1985 and 2000, FAO data showed that shark landings in the UAE were relatively stable between 1,300 and 1,950t per annum.

Finning is also strictly prohibited by UAE and Oman fishing laws, as is bringing shark fins to shore separate from the body. However, seen before as a non commercial or low value item of the catch, sharks have been increasingly targeted in UAE waters (as worldwide) because of the high value of their fins on the

Asian market. Whereas in the past, most of the shark parts were locally consumed during the summer when fishing catches were low, the carcasses are nowadays often discarded and only fins considered valuable. A decade ago, with 400-500t per annum, the UAE was already considered as one of the main exporters of shark fins to Hong-Kong. The UAE, and Dubai in particular, being one of the largest re-export hubs worldwide, it is not clear, however, if the fins exportation figures reflect the local fisheries tendencies. A considerable amount of fins is said to be imported from Somalia, Yemen, and Oman to Dubai for exportation to the Asian market.

An up-date and proper assessment of Elasmobranches' landings and fins trade in the UAE, as well as the promotion of ecological studies of local species, including migra-tion/ movements, life history and ecological requirements are urgently required.

ACKNOWLEDGEMENTS

We would like to thank Ali AL-DANHANI, Head of the Dibba Marine Centre of the Ministry of Environment and Water and the Dibba-Fujairah Municipality for their technical support, Sarah FOWLER, IUCN Shark Specialists Group, Edwin GRANDCOURT, Environment Agency Abu Dhabi, Mark BEECH, Abu Dhabi Authority for Culture and Heritage, Nick BOWLES, Ocean Active Ltd., Dubai, Paul ALGATE, SEACOR Fujairah, and Major Ali AL SUWAIDI, Chairman of the Emirates Marine Environment Group, Dubai, for their data sharing, help in the determination of individuals and constructive comments on the manuscript.

TABLE:

Elasmobranches (sharks and rays) of UAE and Musandam. Sources: 1: RANDALL (1986), 2: BROWN (1992), 3: RANDALL (1995) 4: FIELD (2005), 5: HELLYER & ASPINALL (2005), 6: UAE interact: (www.uaeinteract.com/nature/marine), 7: Ocean Active Ltd (pers. com.), 8: Emirates Marine Environment Group (pers. com.), 9: Environment Agency Abu Dhabi (unpublished), 10: this study.

Names follow the late FAO and IUCN Shark specialist Group nomenclatures (CARPENTER et al. 1997, BONFIL & ABDALLAH 2004, COMPAGNO et al. 2005). [1] *cited as "Grey reef shark (Hypogalius balfouri)".*

FAMILY	SCIENTIFIC NAME	COMMON NAME	SOURCE
STEGOSTOMATIDAE	Segostoma fasciatum	Zebra Shark	4, 7
RHINCODONTIDAE	Rhincodon typus	Whale Shark	2, 5, 7, 8
HEMYSCYLLIDAE	Chiloscyllium arabicum	Bamboo Shark	1, 3, 5, 7, 9
	Chiloscyllium griseum	Grey bambooshark	1, 9
LAMNIDAE	Carcharodon carcharias	White Shark	8
	Isurus oxyrinchus	Shortfin Mako	(6?), 7
TRIAKIDAE	Hypogaleus hyugaensis	Blacktip Houndshark	1, 6(*)
	Mustelus mosis	Arabian smooth Houndshark	1, 9, 3
HEMIGALIDAE	Hemigaleus macrostoma	Hooktooth Shark	1, 6, 3
CARCHARHINIDAE	Carcharhinus sealei	Blackspot Shark	6
	Carcharhinus dussumieri	Whitecheek Shark	3, 6, 9
	Carcharhinus plumbeus	Whaler Shark	1, 6, 9
	Carcharhinus brevipinna	Spinner Shark	6, 7, 10
	Carcharhinus limbatus	Blacktip Shark	6, 7, 9
	Carcharhinus sorrah	Spottail Shark	3, 5, (6?)
	Carcharhinus amblyrhynchos	Grey Reef Shark	(3?), 4
	Carcharhinus melanopterus	Blacktip Reef Shark	4, 5, 6, 7, 9
	Carcharhinus leucas	Bull Shark	5, 7, 8, 9
	Galeocerdo cuvier	Tiger Shark	5, 6, 7, 8,10
	Rhizoprinodon acutus	Milk shark	1, 4, 9
	Rhizoprinodon oligolinx	Grey sharpnose shark	1, 9, 3
	Negaprion acutidens	Sicklefin Lemon Shark	(6?)
	Scoliodon laticaudus	Spadenose shark	9
SPHYRNIDAE	Eusphyra blochii	Winghead shark	1, 3, 9
	Sphyrna mokarran	Great Hammerhead	6, 8
	Sphyrna lewini	Scalloped Hammerhead	5, 7, 8
	Sphyrna zyqaena	Smooth Hammerhead	1
PRISTIDAE	Anoxypristis cuspidata	Narrow/Knifetooth Sawfish	3, 5, 8
	Pristis zijsron	Longcomb/Green Sawfish	3, 5, 8
TORPEDINIDAE	Torpedo panthera	Panther Electric Ray	3, 4, 6, 9
	Torpedo sinuspersici	Marbled Electric Ray	3, 4, 7
RHINOBATIDAE	Rhina ancylostoma	Bowmouth Guitarfish	10
	Rhinobatos granulatus	Sharpnose Guitarfish	3, 5, 6, 9
RHYNCHOBATIDAE	Rhynchobatus djiddensis	Giant Guitarfish	5, 9
DASYATIDAE	Himantura gerrardi	White-spotted Whipray	3, 5
	Himantura uarnak	Reticulate Whipray	4, 5, 6
	Himantura jenkinsii	Pointed-nose Stingray	4
	Himantura imbricate	Scaly Whipray	3, 9
	Taeniura meyenii	Blotched Fantail Ray	4, 6, 9
	Pastinachus sephen	Cowtail Stingray	4, 7, 9
	Dasyatis kuhlii	Spotted Stingray	6, 7
GYMNURIDAE	Gymnura poecilura	Longtail Butterfly Ray	3, 9
MYLIOBATIDAE	Aetomyleus nichofii	Banded Eagle Ray	3, 5, 6, 9
	Aetobatus narinari	Spotted Eagle Ray	3, 5, 6, 9
	Rhinoptera javanica	Javanese Cownose Ray	6
MOBULIDAE	Manta birostris	Giant Manta	4, 7

CAPTURING AN INTRODUCTION

FEATURE AND PHOTOGRAPHY **MARCELO MARIOZI – UWPAE@ME.COM**

"Hello EDA Members, I am a new diver in Dubai. I am a CMAS underwater photo and diving instructor and I've been in Dubai for a little more than a year and a half and after the initial adjustment phase I am going back to my undersea passions, diving and underwater photography. I am glad to have found EDA here, I have been following our magazine since I first thought about moving here, and it is a great organization with a much greater cause and a lot of work ahead.

Back in Brazil I spent the last 10 years helping the development of the national underwater photo & video commission. I had the luck to be invited to the CMAS World Championship of UW Photography in Hurghada, Egypt in 2000 as an assistant diver to my uw photo instructor, and when we came back we practically built our commission from scratch after years of abandonment. Since then, uw photo competitions became my passion, I have organized, competed (3rd place in the nationals, captain of the brazilian team once in Marseille 2002) and judged these events with great passion over the years.

Before coming to Dubai in 2006, I thoroughly searched through the internet for underwater pictures from the UAE waters, and must confess I was a little upset about an apparent lack of good local photos despite the awesome work done by some good photographers. I really believe that underwater pictures are the very best tool we have in promoting a healthy underwater environment, if non-divers don't relate to the subaquatic world, if they don't create a "love" relationship with the ocean through beautiful images it is very hard to attain a high level of consciousness about our waters.

