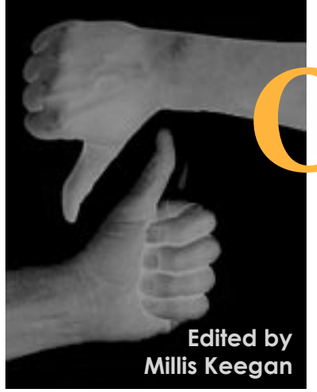


Letters & Opinions

All perspectives expressed in this section are those of the individual author and do not necessarily reflect the views of X-RAY MAG, DiveGuru.Net, or their associates

Edited by Millis Keegan

Hurricanes in the Caribbean, Tidal Waves in the South Pacific area, Terrorist attacks in the Red Sea area. Is there even a safe place left for a dive?

Vacation! This is the time for you to forget your worries, relax and enjoy yourself. Stay away from the news, that way there will be no reminder of all the bad things happening in the world. Well in these days, in these times, don't! As part of your risk assessment, make it a habit to check in on the news and the weather.

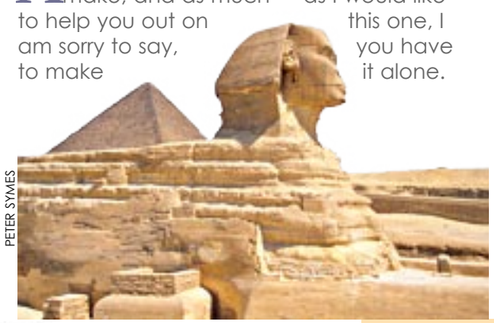
Q I have a ticket to Sharm-El Sheikh a week from now. Vacation is approved, the dive bag is packed, passport and money, all ready to go, but my mind is not. In the lights of recent events in Dahab (April 2006) I must admit I am scared. I go over the bombings in my mind, over and over again. I can't even begin to understand how the families of the victims feel, or the survivors. A week ago I was dead certain that I would not let some bleeping terrorists rule my life. If we let their terror rule our life and make us alter our plans, they win. Right? It's so easy to be brave on your couch in the safety of your home. Now that I'm actually holding a ticket to Egypt in my hand, all my certainty and bravery is floating away in a wave of cowardice. Part of me wants to cancel the trip; another part of me says to stay with my conviction. Should I go? *Jenny / Odense, Denmark*

A This is one tough decision you have to make, and as much as I would like to help you out on this one, I am sorry to say, you have to make it alone.

I know what you are going through, from personal experience, and so does a friend of mine that faced the same decision, in April 2000, after the kidnapping and killings of tourists in Malaysia. He went ahead and made his trip, with the reasoning that lightning doesn't strike twice at the same location. He later found out that lightning does strike twice, but that's another story. Check **http://travel.state.gov/** for travel advice and travel warnings.

DON'T LET TERRORISM DICTATE YOUR LIFE I say don't let terrorism dictate your life! I am not going to let any stupid suicide bombers intimate me. I say we all make a commitment not to change our plans because of terrorist threats. *Mikael / Gdansk, Poland*

Big words in a small world, and quite a statement. Although I agree with you in theory, it is not that easy, as Jenny from Denmark quite accurately points out. This has to be a personal decision and should be made without pressure from anyone.



PETER SYMES

When traveling, always leave your travel itinerary with a friend or with family.

The recent bombings in popular dive destinations in Egypt are upsetting. Egypt is one of the most popular dive destinations in the world, and we have received a number of questions in the matter. Here to address your worries is MAGNUS NORELL, PhD and Director of the Center for the Study of Low-intensity Conflicts and Terrorism (CLIENT) and a Senior Analyst at the Swedish Defense Research Agency.