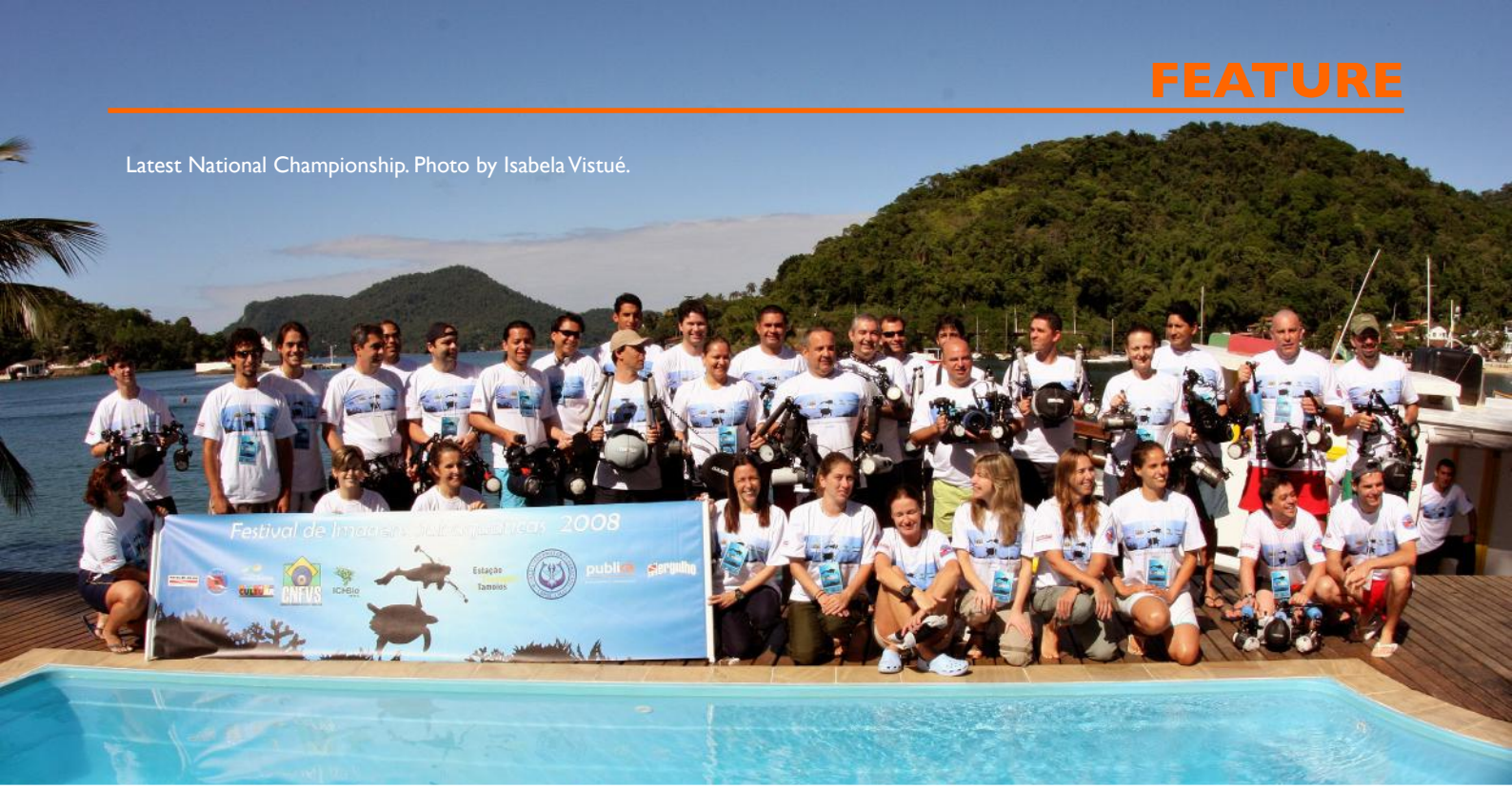
But what strikes me as particularly interesting is the similarities in the situation we have here. Back in 1999 in Brazil we had about the same image in front of us when we started running the events: a timid lack of interest in local diving (we have worse diving conditions than Dubai close to the big cities of Rio de Janeiro and Sao Paulo), quite a lot of people with compacts, very few people with housed SRL systems, and almost no general knowledge that underwater photography is not only an art and science tool but also an internationally recognized world championship sport by international bodies such as the IOC – International Olympic Committee.

We ended up with such a good number of underwater photographers over 10 years, that we had to run a qualifying event to select who would compete in the national championships. The number of uw photo instructors grew, the number of people investing in the activity grew and the publication of photos in magazines increased tenfold and in only 10 years we counted 3 or 4 new generations of people attaining top-level places.

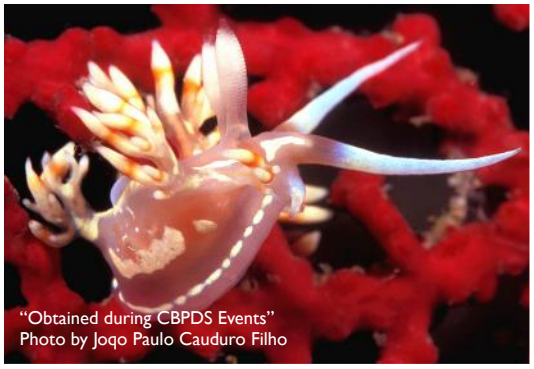
And most importantly, it is unbelievable how much one's skills develop from being a part of such an event!!! It should never be a thing to be afraid of or shy away from, and it's definitely never boring!!! When you put together a good number of photographers, the exchange of information is priceless. When several people are involved challenging and testing the knowledge in the same place, you end up learning a lot more than in a workshop from a single instructor. The main feedback we had in Brazil over these events came from people who hadn't realized how much they could learn from such an event, and how great a time it can be. These comments mostly came from people who initially might have been shy to compete or expose their pictures in comparison to other's.

It would really be a joy to help EDA develop such a program here in the UAE. To dive and shoot close to home is one of the keys to development, and I am really excited about the possibility of starting something new!!! To join such a sport at its beginning is also an amazing opportunity to everyone, and I hope we'll have many participants. I am really curious to see what can be found under UAE waters.

Latest National Championship. Photo by Isabela Vistué.



"Obtained during CBPDS Events"
Photo by Joqo Paulo Cauduro Filho



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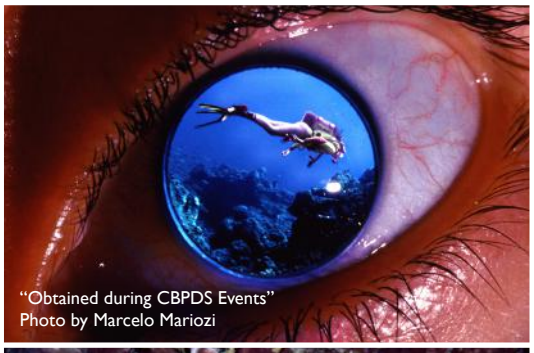

"Obtained during CBPDS Events"
Photo by Marcelo Mariozi

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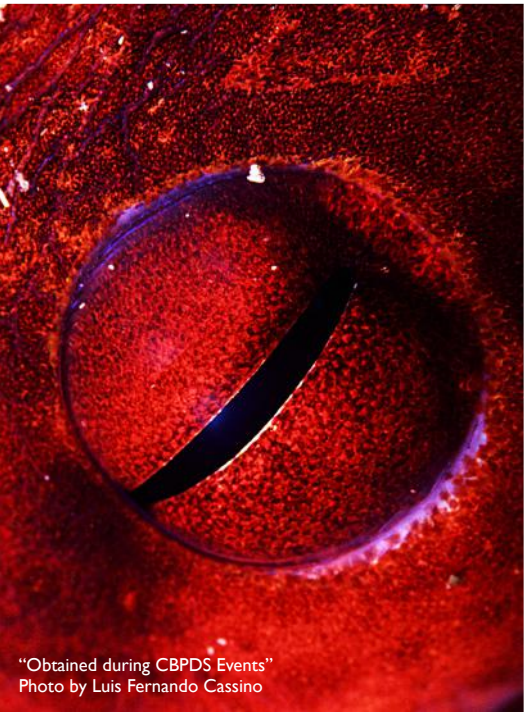

"Obtained during CBPDS Events"
Photo by Luis Fernando Cassino

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HARMFUL ALGAL BLOOMS

FEATURE AND PHOTOGRAPHY **ELISE MARQUIS & RITA BENTO**

Harmful algal blooms, or HABs, occur when populations of microalgae grow intensively while producing toxic or harmful effects on people, fish, shellfish, marine mammals and birds. To the human eye, those blooms can appear greenish, brown, and even reddish/orange depending upon the algal species, the ecosystem, and the concentration of the organisms. These outbreaks are commonly called red tides, but scientists prefer the term "harmful algal blooms" (or HABs).

About 300 species are reported at times to form algal blooms, with cell concentrations of several millions per liter. Harmful algal blooms may cause harm through the production of toxins or by their accumulated biomass, which can affect co-occurring organisms and alter food-web dynamics, causing anoxia or physical damages to fish gills. It is generally accepted that bloom initiation is caused by the right set of environmental conditions, i.e., nutrients or sunlight or temperature or a combination of these. Although these blooms are a natural feature in coastal ecosystems, human activity (e.g., treated or untreated sewage, farming or urban gardening practices) is also thought to contribute to their increasing frequency.

PHYTOPLANKTON

Marine algae come in a variety of sizes and forms. They range from large sessile plants such as kelp to microscopic single cells. The small, microscopic plants living in the water column are referred to as microalgae or phytoplankton ('phyto' = plant and 'planktos' = drifter). Like terrestrial plants, these cells contain chlorophyll and need sunlight and inorganic nutrients to produce new organic matter through photosynthesis. When a microalgal cell becomes big enough, it will then divide into two daughter cells through asexual reproduction. Each resulting cell can then go on doing photosynthesis, growing and then dividing again and so on. The population growth is then exponential. Starting with only one cell, if the cell population from each generation increases by a factor of 2^n (where n is the number of generations), it is clear that after a relatively small number of generations, the number of cells will be very large. In the oceans a doubling generation time of phytoplanktonic population can range from hours to a few days. Most noticeable algal blooms in the aquatic environment range from 100,000 – 1,000,000 cells per liter.

OUTGROWTH

The phytoplankton community encompasses all of the autotrophic planktonic cells. They are primary producers and contain photosynthetic pigments such as Chlorophyll a. They produce new organic matter through photosynthesis. Photosynthesis process requires light, carbon dioxide (CO_2) and inorganic nutrients such as phosphorus and nitrogen. In addition, phytoplankton also needs small amounts of certain trace metals such as iron (Fe) and zinc (Zn).

Light and carbon dioxide are easily available to phytoplankton at the surface of the oceans whereas nutrients and trace metals are not. While primary production in marine waters is usually limited by nutrients availability, it may be highly boosted when the nutrient concentrations increase leading to the development of blooms. In coastal areas, the nutrient supply is provided primarily from sediment transport (upward) processes and runoff from land (from natural sources and sewage).

The frequency, intensity and geographical distribution of harmful algal blooms has increased over the last few decades. Three main factors may explain this increase: 1. Climate change: higher temperatures of the oceans due to global warming, which lead to better growth conditions and increased water column stability, has the potential to favour the

growth of HAB species; 2. Coastal pollutions: HAB events are a reflection of increased pollution and nutrient loading in coastal waters and 3. Human-aided transport: some HAB species have the potential to form cysts that are easily transported from one part of the world to another with the ballast waters of commercial vessels.

OUTCOMES

Harmful Algal Bloom species (HABs) are usually of one of the following three types: 1. species that produce a marine toxin that is transferred through the food chain; 2. species that make toxins that specifically kill fish; and 3. species that create sufficient biomass to cause anoxia or physical damage to fish gills.