Q: Is there anything I can do to protect myself and help my chances of not being a victim of a terrorist attack? *Johnny, Florida*

Q: Are there dive places or countries that are more dangerous and more prone to terrorist attacks? *The Dive Hippies*

Q: Is Egypt an especially bad choice for a dive trip? *Lotta, Stockholm, Sweden*

Q: Will it help to be more observant? I mean, will a suicide bomber show any tell-tale signs, like extra bulky clothes, or carrying unnaturally big bags (this must be a stupid question, in a back packer place like the Sinai everyone carries big bags). Or do they wear like a secret tattoo or badge, or scarf that proves they belong to some secret organization of suicide bombers? *Lena, Gothenburg, Sweden*

A Yes, unfortunately some countries are more prone to terrorist attacks. And Egypt (Sinai especially) right now at this junction in time is such a country. There are active cells in the area that I don't think Egyptian authorities have a complete check on. And, as someone said, lightning can strike twice in the same place (and have, in the case of Egypt). But then again, it can happen in London or Madrid as well.

The name of the game is terror, and it can strike any time, anywhere. I am sorry to say, there are no telltale signs to speak off. I only wish… It has happened on a few occasions in Israel that guards became suspicious of people wearing clothes to warm for the weather, in order to cover up a bomb vest, but it is not at all common.

As for the kind of terrorism we witnessed in Egypt (namely Islamic terrorism), they do very often target 'non-combatants' for example tourists as they consider them to be 'a bad influence' (spreading western 'corruption' and so forth) in their home countries. The same kind of motivation lay for example behind the bombings on Bali. It deserves to be pointed out that these are views not shared by most Egyptians!

I don't think Egypt is 'an especially bad choice'; there are risks but at the same time the Egyptians are fully aware of the importance that the tourist trade have, and they are therefore prepared 'to go the x-tra mile' to protect people (it's not like the police and security forces are just sitting around waiting for the next attack). No 100% guarantees though!

Q: I am going to Tanzania this summer, to study for ten weeks. Should I be concerned? Is there any registered terrorist activity there, and if so, what can I do to keep out of "the line of fire" so to speak. *Marlene, Uppsala, Sweden*

A A few years ago Tanzania was being targeted, back in 1998. At the moment I will assume Tanzania to be "safe". However, there are reasons to be cautious in general, but seeing that you are going to study, you should be safe.

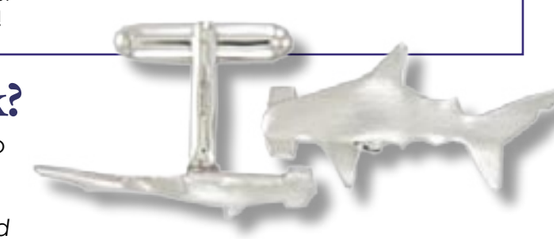
Of course there are Islamists in Eastern Africa as well, but as far as I know, no national government has assessed Tanzania as especially dangerous.

--

The Diveguru: Thank you Magnus Norell. And on a finishing note, there are measures you should take; making a risk assessment is one of them, and something you as a diver already should do as part of your dive plan. When traveling, always leave your travel itinerary with a friend or with family. When traveling to countries that have a higher risk of terrorism than others, also contact your embassy before you go and ask if they want your name and travel information as well. It won't help you prevent an attack, but it helps the authorities in the aftermath of an event.

What do *you* think?

Get heard! Send us you opinion to diveguru@xray-mag.com by July 1 2006 and get a chance to win these exquisite *Silver Hammerhead Cufflinks* generously sponsored by **ReefJewellery**. (See more details next page)



The Hurricane Season is near

Caption

Planning a dive trip to the Caribbean this year? Florida, Mexico, Belize? Hurricane Season is here, be ready. Check the weather report regularly during your stay and do not ignore hurricane warnings. You have to prepare for loss of drinking water, and food for a long time. For how long depends on where you are, since some countries have better infra-structure than others, but drinking water and Non-perishable food for a minimum of a week even in the best of countries is recommended. Make sure you have cash, can opener, matches or a lighter with you, as those items can be hard to find.. Keep your cell phone dry and battery charged, as that might be your only way to communicate with your family for a while.

Locals have enough to worry about in the aftermath of a hurricane, taking care of ignorant tourists should not have to be part of that job. Listen to the authorities and follow their recommendations, before and after.

Evacuate any coastal areas. Hurricanes can flip cars and mobile homes up-side down, tear walls and roofs off a building, and bury a house in sand up to the ceiling. Do not make the mistake of thinking you can sit one out.

Do we even care any more?

Rising ocean temperatures, urban and agriculture run-offs, evidence of Prozac, estrogen, the ever popular anti-bacterial soap and other chemicals have been detected in and the oceans and around our reefs. The environmental stress makes it harder and harder for the reefs to recover.

This year entire colonies have died all over the Caribbean area, leaving ghostly white skeletons of once colorful reef behind. It's an unprecedented die-off, never seen before.

Are we to blame? Do we even care any more? We want your opinion.

About the DiveGurus

Millis Keegan, owner and founder of www.diveguru.net, the homepage that answers questions for divers, snorkelers, anyone with a love for our oceans is a new member of X-Ray magazine. With the help of reputable experts www.diveguru.net will find the answer.

Edited by
Andrey Bizuykin
& Peter Symes

POINT & CLICK ON BOLD LINKS

Equipment

Gotta have it

Tusa

Why be conventional? Who said that diving equipment can't be fashionable? Check out Tusa's new colour combinations

www.tusa.com

Dive data logging

Sensus Ultra is ReefNet's third-generation dive data logging device – and still a simple and convenient tool for collecting detailed dive log data. Inside its diminutive size (1" x 1.3" x 1.75") are a sophisticated sensor, flash memory and processor capable of storing 1500 hours of dive data with a 10 second sampling interval. **Reefnet.ca**

Halcyon

The new Evolve dual cylinder wing owes its design to Halcyon's successful Eclipse circular bladder single-tank wing, allowing for precise control of in-water buoyancy and trim. Horizontal trim is easily accomplished through the addition of lift at the base of the cylinders. Gas trapping on one side or the other of the wing is virtually eliminated. The Evolve wing integrates seamlessly with Halcyon's existing line of MC systems, and is available in 40 lbs. (18 kg), and 60 lbs. (27 kg) lift capacities, either individually, or as part of their complete MC System.

www.halcyon.net

Blackwave

Blackwave Dive Assistant is the complete Pocket PC and PC tool for logging, planning and managing your dives, as well as keeping track of your dive kit, qualifications and other diving information. Download and try a copy from:

www.blackwave.com.

Oceanic VT3

The VT3 is Oceanic's next generation dive computer combines design and technology with ease of use and customization, allowing the user to focus on what's important, diving. With Oceanic's wireless transmitter, the diver can also monitor gas pressure from up to three independent cylinders – ideal for both technical diving applications and recreational diving with our new Buddy Pressure Check feature. The Oceanic VT3 can be switched during the dive between up to three different Nitrox mixes containing 21-100% oxygen.

www.oceanicworldwide.com

DUI

So drysuits are meant to go with cool water. Well, think again. The 30/30 Tropical drysuit from DUI is meant to go with colourful fish. Available from June 2006 this model comes with a shoulder-entry zipper and slim fit designed to be worn with light insulation. Comes with suspenders, latex ankle seals with protective cuffs and valves from Apeks

www.dui-online.com

DEALERS WANTED

Nocturnal Lights

The new SLX LED dive light from Nocturnal Light combines a 5500k beam with a 4 hour duration on a set of 6 AA batteries, making it well suited for photographers and technical divers. Simply add a light diffuser and the ball joint adapter to the handle and you'll have an auto focus assist light. Because the bulbs used do not generate too much heat, it can also be used as a flashlight above water, making it a great all-around dive light for all kinds of divers. The batteries which will easily last several regular dives can be easily replaced between dives.

www.nocturnallights.com

Noisemaker

How do you get your buddy's attention, or help from others? The solution Give ReefNet's new "H2YO" a shake to emit a loud and distinctive rattle that can be heard at great distances underwater. To make sure you sound unique, H2YO is offered with two sounds:

* **Rattle** - several balls inside
* **Clank** - one large ball inside

reefnet.ca

Ralftech

The Travelight from Ralftech must be the lightest buoyancy compensator on the world market today. Depending on size it only weighs in at 1,9 to 2,4 kg depending on sizes. It is also simple as there are no rigid parts, so it can quite easily be rolled up into a small pouch for travelling.

www.ralftech.com

Redtech

Slovenia based RedTech have put on the market a series of high end buoyancy compensators, suitable for technical and more demanding recreational diving. The innovative Quick Slide System (patent pending) – provides a safe and easy way of adjusting and securing straps, which enables easy and quick donning.