The first type of HAB species may cause illness or death in humans. As they filter water for food, shellfish such as clams, mussels, and oysters can accumulate toxins in their tissues. A single clam can harbor enough toxin to kill a human or large marine mammal. Moreover, certain of the more lethal HAB toxins are not affected by cooking or preserving methods and have few effective antidotes. The two other types of harmful algae are non-toxic to humans but cause harm to fish and invertebrates. Several species of phytoplankton belonging in different taxonomic groups can produce toxins, which may result in extensive fish kills with major economic losses. The high algal biomass formed during a HAB event may also be harmful to fish and invertebrates by damaging or clogging their gills or leading to anoxia (oxygen depletion) in the water. Anoxia in aquatic systems refers to waters where the dissolved oxygen concentration is below 2 mg/L. Most organisms avoid, died or become physiologically stressed in waters with oxygen below this concentration.

Whether toxic or noxious algal species dominate a bloom or alternatively, occur at low but harmful levels within a phytoplankton community, their presence often affects other trophic levels, resulting in ecosystem dysfunction, public health risk, and enormous economic losses. Dead fish pose a health hazard as they rot and decay, and birds, and possibly marine mammals can become intoxicated by eating dead or dying fish.

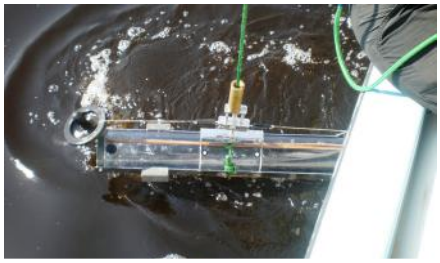
HARMFUL ALGAL BLOOM IN FUJAIRAH COASTAL WATERS

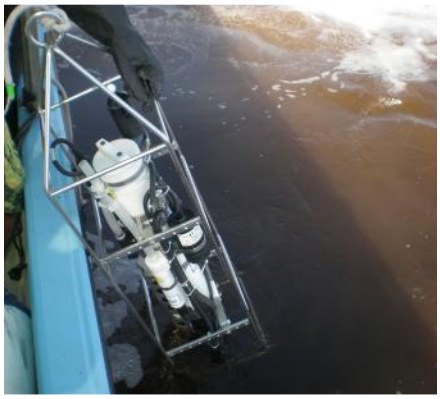
From early September 2008 until now, a Harmful Algal Bloom event has been observed along the East coast of the UAE and Oman. To evaluate the characteristics of the HAB event occurring in the Gulf of Oman, the coastal waters of Dibba was sampled on the 9th of November 2008, in 8 different locations, including places with HAB and places with clean water. At each location, physical, chemical and biological data were collected in order to characterize the HAB and the state of the coastal waters. These samplings was done together with researchers from UNU (United Nations University), Fujairah Municipality, EWS-WWF and Emirates Diving Association.

The high surface concentrations of algae reached 2.4 millions of cells per liter, leading to oxygen depletion at the bottom of the water column and a very low penetration of the light. According to turbidity and fluorescence profiles, the HAB was mainly present close to the shoreline and in the surface waters, in less than 3 meters deep. The large fish kills observed might have been caused by the combination of lack of oxygen and production of toxins by the HAB species. Those toxins physically and chemically lead to the death of fish but are not harmful to humans. The bloom had almost no effects on the water salinity and temperature since the salinity and temperature values and profiles were similar at the eight sampled locations.

Benthic communities of corals, sea grasses and macro algae require photosynthetically active radiation (PAR) to function and establish both the health and the range of the community. Levels of PAR also indirectly impact in higher trophic level communities that rely on consuming communities that require suitable levels of PAR. At the sample sites with HAB, the water received less than 10% of the surface light penetration at 1 meter depth and the bottom (< 10 meters deep) was not receiving anymore light.

The high concentration of nitrates in the coastal waters might have been a major factor at the start of the bloom. The origin of those high nitrate concentrations remains to be determined but the upwelling occurring along the coast might be the main one. Moreover, the lack of wind and waves along the coast might also have been an important factor at the beginning of the bloom. However, loads of other limiting trace metals such as iron in the coastal waters might also have been possible. At the time of the sampling, the HAB was not limited in nutrients, meaning that the end of the blooms will, most probably, occur with a change in the weather conditions (e.g. wind or swell). More sampling will be done in the next couple of months in order to characterize the effects of the HAB on the coastal environment.





RECONNECTING TO PLACE

FEATURE **ERNST VAN DER POLL** PHOTOGRAPHY **MAHMOUD ABU WARDEH AND ERIC MADEJA**

Photo by Mahmoud Abu Wardeh

Do you remember the last flight you took…6 to 8 hours in a small seat with barely enough leg space to get behind the seat in front of you? Looking out the window before takeoff, you can see hundreds of planes waiting in line to take off.

An interesting bit of trivia…did you know that worldwide there is at least 50,000 flights that take off per day, 350,000 per week, 1.4 million a month, 16.8 million a year.

Distances that used to take 6 weeks to cover can now be done in less than one day. Hundreds and thousands of people travel long distances for recreation and business. You can wake up for breakfast in Paris and watch the sun set in Cape Town after the afternoon surf.

The world is shrinking every day. Millions of us have left our home countries to start lives abroad.

With all this travelling, we are losing the connection of the land around us.

37 years ago, life in the UAE was worlds apart to what it is today. People of the desert and the sea had an intimate connection with time and place. The local traders and fishermen found their way across the water by looking at the stars. A Bedouin traveler knew exactly where to find water and shelter from the hot desert sun. Few of us could match the local ecological knowledge of even our most ignorant ancestors.

On the other hand we have gained a greater understanding of the wider function of nature. We might not be able to identify the local flower or shrub in our back garden, but we can instantly conjure up a satellite image of our house on our laptops while having an espresso at our local coffee shop.

We might not know how to point to South without the help of a compass, but our cell phones can pin point our exact longitude and latitude when we are trying to find our way through the mazes of an unknown city in peak traffic.

We might not know the names of the birds singing outside our window, but we can empathize with the sorrows and joys of Antarctic penguins at our local movie theatre. We are so uninformed about the regions we call home and yet we are now more tuned in than ever before to the performance of the planet as a whole.

With the increased knowledge of the little blue planet we call home comes the flood of evidence that we are seriously dropping the ball. Ecosystems are being wiped out to make space for real estate and construction sites.

Species that have evolved for over a million years are driven to extinction because we would like to impress our wedding guests with the content of our soup.

Every time you turn the key of your ignition to drive down to the shop you are changing the climate.

We are acidifying the oceans, melting icecaps and generally wrecking havoc with the very systems that support life on earth.

Of all of this, the change of climate is our biggest concern. Not only do we know what causes the climate crisis, but we know what to do about it.

Not only do we have concrete evidence that what is happening is real, we increasingly know what to expect locally.

Not only do we know what it would take to stop turning our planet into a green house, we can predict with increasing accuracy what it would take to do that…

So why when we are faced with the grim realities of climate change, mass extinction

and eco system collapses do we continue to live our lives with a sense of ignorance and oblivion? Passive observers in an unfolding tragedy. What is it going to take to wake us up, out of our slumber? To engage and empower us to become locally pro active and part of the action?

We need to synergize the global with the local. We need to harness the remarkable technology at our fingertips with a real and intimate engagement of place.

We need to start realizing what is going on around us, not just look but see. Not just talk but do…Getting out from behind our desk…

With the rise of the "Knowledge technology" many of us work in offices behind desks and deal with issues in which we have very little direct face to face experience. This creates a disconnection between our actions and their implications. It makes it difficult for us to understand the significance and the impact of what we do, what our politicians do and who it all effects. Herein lies the breakdown of the limited understanding we have of our planet.

Jon Le Carre once wrote, "the desk is a dangerous place from which to view the world…"

It is time to get out from behind our desk and into the world, to learn about things we wish to understand, change or somehow influence. It is time to make that real and intimate engagement with "place", regardless of how far we physically travel.

On the 5th of November, 17 of us decided to get out from behind our desks to embark on a learning journey. A journey that gave us a revelation about the importance of "Place". A learning journey that was about connecting cross culturally and creating conditions for honest conversation across barriers.

Sometime in between falling asleep after takeoff and being surrounded by a flowing school of barracuda and hump head parrot fish, a disconnection became a connection. "Place" became something other than a satellite image of Google earth on my laptop. "Place" became a revelation of where I am.

The revelation of place made me realize that we are human beings, not human doings. That there is more to life than life behind a desk, making budget, surviving the financial crisis or the rise and fall of oil prices.

The revelation of place made me realize that if we are to change the world and make a significant contribution to the advancement of social capital, we need to experience firsthand the issues and challenges facing the world's communities.

On the 5th day of our trip we paid a visit to the local school on Mabul. There are more than 800 children among the 1,700 inhabitants. A school was established in 1986 which teaches the Malaysian education curriculum. To attend the school, children need the Malaysian ID cards, without this, kids are denied the opportunity to attend.

The school has grown alot since my previous visits. Big colorful murals with marine motives welcome you when you walk through the gates. Little curious faces pop out from every classroom window and door. "How do you do" gets shouted out a 100 times with big smiles, proud to practice the little English they know.

With the help of the Emirates Diving Association, Barraka, Ocean World Productions and 2 of my very good friends that went with me to Mabul in February, we managed to raise enough donations to buy each child in the school a new school bag with stationary for the new school year. In addition to this we also made a donation to the school to build a reading hut for the kids to do their homework and read books.

With big smiles and excitement, the kids opened their stationary and school bags. Education among these kids is a privilidge. Every learning opportunity gets soaked up like a sponge. They want to learn, all they need is the opportunity.