One of the original unique aspects of the RedTech system is the complete modularity of the system enabling the diver to build a personalized configuration that will meet his or her exact needs and ideas

www.redtech.hr

Scuba Hides

Scuba Hides can transform a tank into a billboard only your potential customers, and other divers will see. With layout and color choices as limitless as your imagination, your message will be heard loud and clear. As Scuba Hides will be used and seen by divers, they offer a unique target marketing opportunity to anyone in the diving industry

www.scubahides.com

2x Mares

Mares Demon mask known for it wide field of vision and soft skirt which makes is very comfortable to wear for long durations will now be available in new colours clear/blue and clear/yellow. Three additional colours will be available in early September. Avanti Excel full foot fin is an offspring of the acclaimed Avanti Quattro Excel open heel and will be available in June in colours Blue and Yellow.

www.mares.com

Cis-Lunar Returns

When Cis-Lunar launched the legendary MK V rebreather back in 1998 it was state-of-the-art, fully automatic and built for ultra long dives with the safety and ruggedness necessary for advanced cave exploration was available. A little over 100 units were built and most are still in use. The dot.com crash in the early 2000 stopped the Cis-Lunar from financing serial production and that seemed to be the end of it. But now Cis-Lunar is teaming up with a Swedish industrial group, DP Scandinavia, based in Marstrand, to commercialize underwater technology developed by it's inventor Dr Bill Stone and his team.

Why be dull?

Mouthpieces in Lego-colours from Apex can either liven up your diving day, or help you locate your kit on the drying rack on the liveaboard. **www.apeks.co.uk**

Aunoc

Believe it or not, this little cool baby with the intense output is - with its 3 inches in length - only the size of a lipstick. Yet, thanks to its sturdy construction in hard anodised aluminum alloy 6061, it is rated to a depth of 60 meter. Small enough to even be carried in a pouch on a bcd strap this is a handy emergency backup light request. Powered by a Lithium battery and sealed by a single o-ring. Lamp is switched on and off by simply twisting the lamphead.

www.aunoc.com

Polespear

Free diving legend Manny Puig stands behind the introduction of perhaps the finest polespear on the market. The modular three piece pole-spear is constructed from thickwalled 6061T6 anodized aluminum. The use of pole-spears for under water hunting differ from that of spearguns because our arms can only hold so much band pressure and our muscles tire quickly. Where a polespear can make up for its shortcomings is by providing a blow with more mass and momentum at close quarters than a traditional spear flung from a speargun. A streamlined and stiff design is crucial in the rendition of a more striking and accurate blow at prey in close range where the higher mass, or "backbone" as we call it, delivers a striking blow at even large fish. In developing the Manny Puig Polespear all these principles were kept in mind with the aim of keeping it versatile enough for small and medium fish and with the necessary characteristics to take down big fish. **www.omersub.com**

Oceanic Worldwide Announces Voluntary Recall of Versa Pro revision 2A Dive Computers

In cooperation with the U.S. Consumer Product Safety Commission (CPSC), Oceanic Worldwide of San Leandro, California, is voluntarily recalling Oceanic Versa Pro revision 2A Digital Dive Computers. While operating in the User Selected Digital Gauge Mode, displayed Elapsed Dive Time can be in excess of actual elapsed time.

Oceanic has received a report of two Versa Pro revision 2A units that experienced the offset time displayed while operating in User Selected Digital Gauge Mode. No injuries have been reported.