There are between 400 and 600 kids without Malaysian ID cards. Those 'without' can attend 'religious schools' or madrassas which teaches Arabic.

On one of my walks through the village I met Abdul Ghafoor, one of the teachers at the Madrassa. He is a quiet man with intelligent eyes. He has a heart for teaching children. He informed me that the madrassa has been closed for 2 months due to the villagers not having enough money to pay the teachers. The villagers are fishermen and the takings of the catch helps to pay the teachers to teach the children at the madrassa. Due to unsustainable fishing practices, increased cost of fuel and a number of other factors, more and more fishermen are forced to leave for the mainland with the hope to find alternative ways to make a living. Abdul had no choice but to close the madrassa, but he sees the need for education. He has turned his porch into a home school and 3 times a week he teaches about 40 kids on his porch English, Arabic, Maths and readings from the Quaran. He does not get paid, but the parents of the children will help if they can when they can.

During one of our conversations, Abdul asked me if there is anything we could do to help to reopen the Madrassa. He had an idea to try and buy a larger boat with longer range to try and get to areas for a better catch. He is hoping that the small margin of the catch could help to reopen the Madrasssa again.

I could see him think deep about this challenge. When we think capital, we think money. Here was a situation where a community needs capital to secure a future for their children's education. Without capital the doors of the madrassa would stay shut, the books closed and the black board empty.

I was thinking of the contrast when comparing life in Dubai with all its skyscrapers, technology and developments to the 'simple' uncomplicated peace of living on the island. I realized that when comparing the two, only a fragment of this community's wealth was found in economic figures and physical structures.

Within this community there are other forms of capital that is being overlooked every day. This "human capital" is the solution that is actually making up the bulk of these communities assets…

Something caught my eye on the wall behind Abdul Gafoor as I was listening to his stories about the madrassa and the children he loves to teach. On the wall behind him was beautiful calligraphy images and art, verses of the Quran shaped as people in prayer or doves in flight.

It is within these pieces of art that I realized the solution lies to reopen the madrassa to teach the kids.

I asked Abdul if he is able to teach this calligraphy to the chidren. He quickly assured me that art is one of their favorite subjects but that they lacked the art materials for the kids to practice.

After discussing the idea we came up with a plan for Abdul to start teaching the children the calligraphy. As part of the Tawasul project I will work with Majid Khalfan and some of the other volunteers in our group to sponsor the children the art materials to draw their calligraphy on canvases. I agreed to buy these canvases back from them to sell back in Dubai. The proceeds of the art will be reinvested into a project working with WWF Malaysia and the Madrassa to hire more teachers and fund a volunteer program for the UAE Nationals and other nationalities to volunteer at the madrassa to teach English, Environmental Education and Health Education.

In a sustainable framework, human capital reflected in a healthy, skilled, talented, creative and engaged people becomes of even greater value than economic capital.

What became clear to me is that emphasis needs to be placed on communities own resources rather than on its capability to access outside assistance.

It is within this mindset that Tawasul seeks to start a Voluntourism (Volunteer Tourism) Program for volunteers to help communities to discover that they can achieve genuine

development by harnessing their wealth in the form of Human Capital. I would like to see this achieved by developing people skills, strengthening communities social bonds and engaging the communities in grass root conservation efforts to protect and conserve their local environments.

Voluntourism experience gives us a chance to educate ourselves by participating in a travel experience beyond our expectations and offer our help as volunteers, all in an effort to reconnect ourselves into a deeper engagement with "place'.

For more information of how you can get involved, please visit our Tawasul site at: **www.tawasul.ning.com** and join our community.

Tawasul – Reaching out today for a better tomorrow.


Photo by Mahmoud Abu Wardeh


Photo by Mahmoud Abu Wardeh


Photo by Eric Madeja – www.treasure-imagesc.com


Photo by Eric Madeja – www.treasure-imagesc.com

Global Sports Alliance (GSA)

Global Sports Alliance (GSA) was established in 1999 with the goal of making sport a leader in promoting environmental awareness and action in sport. Sport is universal and provides a conduit through which we can affect global change in a way that political and business channels have failed.

The natural environment is often the canvas on which a given sport is played and a degraded environment not only affects the enjoyment of sport, but can also have a profound effect on the health and fitness of the athlete. By focusing the attention of sport enthusiasts worldwide on the need to protect the natural environment, we will generate a global force of more that one billion environmentally aware athletes, or as GSA calls them, "Ecoplayers", that will take action in their sporting and everyday lives.

Alongside "fair play", GSA emphasizes "Ecoplay" (which means to enrich nature and reduce energy and material consumption) as a fundamental part of sportsmanship, and these simple environmental actions, carried out on a global scale, can have a profound impact on protecting the natural environment.

On the professional level, GSA created the 'G-ForSE' website that acts as a news channel and database for environmental action in sport. The website gathers information on environmental action in three categories; sporting goods, sports events and sport facilities. Sporting federations and organizations that are working to reduce the environmental impact of their sport or to use sporting events as a vehicle for promoting awareness, use the site as a channel through which they promote their activities and share information on their initiatives. That information then goes into a database so that other organizations and event producers can learn and imitate these successes.

Every 2 years, GSA and the United Nations Environment Programme (UNEP) co-host the G-ForSE Global Forum that brings the representatives of sporting federations, manufacturers, events, facilities and athletes to share information, consolidate actions and develop fresh initiatives. Forums have been held in Tokyo, Lahore (Pakistan), at the Olympic Museum in Lausanne (Switzerland) and in 2008, in Alicante, Spain to coincide with the launch of event sponsor, Volvo's Ocean Race.

On the local level, GSA has developed a global network in more than 50 countries of local GSA Teams that fly the Ecoflag (a flag that has become a symbol for sport and the environment) at local sports events to raise awareness, while they introduce simple environmental actions to reduce the environmental impact of the event.

GSA also encourages Ecoplayers to 'reduce, reuse and recycle' sporting equipment and has developed a program, called 'Sport-Eco.Net' to support this. One such program shares used (but still usable) sports equipment with developing countries to give kids a sporting chance, and another has redistributed more than 3 million used tennis balls to schools around Japan to fix on the bottom of tables and chairs and dramatically reduce classroom noise.

Combined, GSA's programs are known as the "Ecoflag Movement" and they are coordinated through the GSA World Center in Tokyo.

CONTACT:
NPO Global Sports Alliance (World Center)
1-1-11 Shibuya, Shibuya-ku, Tokyo 150-0002
Tel: 810306419 2900
Fax: 81 9 6419 2877
E-mail: **info@gsa.or.jp**

G-ForSE 2008

An international line up representing sports organizations and federations, international sporting events, the sporting goods industry and related NGO/NPOs, gathered in Alicante, Spain from 4-6 October 2008 for the 5th Global Forum for Sport and Environment (G-ForSE) 2008. Held every two years, this year's Forum focused on the connections between sport and climate change.

Organized by the United Nations Environment Programme (UNEP) and NPO Global Sports Alliance (GSA), G-ForSE 2008 was sponsored by Volvo and held in Alicante in conjunction with the launch of the Volvo Ocean Race.

The first plenary discussion held on the morning of the 4th October focused on opportunities and challenges in greening sports and saw representatives of Beijing 2008, Vancouver 2010, South Africa 2010 and Sochi 2014 outline measures they've incorporated to reduced the impact of their events on the environment. Delegates then spent the afternoon watching the Volvo Ocean Race get underway on a sun-soaked Mediterranean.

The Formal Opening Session of G-ForSE 2008 took place on the morning of the 5th October at the Alicante Congress Palace, with opening speeches from Ms. Teresa Ribera, Secretary of State for Climate Change, Spain; Mr. Leif Johansson, President AB Volvo and CEO Volvo Group; and Mr. Achim Steiner, UNEP's Executive Director.

Sport is played across a diverse range of environments and each presents its own challenges in tackling environmental issues. In the second plenary, the participants heard about the commitment of sport organizations involved in golf, football, Grand Prix and cycling to tackling climate change.

In the afternoon sessions, the presentations looked at the impact of climate change on sports, such as skiing, and how sporting events, both large and small, can offset or reduce their emissions. The final session of the day then turned to the question of 'raising public awareness on the environment and climate change through sport'.

The final plenary held at the Hotel del Alba on the morning of the 6th October looked at solutions for climate change through sport and discussions on the wording of an "Alicante Declaration on Sport and Climate Change" spilled over into the afternoon.

Since the first G-ForSE was held in Tokyo in 2001, the commitment of sport to reducing its impact and raising environmental awareness has made dramatic progress. Most major sporting events now address the environment as a core issue in their preparation and this influence has begun to filter down to smaller and local events. Increasingly we see sporting facilities introducing measures to reduce their impact, both during construction and while hosting events. The sporting goods industry has also taken steps and is developing innovative ways to reduce energy and material consumption that not only saves resources, but reduces costs.

For more information on G-ForSE 2008, the participants, the draft declaration and to download individual presentations, see the UNEP website at: **http://www.unep.org/sport_env/Activities/Gs4E08.asp**
For enquiries regarding G-ForSE 2008 contact: **info@gsa.or.jp**

LINKS:
G-ForSE website: **http://www.g-forse.com/**
NPO Global Sports Alliance (GSA): **http://www.gsa-world.org**

IMAGINE **SIPADAN**

FEATURE AND PHOTOGRAPHY **RAMA CHAKAKI**

The preparations for our trip commenced four weeks prior to departure. Ernst, our trip organizer and dive instructor setup weekly meetings. The purpose was to review National Geographic Fish & Coral ID coursework, introduce team members to each other and to present film footage on the destination. Despite the beauty of the scenery in the film footage, non of us could have been adequately prepared for what we saw and felt!