Oceanic Versa Pro 2A Dive Computers subject to the recall are only the revision 2A units which have serial numbers 12000 through 18176 which is located on the side of the module and can be viewed if after the front button is depressed to activate the unit, it is held depressed until the Diagnostic Mode screen completes its countdown and the Serial Number screen appears displaying the module's SN and software firmware revision (r2A). The unit will shut Off when released.

Authorized Oceanic dealers sold Versa Pro 2A modules, that were manufactured between March 21, 2003, and February 7, 2005, in wrist and console mount configuration during March 2003 through April 2006 for between $429 to $639, depending on the configuration with other instruments.

Consumers should immediately discontinue further use of Versa Pro 2A Dive Computers for User Selected Digital Gauge Mode operation (as a Depth Gauge/Timer) and take it to any Authorized Oceanic Dealer, or return it directly to the factory for an Upgrade to Versa Pro revision 2B. Should you have any questions, please contact our toll free Recall Helpline at (888) 854-4960 or locally at (510) 562-0500 between 8 am and 5 pm Monday through Friday Pacific Time.

www.oceanicworldwide.com

Poseidon underwear

Poseidon will deliver a base layer underwear with all standard Jetsuit TNG Technica and Unisuit Exclusives at no extra cost. This means that we will give the divers the start kit to a total system for isolation under water. The layer closest to the body is the base layer which helps to wick moisture away from the body so that you stay dry and warm. The outer layer is the protection against the outside environment and the cold. In this case it is the suit. This part of the system is what you get when you buy a Poseidon suit. The base layer with the suit is the minimum you should wear at all dives. In addition to this you can add the heat layer that consists of three parts (sold as a kit). A pair of trousers, a zipped sweater and a zipped west. This gives the diver total flexibility to adapt to the situation and his own preferences.

www.poseidon.se

Six Gill

The Six Gill fin is Deepoutdoor's bid for the next step in the evolution of dive fines. The gills expands during kicks to create a pump action and on the downstroke they create a vortex that channels water off the blade. The scoop on the front expands during during upstroke and contracts during downstroke reducing resistance. The short blade is also reef-freindly

www.deepoutdoors.com

3rd impulse

Since Aqua Lung introduced the first IMPULSE snorkel in 1989, it has been the best selling snorkel in the world. Today, after continued refinement and evolution, the Impulse 3 is more streamlined and produces a higher performance than its predecessors

www.aqualung.com

pressrelease

Poseidon to be acquired by DP Scandinavia.

A Letter of Intent has been signed with regard to the acquisition of Poseidon Industri AB by DP Scandinavia AB. The take-over date is planned for June 30th 2006.

Poseidon Industri AB

Poseidon was founded 1958 to manufacture diving equipment for the rapidly growing diving industry. The company has ever since been a technology leader in the world diving industry with the first single-hose regulator, the wet suit and the dry suit.

Manufacturing and operation is located outside Gothenburg, Sweden. For further information, contact;

Stefan Jennefalk
Stefan@poseidon.se
+ 46 (0)31 734 2900

DP Scandinavia AB

DP Scandinavia is located in Marstrand on the west coast of Sweden. The company hasrecently acquired all rights to Cis-Lunar Closed Circuit Rebreather and related technology.
For further information, contact;

Kurt Sjoblom
Kurt.sjoblom@cislunar.se
+46 (0)303 248540

Edited by
Michael Arvedlund, PhD

Softcoral, Asia
Nephtheidae
family

Coral Bleaching

Can tropical stony corals adapt to bleaching?