Ernst declared "you feel you don't really know the people around you, even though some of you went diving together in Dubai, by the end of the trip, you will all be good friends". Looking around the room, I found that a challenging thought. I felt I had little in common with the seemingly pleasant strangers. A bouquet of nationalities, French, Emirate, British, Scottish, Cypriot-Jamaican, Palestinian-Irish, Lebanese, American and South African, paralleled by a diversity of professions such as architects, security engineers, fire dancers, legal secretaries, computer sales professionals and the list goes on. Even the personalities seemed extremely different! The only common denominator was our appreciation for marine life and our love for diving.

The trip was long. A six hour plane ride, followed by two other 2 hour rides, then a 2 hour bus ride, and finally a 1 hour boat ride. We really were going to the other end of the earth! But we were prepared…dive gear, dive insurance, marine life education and most importantly enough cameras and film to transform Sipadan into an underwater hollywood! We arrived at Mabul, a small island of a few thousand inhabitants, some Malay, others from neighboring Philippine islands. We stayed at the Borneo Divers Resort, one of three resorts on the island. Mr. Clement Lee, the Chairman of Borneo Divers has been in the business for over 20 years and a great lover of all marine life and an acclaimed conservation activist. Clement works closely with local conservation groups, and communities to ensure the beauty of Mabul and Sipadan is sustained and enjoyed by many. The resort offered the necessary resources to provide for a great dive experience. Well trained and friendly dive masters, boats, dive equipment, and a program ensuring daily passes to dive in Sipadan.

I find diving a peaceful experience that takes me away from the noise pollution in urban life. While I've snorkeled in the Caribbean and Red Sea, my only diving experience was in Musandam. It is beautiful. But imagine a 600 meter drop, imagine gliding alongside a wall of hanging reef gardens, imagine 50 meter visibility, imagine being surrounded by schools of barracuda, white tip sharks, sea turtles, Napoleon wrasses! Imagine seeing Nudibranches, pigmy sea-horses, frog fish, crocodile fish, squid, spanish dancers all in one dive! Imagine riding a gentle current among thousands of colorful brilliantly shaped peaceful species. For 7 days, we had three to four dives a day at Barracuda point, Lobster Wall, Hanging Gardens, Ray Point, Eel Garden, White Tip Avenue, and Turtle Patch. To say we were overwhelmed with beauty would be an understatement.

Diving in Sipadan and Mabul alone would have made this trip memorable for life. But Ernst gave us more. Two years back, Ernst started Tawasul, a program designed to connect UAE youths to marine ecology, teach them conservation and enable them to support marine communities around the world. With that end in mind, our trip consisted of a voluntourism (volunteer tourism) component; we had raised sufficient funds to deliver desperately needed school supplies to the local village. We met with local village leaders and teachers and the WWF to understand the local community challenges and requirements. We spent time with children in home schools singing, teaching and capturing the beauty of their smiles in our hearts and minds.

We returnedto Dubai with plans to return to Sipadan and Mabul. We are planning to support their local communities through eco-education, health education and eco-tourism capacity building. Ernst is training 70+ dubai school children on diving and preparing the next trip to Sipadan. You can help us achieve our goals by visiting the Tawasul site at **tawasul.ning.com** and joining our community.

"In the end,we will conserve only what we love, we will love only what we understand and we will understand only what we are taught." *Baba Dioum -Senegalese Conservationist*

THE MAGIC OF MALDIVES

FEATURE AND PHOTOGRAPHY **YUKI OCHIAI**

Best captured on a JVC HD Everio Camcorder with Marine Case.

Tour Operator: Eagle Ray Live Aboard
Products Used: HD Everio Camcorder GZ – HD40 (120GB) and Marine Case WR – MG200

When it comes to diving, I can safely claim that I am more passionate about it than any other sport or hobby in the world. Like any passionate diver, I can't resist any good opportunity to go to different places for an exhilarating experience.

This year in September, I decided to pack my bags and the diving equipment and head to the Maldives. I made sure I packed my JVC HD Everio Camcorder and Marine Case along with my equipment so that I could bring back memories that would last a lifetime.

I was also lucky to find Eagle Ray Live Aboard, a company that organized my complete diving cruise. I must say that my experience with Eagle Ray Live Aboard surpassed my expectations on all fronts.

Divers who have not visited Maldives should know that it is located in the Indian Ocean and consists of 1,192 beautiful yet small low lying coral islands. Most of these islands are surrounded by white sandy beaches. One of the closest diving destinations from Dubai, Maldives is every diver's paradise. Loved by visitors for its charming natural beauty, the islands are surrounded by turquoise waters and reefs with an abundance of diverse marine life which is best enjoyed through a diving cruise. As far as I am concerned, Maldives is an ideal diving destination and HD Everio Camcorder is quite easily my best Diving Buddy for capturing and enjoying these precious moments.

Mantas, sting rays, turtles, whale sharks and various types of corals add vitality to the marine environment while multi-coloured fish enriched my unique diving experience. In addition to the breathtaking underwater beauty of Maldives, I also witnessed some inhabited islands where culture and tradition has thrived for centuries.

Every diving moment under the turquoise, tranquil waters was a refreshing one. I spent long hours amidst the rich diversity of marine

life and captured the experience on the HD Everio Camcorder. The long time recording feature of the camcorder helped me in capturing marine life for longer durations, without missing out on the unique, one-time wonders of the diving cruise. In addition to moving images, I also managed to take lots of still pictures even though I could have taken up to 9,999 pictures with my HD Everio Camcorder.

Since the islands are scattered over a large area, some of the best diving is found inside and outside the Atoll's lagoons and in the channels in between. With an HD Everio camcorder, I had no hassle of changing tapes, and rare sightings could be captured and preserved without the least interruption.

The Hard Disk Drive of the HD Everio Camcorder ensured non-stop recording of marine life at the press of a button.

My six- day diving cruise trip consisted of visits to many different islands and while each day was an eye-opener and every island was as good as the other one; I managed to keep a diary of each day along with the fish I saw.

19th, 20th and 21st September
Exploring Baa Atoll, Manta Soup Point
Located just south of the Baa Atoll and to the north of the Male Atoll, a total of 50 islands make up Baa Atoll. The presence of whale sharks and mantas in the surrounding waters provides amazing snorkeling and diving opportunities. The technologically advanced

HD Everio Camcorder enabled split-second recording, so I could capture quick-time actions as and when they occurred. Armed with an Everio, capturing the fastest moving fish was guaranteed.

22nd September

Meeting the Sharks at Rasdo Channel

In the channels, I explored caves, caverns and overhangs where soft corals proliferated. Colourful sponges, invertebrates and gorgonian fans rioted in the nutrient rich water. Gray Leaf Sharks, Eagle Rays and tuna which are renowned for being super quick and difficult to capture were a sure find. The Zoom Lever on the Everio was the perfect device to get up close with these magnificent creatures.

23rd September

Spot Hammer Head Sharks at the Rasdo Ridge and Rasdo Atoll

The elusive Hammer Head Shark was a rare find. Spotting one can be exhilarating for any diver. The instant recording feature of the HD Everio Camcorder enabled quick recording, even though appearance of these shy creatures was brief. Even better, the HD Everio Camcorder provided me the flexibility of going underwater up to 40 meters, as against the standard 30 meters with ordinary camcorders.

24th September

Discovering Dolphins and Napoleons at Dido Goni, Fish Head and Ali Atoll

To discover marine life at its best, the diver must have well designed, easy to carry equipment. In my case, I was very well equipped. The HD Everio, designed for effortless handling was just perfect. Small and compact, I carried it with ease.

25th September

Whale of a time with Whale Sharks at Holiday Bai, Gethi Tila and Migili Corner

The diver's eye is always challenged with new and interesting sights. My Everio Diving Buddy came in very handy to support and capture these rare under water moments, which I enjoyed in the present and recorded for the future.

If you are planning to go diving in the Maldives, make sure to carry the Everio Diving Buddy with you. This will ensure ease of carrying, convenience of long time recording and the flexibility of recording up to 40 meters under water. Enjoy the incredible marine experience and share it with friends and family long after you have returned from the magical islands. With my footage, I can go back whenever I want!

For Marine Video recorded during this cruise please contact: **info@jvcgulf.com**

(Formats available: AVCHD & MPEG2 Full HD)

DIVING **GONDWANALAND**
THE **GRANITE ISLES** OF SEYCHELLES

FEATURE **GLYNN BURRIDGE** PHOTOGRAPHY **DR. PEDRO VIEYRA**

Many countries worldwide lay claim to extraordinary diving opportunities showcasing prolific marine life and offering wondrous underwater adventures for divers who increasingly flock to these destinations in droves, benefiting from the low-cost diving packages on offer.

In the world we live in, where travel has become something we take for granted and the consequences of the mass transportation of people are becoming ever more apparent in terms of overcrowded, jaded destinations, many people are increasingly searching for something – and somewhere – different. A place for the discerning traveller, far away from the madding crowd and still wonderfully intact in terms of their ecology and breathtaking, pristine, natural beauty – the Seychelles islands.

The 115 islands of the Seychelles archipelago have been the stuff of legend ever since the first mariners ventured into the western Indian Ocean to discover an array of islands so beautiful that certain of them committed what they saw to their journals. They described imposing mountains covered with lush, virgin forests where giant tortoises roamed and where fish and fowl appeared plentiful. Some named them the Islands of Abundance where, no doubt, they came ashore to replenish their stores and to rest bodies weary from months of seafaring.

Today, in a world that is becoming grimier by the day, it is both amazing and hugely refreshing to see how little has changed on these islands which are regarded by many as the most beautiful on the planet. Seemingly lost in time in their secluded corner of the western Indian Ocean, and surrounded by no less than 1,400,000 sq. km of exclusive economic zone, the Seychelles Islands are only now awakening from their slumber of ages. After a millennia of solitude they are still a sanctuary – as much for species of endemic flora and fauna among which can be counted some of the rarest species on earth as for modern travellers grown tired of the mundane elsewhere.

This is particularly true of diving in Seychelles and a very far cry indeed from the crowded dive boats and frenetic dive schedules of other popular destinations. With a population of only 86,000 and a mere 160,000 visitors a year, Seychelles can afford to adopt a more leisurely philosophy to its tourism which is altogether more authentic, laid-back and which accords more soulfully with the natural rhythms of island living.

As a diving destination, Seychelles is blessed with an almost year-round diving season on islands which lie outside of the cyclone belt, warm seas offering, very often, excellent visibility and a plethora of marine life. Diving these islands is special, invigorating and yet wonderfully relaxed and, as with everything in Seychelles, there is time to enjoy the many wonders that you will undoubtedly come across.

Yet, there is another reason why diving these islands is a once-in-a-lifetime experience and that is because the Seychelles Islands straddle, uniquely, two very different underwater worlds: that of your traditional coral reef, but also that of the granite formations of the Inner Islands – the most ancient, mid-oceanic granite isles on earth.

It is here, among these giant underwater monoliths which date back to the very dawn of time that diving in Seychelles becomes truly different, spectacular and exceptional. Standing as they have for millenniums with their primeval mass in the ocean, these timeless, magnificently-shaped, granite edifices have been the refuge and hunting grounds of successive generations of marine creatures dating back to prehistoric times. As such, today, they are the well-established habitats for a wide diversity of marine life which will delight the diver, both novice and aficionado alike, with cavalcades of colourful inhabitants.

Able to withstand the ravages of El Nino which was responsible for the destruction of so many coral reefs worldwide, the granite formations of Seychelles' Inner Islands continue to provide a solid platform for prospering populations of fish, crustaceans and corals. Contorted over millions of years by the immense forces of nature, they have been transformed, in some places, into towering granite pillars or horizontal Jurassic slabs and, in others, gouged into spectacular caves, canals and swim-throughs which are as memorable for their sheer architectural splendour as for their populations of underwater inhabitants.

Marine life flocks to these ancient granite formations, typically, in the form of three types of fusilier fish: yellow-back, lunar and neon which can sometimes be seen migrating in their hundreds. Parrotfish, groupers and snappers are in abundance along with such pelagics as dog-tooth tuna, sailfish and mantas (Mobulas). Although spotting many of the latter is a question of being at the right place at the right time. Spotted eagle rays can often be seen gliding across the granite sea-scapes like gilded alien spacecraft in, sometimes, large formations. Moray eels seem to find the granite crevasses ideal as hiding places from which to spring upon unsuspecting prey while spiny lobsters appear to relish the protection they offer. At such places as Maryanne Island near Praslin and Shark Point off Baie Lazare, healthy shark populations cruise in numbers and then, of course, there are the perennial turtles. Colonies of coral seem still to thrive in places among the granite boulders where there is little or no current, alongside colonies of shrimps, crabs, clams and oysters while, on night dives, nudibranches sometimes flicker eerily in the half-light. Whale sharks are also visitors to these waters, charming onlookers with the graceful meanderings of their seasonal migration.

The unique underwater world of Seychelles' granite islands is where time appears to have stood still. It is as if these isles have become cocoons – allowing ecosystems to thrive in places still little visited by man, for he and, hopefully, successive generations of visitors and locals alike to experience and enjoy.

A TRIP TO AL SAWADI

OMAN OCTOBER 2008

ENCOUNTER WITH A WHALE SHARK

FEATURE **TONY GALUSTIAN** PHOTOGRAPHY **BRIAN MEREDITH**

3rd of October 2008 on a Friday morning, we took a boat ride from Al Sawadi Beach Resort in Oman. Which in itself is in need of a major renovation I would say. However the dive centre in the resort is run by a bunch of really nice people, namely Fatima, Saeed and Roshan who always make the dive trips great fun through their excellent knowledge of the different dive sites.

That particular morning we had a nice, calm, flat sea. The boat ride took us approximately 40 minutes to arrive to the dive site called "the Garden of Eden" which is part of the Dymaniyat Islands.

As we reached the dive site, our group started to kit up, ready to start the exploration of this magnificent under-water world which is full of the most amazing, and colourful marine life.

The vizability was around 15m and there was a lot to see. The black sting rays were quite a sight, spanning over 2 to 3m. There were a number of big Honeycomb moray eels stretching over a meter and a half, and most of all the big Leopard sharks were quite a treat to enjoy the dive.

A school of fusiliers filled the background to add more colour and excitement to this wonderful dive experience.

The dive took us about 40 minutes at a maximum depth of around 19m. The time had come for the 3 minute stop and ascent back up to the boat.

As we all started taking off our gear and continued exchanging words with the excitement of the dive still fresh in our minds…we Suddenly heard someone (Saeed) calling out WHALE SHARK…WHALE SHARK. There was a moment of panic and confusion on the boat and all I could hear was, "Hit the water guys! Go, go, go!". Everyone of us just about grabbed the bare minimum (masks and fins) and jumped right back in.

This baby Shark was approximately 4m in length and it was all over us for about 20 minutes. We tried not to touch it as to not scare it away, but this was proving to be a very difficult task since it seemed very interested in our company and would not leave us alone.

Those 20 minutes of that whale shark encounter were the best 20 minutes of my diving experience which I will keep with me and cherish forever. No words can express the shear excitement of such an intimate experience at that moment in time with this wonderful and gentle creature.

"THOSE 20 MINUTES OF THAT WHALE SHARK ENCOUNTER WERE THE BEST 20 MINUTES OF MY DIVING EXPERIENCE"

EAR **BAROTRAUMAS** IN DIVERS

FEATURE **AL FONSO BOLOGNINI MD**

The air cavaties of the skull and in particular those of the ears are often affected by diving incidents. Braotrauma means physical damage to tissues caused by variations in ambient pressure. Barotrauma is also known as squeeze or a pressure injury. Barotrauma affects the air spaces only since liquids are incompressible and are not subject to variations in volume in response to changes in pressure. Boyle's Law states that at a constant temperature the volume of a given mass of gas varies inversely with the absolute pressure, while the density of a gas varies directly.

$$P1\,V1 = P2\,V2$$

In practice, if we take the example of a man at the surface of the sea, the volume of air contained in his middle ear would be approximately 1.5 ml. If we suppose that he dives underwater to 10 metres, at a constant temperature, Boyle's Law tells us that the volume of air would be reduced exactly by half.

P1 = 1 Bar; V1 = 1.5 ml; P2 = 2 Bar;
V2 = P1 *V1/P2

SUBSTITUTING WE GET:
V2 = 1 Bar * 1.5 ml/2 Bar = 0.75 ml

We shall see how this small change in volume can also have very serious effects on the ears that can lead in extreme cases to dangerous and life-threatening situations, due to vertigo, vomiting, inhalation of water and drowning. Variations in the volume of gas in the first ten metres are thus particularly risky for barotrauma injuries.

Ear barotraumas can be classified into different types based on topographic criteria, as shown in Figure 1:
- External ear barotrauma
- Middle ear barotrauma
- Inner ear barotrauma

Barotraumas can also be classified according to the pathogenetic mechanims that cause them:
- Barotrauma as a result of the contraction of gas volume that causes damage with an implosive mechanism
- Barotrauma as a result of the expansion of gas volume that causes damage by an explosive mechanism.

In turn barotraumas caused by gas volume contraction (implosive mechanism) can be further divided according to whether they happen during the descent phase of a dive, or after surfacing, as in the case of diving with Oxygen rebreathers where they can be "postponed" appearing several hours after the dive (middle ear oxygen absorption syndrome). Gas expansion injuries (explosive mechanism), on the other hand are those that happen on the ascent, as the ambient pressure decreases (synonyms: reverse blockage or reverse squeeze).

PATHOGENETIC CLASSIFICATION OF EAR BAROTRAUMAS

A) Due to gas volume contraction
1. **DURING THE DESCENT** (Outer, middle, inner ear) (*Immediate batotrauma*)
2. **AFTER SURFACING** (Middle Ear) (Delayed Barotrauma) (Middle Ear O_2 absorption syndrome)

B) Due to gas volume expansion
1. **On ascent** (outer, middle, inner ear) (*Delayed Barotrauma*)

It is important to note that barotrauma will not normally occur in divers who have normal anatomy and physiology and who follow appropriate diving procedures. Almost always in clinical practice it evolves that the patient recalls that there was a problem, often minor before diving, that the diver generally plays down, for example a common cold.

OUTER EAR BAROTRAUMA ON DESCENT

In normal conditions the diameter of the external auditory canal is such that it instantly compensates ambient pressure.

There are however some ways that the external auditory canal can become blocked:
a) Plug of cerumen (earwax) obstructing the duct
b) Suit hood too tight
c) Ear plugs used incorrectly
d) Otitis externa ("swimmer's ear") with inflammatory stenosis (narrowing) of the canal
e) Mask strap too tight around the ears

In these circumstances the pressure on the outer ear cannot equalise with the ambient pressure. During the descent thus a relative vacuum develops in the outer ear between the blockage and the middle ear, in comparison to the pressure in the middle ear.

If this persists for several minutes, oedema and petechial haemorrhage can happen in the part of the canal affected and the tympanic membrane and middle ear. In more serious cases serous-sanguineous bubbles can form that can burst and produce a large haemorrhage from the auditory canal (otorrhagia). The membrane can become perforated in both gas contraction barotraumas that arise with an implosive mechanism, as well as in gas expansion barotraumas caused by an explosive mechanism. In turn gas contraction barotraumas can be subdivided according to whether they happen while diving during the descent, or after surfacing, as in the case of diving with oxygen rebreathers.
The symptoms are acute pain on descent, loss of hearing, vertigo, nausea and otorrhagia.

Treatment – apply antibiotic and steroid preparations locally and clean the canal correctly.