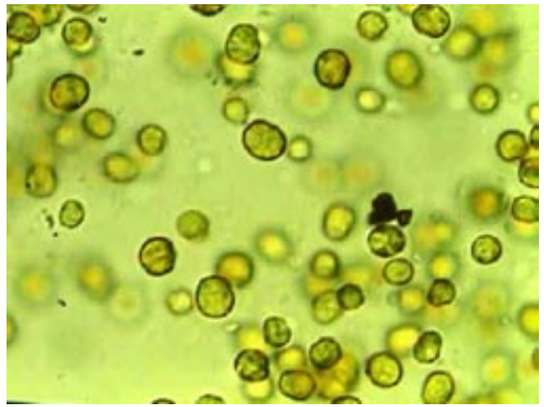
Corals are animals with unicellular yellow-brown algae called zooxanthellae living symbiotically within their tissue. It is the nutrients supplied by the zooxanthellae in the form of photosynthetic products that make it possible for the corals to grow and reproduce quickly enough to create reefs. In turn, the coral provides protection and access to light for the zooxanthellae. These coral polyps of the Goniopora family are individual animals in a colony who filter the water for food particles

Text by Tyge Dahl Hermansen,
Michael Arvedlund & Peter Symes
Photos by Peter Symes

You may have heard or read about it – coral bleaching is happening with an increasing frequency in tropical areas. Worst was the global bleaching event in 1998. And coral reef researchers are now fearfully awaiting the next bleaching event. Will it be just as devastating as the 1998 one?

But what is coral bleaching actually? No, it is not mum that has stinted bleach over the lovely colourful tropical corals….although it looks like it. The explanation is quite different. Normally, tropical shallow-water stony corals only exist to dept's where sunlight is able to reach. This is because they contain in their tissue a specialized kind of brown algae called zooxanthellae. These algae are crucial for the survival of the coral.

The coral is supplied with nutrients from these zooxanthellae. They produce energy and nutrients through photosynthesis. However, this relationship can only exist at temperatures above 18°C. and below 31°C. When very hot summers occurs, and they do with a fast increasing frequency, the zooxanthellae instead produces something called "super oxygen", that is oxygen with extra energetic levels donated by electrons. This is poisonous for the coral. Therefore the coral rejects the cell with the zooxanthellae. Thereby the coral looses the green and brown colour nuances from the zooxanthellae, and looks "bleached".



Microscope photo of zooxanthellae algae, Courtesy of NOAA

Coral bleaching can have many causes

Coral bleaching is a phenomenon that can be caused by a lot of different factors that stresses the coral. It can be caused by different kinds of pollutants or by an elevation of the average temperature in the specific habitats or microhabitats. But in all cases it is caused by changes in the surrounding milieu that stresses biological ecosystems as the subtropical and tropical coral reefs.

Temperature

Especially phenomenons that include temperature elevations as the greenhouse effect and El Nino have been discussed in details through the last years. Such phenomenons have involved a general decrease in the coral reefs of subtropical and tropical regions. Calculations have shown that if such conditions are maintained, all coral reefs will become extinct in the year 2050.

Can corals adapt?

Some researchers, such as the two world famous scientists, Daphne Gail Fautin and Robert W. Buddemeier introduced in the nineties a hypothesis called "adaptive coral bleaching." This hypothesis builds on the assumption that an adaptation by the coral to the new conditions (the elevation of the temperature) has taken place through symbiotic adaptation with zooxanthellae that are able to resist the increase in temperature, by which the host coral avoid to be poisoned by super oxygen.

Adaptive bleaching

The adaptive bleaching hypothesis (ABH) is based on lots of observations in the field. Professor Daphne Gail Fautin and Professor Robert W. Buddemeier have worked out a generalized conclusion on their qualitative description of the ABH, in light of the existing field observations and data. The conclusion of this qualitative description of adaptive bleaching is that the coral-zooxanthellae symbiosis is able to make a dynamic response to the environment.

Zooxanthellae of various corals have been found to belong to at least 10 different algal taxa. Curiously, zooxanthellae found in closely related coral species are not necessarily closely related themselves, and zooxanthellae found in distantly related coral species may, in fact, be closely related

"It turns out that there is information that corals and their symbionts may be capable of acclimatization and selective adaptation to elevated temperatures that have already resulted in bleaching resistant coral populations."