Prevention – remove any plugs of ear wax obstructing the canals; avoid wearing a diving suid hood that is too tight or make holes in the hood over the ears; avoid using ear plugs unless advised by a physician and avoid diving if you have an ear infection.

MIDDLE EAR BAROTRAUMA ON DESCENT

This is the most common diving injury encountered by divers and occurs as a direct consequence of failing to equalise the pressure in the middle ear with the ambient pressure via the Eustachian tube.

The tension in the ear can be felt from 2 metres when the volume of gas within the middle ear is reduced by 20%. Gradually, as the depth increases, if the diver fails to equalise, the tympanic membrane will become drawn inward, accompanied by pain, hyperaemia and oedema of the mucosa of the middle ear with possible extravasation of blood (blood becoming forced into the middle ear cavity) until the tympanic membrance becomes ruptured. There are five different grades of severity of tympanic membrane barotrauma according to a clinical scale (Teed scale, Figure 3).

THERE ARE TWO MAIN CAUSES:

Illness affecting the upper airways that obstruct the Eustachian tube and causes improper or delayed equalisation.

The first includes infectious rhinitis (inflammation of the nasal mucous membranes) and allergic rhinopathy (diseas or malformation of the nose), consumption of alcohol causing nasal congestion, massive sinonasal polyposis, large septal deviation, smoking cigarettes, using beta-blockers and parasympathetic mimetic drugs.

The symptoms are initially a sensation of pressure in the ear that quickly becomes very sharp if the descent continues. The pain is generally severe and deters the diver from going down any deeper. In the case of tympanic membrane rupture there is immediate relief of the pain and equalisation of the pressure. The middle ear then becomes flooded by water, which is at a lower temperature than the

body temperature. This will ultimately cause a caloric stimulation of the semi-circular canals with onset of sudden vertigo with a sensation of spinning (objective vertigo), nausea and vomiting. These are all very dangerious symptoms in the water, due to the risk of water inhalation and drowning. After surfacing transmissive hearing loss will be exhibited for medium and low tones with tinnitus caused by the rupture of the tymanic membrane.

Treatment – Ensure prompt treatment by as Ear, Nose and Throat specialist.

In order to prevent this unpleasant injury it is important to equalise frequently from the very early stages of a dive in order to prevent closure of the tube that occurs due to the collapse of the walls at a depth of 3-4 metres. In the case of difficulty equalising it is important to stay calm and ascend a few metres in order to try to equalise the pressure again. Also in this case it's important to be in good health when diving and avoid diving whenever you have a cold or any of the predisposing conditions mentioned.

Also, avoid using nasal decongestants since after an initial decongestant effect, the effect can wear off and nasal congestion can occur during the dive.

MIDDLE EAR BAROTRAUMA ON ASCENT

This injury, known by divers as a reverse blockage (inverted squeeze), occurs as a result of the expansion of gas in the middle ear due to a reduction in ambient pressue that starts to happen as soon as the ascent begins. Normally during the ascent phase divers know well that they do not have to equalise because the excess volume of gas in the middle ear is passively exhaled with the spontaneous opening of the Eustachian tube and equalisation occurs according to the ambient pressure gradient. An obstructed Eusachian tube is the primary pathogenetic event leading to this injury, which is, in general more serious than the corresponding barotrauma on descent. In fact, the increase in pressure of the midle ear causes the tympanic membrane to flex outwards immediately causing it to rupture on descent. The overpressure in the middle ear can affect the zone of the two windows (described below), two points of low resistance, and therefore they transmit the increase in pressure to the inner ear causing alternobaric vertigo. Alternobaric vertigo is a temporary vestibular dysfunction of asymmetric stimulation of the inner ear. It would be caused by a monolateral increase in the middle ear on ascent (it can also be caused by forced equalisation using the Valsalva technique) with stimulation of the labyrinth and onset of objective vertigo that diminishes promptly on going down a few metres. In the case of rupture of the window, an effusion of labyrinth fluid into the middle ear occurs with a full labyrinth fistula. The eventual result of this last occurence is the onset of hearing loss and sudden serious vertigo, that generally happens on ascent or on reaching the surface (it is difficult to make differential diagnosis from the otologic (ear-related) manifestations of EGA that appear in the last few metres or on reaching the surface.

PERILYMPHATIC FISTULA

In more severe cases barotrauma of the middle and inner ear can cause a rupture of the round window which is closed by the secondary tympanic membrane or of the oval window which is closed by the footplate of the stapes with effusion of labyrinth fluid and immediate disturbances of the cochleovestibular receptor. The symptoms are loss of hearing, tinnisus and violent objective vertigo. Sudden onset in the last few metres or on reaching the surface with this injury make it difficult to differentiate from the ear-related manifestations of AGE which behave in a similar way.

Treatment – ensure prompt treatment by an Ear, Nose and Throat specialist. In cases of perilymphatic fistula the victim should be hospitalised as soon as possible as for inner ear barotrauma.

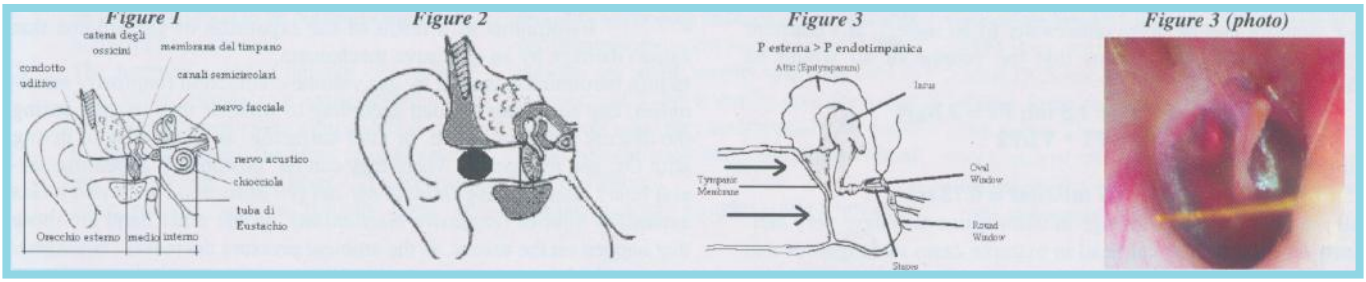
Prevention – to prevent this avoid equalising at all during the ascent. In the case of a cold or nasal problems it can be difficult to clear the ears and the unfortunate person can be struck by a reverse blockage, thus it is important to avoid diving in these situations. If you notice pain in the ears on ascent, stop, go down a few metres or until whatever depth relieves the pain and try again. There is no other way of clearing the ears during an ascent. The Valsalva technique would only further increase the pressure in the ears.

INNER EAR BAROTRAUMA DURING DESCENT AND ASCENT

The inner ear is formed by a membranous system containing liquids (cochlea) that is surrounded by bone. By definition liquids are not subject to variations in volume caused by variations in pressure. The middle ear with the ossicular chain transmits the sound signal to the inner ear through a communication path which is closed by the footplate of the stapes (oval window), the acoustic energy is thus transmitted to the labyrinth fluid through the generation of movement of the ciliated cells which transfrom this wave into an electric signal that can be sent to the auditory cortext from the acoustic nerve. The pressure of the endolymph fluid is compensated by another opening in the middle ear called the round window and is closed by the secondary tympanic membrane or Scarpa's membrane. The stirrup presses onto the oval window, compresses the endolymph and the secondary membrane flexes outward into the middle ear compensating for the increase in pressure. The opposite happens when the stirrup retracts. It is as a result of these relationsips with the middle ear that variations in gas volume in the middle ear can transmit to the inner ear causing the physical rupture of the windows with effusion of perilymph (labyrinth fistula), rupture of the vestibular membrane or haemorrhage inside the cochlea. The atogenetic mechanism during descent is possible with a mechanism of rapid increase in pressure capable of causing rupture of the window(s) during a forceful Valsalva manoeuvre, or in the case of negative middle ear pressure that causes outward flexing and rupture of the round windown or dislocation of the footplace of the stapes with effusion of perilymph (oval window fistula). On ascent the mechanism of action is overpressure of the middle ear due to an obstructed Eustachian tube with transitory vertigo in mild forms and severe vertigo with hearing loss and tinnitus in the case of fistula. In cases of suspected fistula, the patient should be immediately hospitalised due to the possibility of surgical closure of the communication between the inner ear and the middle ear. Treatment and prevention are identical to that for reverse blockage.

MIDDLE EAR OXYGEN ABSORPTION SYNDROME

There is a little known clinical barotrauma profile that can complicate prolonged dives using closed circuit Oxygen rebreathers (ARO), or recompression treatment using long durations oxygen tables. The characteristics of this barotrauma is that it presents after time has elapsed after surfacing (delayed barotrauma). After an oxygen saturation dive, the O_2 concentration in the diver's middle ear will be close to 100%. As O_2 is used in metabolism it becomes reabsorbed by the respitory epithelium of the middle ear, with the result that it creates negative pressure in the middle ear that can create negative intratympanic pressure with effusion of serous fluid.



The symptoms are acute pain and a feeling of fullness in the ear.

Treatment – to treat use nasal decongestants, analgesics, antibiotics and antistaminics, depending on the state and specialist advice.

Prevention – instruct the diver to carry out some equalisation techniques in the air after oxygen saturation dives to wash out the oxygen accumulated in the middle ear. It is contraindicated to sleep after these dives in that during sleep the opening of the Eustachian tube is slower compared to that when a person is awake with the risk of re-absorption of the O_2 contained in the middle ear and subsequent barotrauma.

CONCLUSION

Diving activities whether using scuba equipment or freediving is one of the most rewarding and wholesome sports from the psychological and physical points of view. It is important that divers understand the importance of correct dive training that relies on thorough and expert teaching methods and be aware that training and prevention is the best treatment for diving incidents. In particular barotraumas are the most frequent among diving emergencies and most of the time they happen to expert divers who are not at 100% of their fitness. These simple rules can help the less experienced diver to prevent these problems.

1) Avoid diving with a blocked nose caused by infection or allegies.
2) At the first sign of pain in the ears, if on descent, ascend a couple of metres, and try again gently, perhaps changing the descent posture. If you are still having problems abort the dive and exit from the water. In the case of ear pain during ascent, don't equalise, go down a metre and try again while making a wallowing motion or extending the head slightly, in order to allow the Eustachian tube to open passively. Stay calm.
3) Always dive with a careful diving companion who you get on well with.
4) Don't use decongestants or medicines before diving without medical approval. The "theraeutic" effect of rinsing the nasal cavities with seawater before diving is the best decongestant and mucolytic for divers.
5) Don't drink alcohol the evening before diving it can cause congestion of the nasal mucous membrane.
6) In order to equalise the ears learn and use the Frenzel method (also known as the Marcante-Odaglia method) technique instead of the Valsalva one.
7) Simple dives in a few metres of water, perhaps in order to dislodge an anchor or to recover objects fallen overboar are the most dangerous in that they can be conducted spontaneously without the necessary concentration.
8) Select and check your own equipment carefully avoiding hoods and mask straps that are too tight.
9)Have a medical check every year to ensure that you are fit to dive.

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ANSWERS TO **SHARK QUIZ**

1. d. Sharks first evolved around 400 million years ago – that's 200 million years before dinosaurs walked the earth! These early sharks were, in many ways, very similar to their modern relatives. For example, they too had skeletons made of cartilage, multiple gill slits, and replaceable teeth. Scientists have identified over 2,000 species of shark fossils to date!

2. a. The largest shark in the world is the Whale Shark, which can grow up to 60 feet (18m) long! Still, this giant is no meat-eating machine: it feeds on tiny plankton.

3. c. The dwarf shark is about six inches (15cm) long and weighs less than a pound (450g).

4. b. Sharks do not have swim bladders (found in other fish) so lack natural buoyancy. If they stop swimming they sink to the bottom.

5. b. While some sharks must swim continuously to pass oxygen-filled water through their gills, other sharks can "breathe" while remaining stationary in the water. Still, no sharks sleep like humans do. Instead, they experience varying degrees of activity and rest.

6. a. In addition to the five senses that humans have, sharks have another powerful "sixth sense". They can detect electrical and magnetic fields through special, jelly-filled canals in their snouts. This sense enables them to detect prey and navigate their long migrations using the earth's magnetic fields. In addition, they can see light 10 times dimmer than humans can see, and smell one part blood in ten billion parts water!

7. b. While most sharks are cold-blooded, certain species, including the Great White Shark, can raise their body temperatures above that of the surrounding water. This enables them to move their muscles three times faster, and to be more successful hunters in the cooler seas of the world. These warm-bodied sharks pay a hefty price for their speed. They must eat 10 times more food than cold-bodied sharks, and require energy-rich, large prey.

8. b. Most of the sharks eat about 2% of its body weight per day – slightly less than a human eats.

9. d. Sharks can replace lost teeth in as little as 24 hours. The number of teeth are infinite, but it is known that some sharks use up to 3,000 teeth in a lifetime! The Megamouth Shark has roughly 100 rows of tiny, numerous teeth in each jaw (only 3 rows are functional). Since shark skeletons are made of cartilage rather than bone, they decompose rather quickly. Fortunately, their numerous teeth transform into long-lived fossils, providing scientists with information about their evolution.

10. d. Of the 35 species of sharks known to have attacked man, Great White, Tiger, and Bull Sharks are the most dangerous. Still, each year there are only about 10 shark-attack fatalities around the world – more humans are killed by lightning strikes and bee stings! Shark attacks have become more frequent over the past few decades because humans are flocking to coastal waters, not because sharks are becoming more aggressive.

11. d. The IUCN lists 79 species of sharks as imperilled, due to over-fishing, hunting for their fins, meat, and oil, and habitat destruction. Many sharks are considered "apex predators", meaning that they have no natural predators, and that they are at the top of their habitat's food chain. Apex predators play a crucial role in maintaining the health and balance of an ecosystem by keeping other animal populations in check.

12. a. Professor Aronnax in Jules Verne's Twenty Thousand Leagues Under the Sea said he felt more like a prospective victim than a naturalist while observing the "monstrous fireflies." While the book, written in 1870, doesn't name great whites directly, the vivid description of the fictional sharks encountered has been determined to be of none other than Carcharodon carcharias, the Great White Shark.

FEATURED **CREATURE**

UNDULATED **MORAY**

(Gymnothorax undulates)

FEATURE **RITA BENTO**

EDA accepts text and photo contributions for this page.

FAST FACTS

- Occurs in a depth range between 1 and 30m
- A common species on reef flats among rocks, rubble, or debris and also occurs in lagoons and seaward reefs
- Nocturnal species that feeds on fishes, octopi, and probably crustaceans
- Head variable, often yellowish, but also brown, grey or whitish
- Not in IUCN Red List

FUN FACTS

- Their length is up to 1.5 m
- Reported to be an aggressive species and prone to bite
- Used in Chinese medicine
- Reports of ciguatera poisoning (toxin)
- In arabic in call Musaf a'raqta

UPCOMING **EVENTS**

2009

Check for the 2009 upcoming events on our website calendar.

NOTICES

INTRODUCING EDA'S NEW **WEBSITE**

One has to say, a new website was truly well overdue. And here it is. EDA's very own brand spanking new site. Enjoy!

http://emiratesdiving.com/

NEW EDA STAFF MEMBER **REEMA ABBAS**

Reema is a UAE national who has an insatiable passion for life. Her interests range from painting and outdoor activities, to traveling and exploring different cultures. She has back-packed across Asia, and even trekked to Mount Everest Base Camp in Tibet which is 5200m above sea level. To add to her thrills in life, Reema is also a certified open water diver, she quotes 'Diving gives you a feeling of exhilaration as well as tranquility' Reema considers herself lucky to live in a country where you are always near the sea, which is an important aspect in the UAE culture. Her love for the earth and her spirituality has led her to discover the importance of our environment, people and bridging the gap of different cultures existing around us.

EDA
جمعية الإمارات للغوص
Emirates Diving Association

MISSION STATEMENT

To conserve, protect and restore the U.A.E. 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.

CONTACT DETAILS

Emirates Diving Association
Heritage & Diving Village
Shindaga Area
P.O. Box: 33220
Dubai, UAE

Tel: +971 4 393 9390
Fax: +971 4 393 9391
Email: diving@emiratesdiving.com, projects@emiratesdiving.com
Website: http://emiratesdiving.com/

THE MOST DANGEROUS SPECIES IN THE SEA

The plastic demijohn
Origin: city streets, beaches and gullies.
Behaviour: can be ingested by animals, causing serious poisoning.
Average lifespan: 400 to 600 years.

The battery
Origin: city streets, gullies and boats.
Behaviour: the liquids they discharge are highly poisonous.
Average lifespan: thousands of years.

The carton
Origin: beaches and city streets.
Behaviour: has an abrasive effect on organisms growing on the sea bed.
Average lifespan: 25 to 50 years.

The paper bag
Origin: beaches and boats.
Behaviour: has a serious effect on the digestion of certain sea creatures.
Average lifespan: 4 weeks.

The tin can
Origin: city streets and beaches.
Behaviour: causes cuts and lesions to marine fauna and swimmers.
Average lifespan: 200 to 500 years.

The plastic bottle
Origin: beaches, city streets and boats.
Behaviour: causes serious damage to marine flora and fauna.
Average lifespan: 300 to 500 years.

The cigarette stub
Origin: toilets, beaches, gullies and city streets.
Behaviour: impedes the digestion of certain animals.
Average lifespan: 10 years.

The plastic ring
Origin: beaches and city streets.
Behaviour: traps marine organisms, causing serious injuries or death.
Average lifespan: 450 years.

The plastic bag
Origin: city streets, beaches and boats.
Behaviour: as it resembles a jellyfish, it is eaten by other animals and poisons them.
Average lifespan: 35 to 60 years.

The bottle cap
Origin: city streets, beaches and boats.
Behaviour: causes digestive problems to marine fauna.
Average lifespan: 300 years.

Pieces of plastic
Origin: factories and city streets.
Behaviour: can be eaten by other animals and poisons them.
Average lifespan: hundreds of years, depending on the quantity.

The food wrapper
Origin: beaches and city streets.
Behaviour: causes serious damage to marine flora and fauna.
Average lifespan: 20 to 30 years

Aluminium foil
Origin: beaches, streets and gullies.
Behaviour: can envelop certain organisms and prevent them from feeding.
Average lifespan: 5 years

Diesel and engine oil
Origin: boats.
Behaviour: its toxicity destroys the marine habitat wherever it reaches.
Average lifespan: depends on the amount discharged.

The glass bottle
Origin: city streets, beaches and boats.
Behaviour: causes cuts and serious injuries to swimmers and marine fauna.
Average lifespan: thousands of years.

The aluminium foil lid
Origin: beaches and boats.
Behaviour: has an abrasive effect on organisms growing on the sea bed.
Average lifespan: 10 years.

The sanitary pad
Origin: beaches, toilets and boats.
Behaviour: impedes the proper digestion of animals that ingest them.
Average lifespan: 25 years.

All around the world, 8 million tonnes of waste reach the sea every day. All this refuse is generated by human activity. This non-recyclable rubbish is thrown into the toilet, onto the streets, into gullies, onto the sand and into the sea, turning it into a tangible destroyer of marine life. But you can stop this from happening.

Uncontrolled waste is a threat to the seas.

Agència Catalana de l'Aigua

Generalitat de Catalunya
Departament de Medi Ambient i Habitatge