Coral Bleaching

"Clearly, there are limits to acclimatory processes that can counter coral bleaching"

Evidence of adaptations

In a recent science review, the coral reef researchers Stephen L. Coles and Barbara Brown have summarized the existing evidence for adaptive coral bleaching. "It turns out that there is information that corals and their symbionts may be capable of acclimatization and selective adaptation to elevated temperatures that have already resulted in bleaching resistant coral populations, both locally and regionally, in various areas of the world."

Mechanisms

There are possible mechanisms that might provide resistance and protection to increased temperature and light. These include inducible heat shock proteins that act in refolding denatured cellular and structural proteins, production of oxidative enzymes that inactivate harmful oxygen radicals, fluorescent coral pigments that both reflect and dissipate light energy, and phenotypic adaptations of zooxanthellae and adaptive shifts in their populations at higher temperatures. Such mechanisms, when considered in conjunction with experimental and observational evidence for coral recovery in areas that have undergone coral bleaching, suggest an as yet undefined capacity in corals and zooxanthellae to adapt to conditions that have induced coral bleaching.

AUSTRALIAN INSTITUTE OF MARINE SCIENCE

When corals bleach they commonly lose 60-90% of their zooxanthellae and each zooxanthella may lose 50-80% of its photosynthetic pigments

LImits

Stephen L. Coles and Barbara Brown continues: "Clearly, there are limits to acclimatory processes that can counter coral bleaching resulting from elevated sea temperatures, but scientific models will not accurately predict the fate of reef corals until we have a better understanding of coral–algal acclimatization/adaptation potential. Research is particularly needed with respect to the molecular and physiological mechanisms that promote thermal tolerance in corals and zooxanthellae and identification of genetic characteristics responsible for the variety of responses that occur in a coral bleaching event. Only then will we have some idea of the nature of likely responses, the timescales involved and the role of 'experi-

Softcoral Red sea
Nephtheidae family

PETER SYMES

ence' in modifying bleaching impact."

The Future

If global temperatures rise as predicted by the current climate models, water temperatures in 100 years will be much greater than those that cause bleaching now. Consequently corals would need to acclimatise continually to survive. However, most research indicates that acclimatisation is limited and unlikely to allow corals to adapt in due time. to the predicted rise in water temperatures.

Natural selection

A second process by which coral populations could adapt to new conditions is by natural selection. This results in a gradual change in the temperature-tolerance of the population through the elimination of the corals that cannot tolerate higher temperatures. As described elsewhere in this issue (see page 6, "Corals may survive global warming by gorging themselves") some species will be better at adapting to changes than others. Also, different colonies of the same coral species may respond to thermal stress differently. If only the most temperature-tolerant corals survive a bleaching episode, the offspring from those corals might be on average more temperature-tolerant than the previous generation.

Again, there will be limited how high the temperature can rise before corals reach the limits of of survival, and thereby their possibilities of adaptation. This would invariably also lead to extinction of species. Such adaptations are thought to occur slowly, over several generations (with most corals having generation times of at least 5-10 years), but potential rates of adaptation have never been estimated.

USGS

Bleached corals off Hawaii. *Porites spp*

Replacing the algae

Corals can host several types of zooxanthellae in their tissues. Another possible adaption to warmer conditions could be changing the dominant type of zooxanthellae within their tissues. Corals with a certain type of zooxanthellae can tolerate up to 1.5°C higher temperatures than corals of the same species without that type.

It is not known how many of the almost 800 species of reef building corals can change the type of dominant zooxanthellae or, indeed, what stimulates the change.

However, results from the laboratory shows that some corals can adapt to the heat resistant types of zooxanthellae under artificial circumstances. Increased temperature tolerance may also come at a cost. For example it has been observed that juvenile corals with heat-tolerant zooxanthellae grow up to three times slower than those with a different zooxanthellae type. The type of zooxanthellae that occurs in the corals may also affect other aspects of coral health.

It is possible that a combination of natural selection and switching of zooxanthellae may help corals cope with climate changes. Faster rates of change are possible for zooxanthellae than for the coral because the algae have much shorter generation times

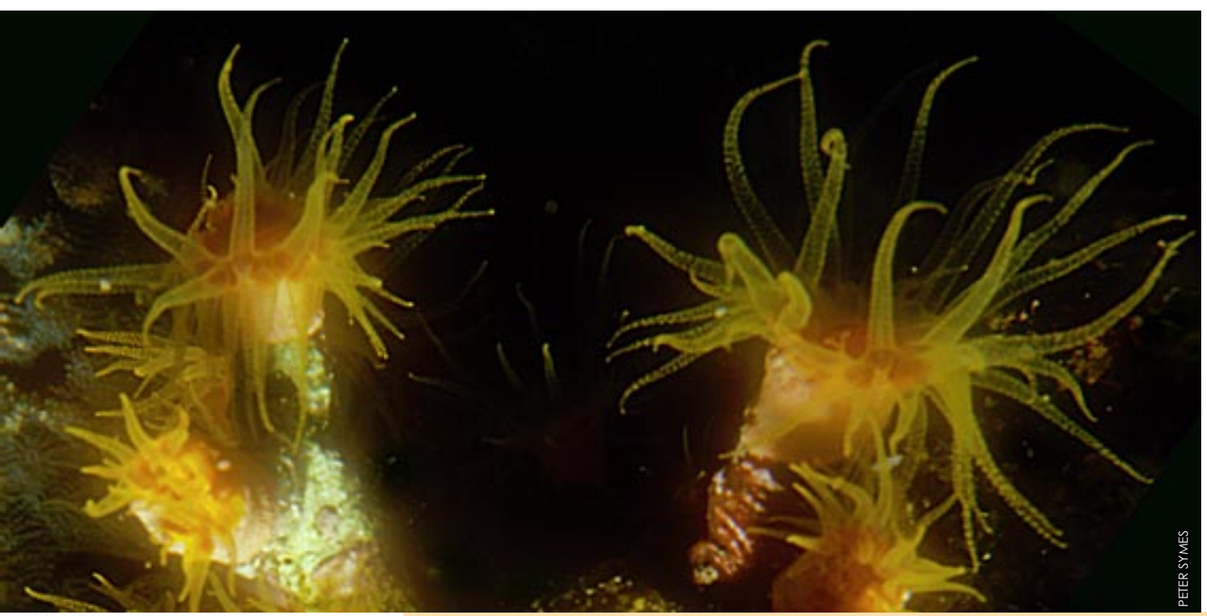
Moving

A third process is one in which larvae from warm-adapted coral populations may disperse to cooler areas as they warm, thereby changing the distribution of species creating new reefs further from the equator However, this is also likely to be a very slow process and as there are other ecosystems already in place elsewhere the whole picture becomes quite complex and unpredictable. But because the cooler areas warm, these warm adapted species gain an extra advantage in advance. But only the future will show if such settlements will succeed.

Recovery

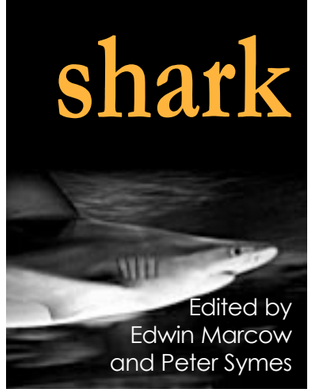
There has been short-term recovery of coral reefs after bleaching events. When a reef is only slightly stressed, a few scattered corals will die, and the effect will be barely noticeable. When a reef has been exposed to prolonged heating, most corals will die, and it can take many years for the area to recover, in particular if large, old corals have been killed.

The long-term recovery of reefs from bleaching will depend on the frequency of bleaching events. If bleaching becomes more frequent reefs may change greatly in character. Unless there is a greater capacity for adaptation in corals than scientists currently believe to be likely, today's diverse community of corals may be replaced by a smaller number of tolerant species. Or worse still, replaced by completely different and less diverse ecosystems such as dense algae cover Some vulnerable coral species may come to be found only in cooler areas. ■



PETER SYMES

Coral polyps
Tubastraea spp



Bits & Bites

Student Study in the Bahamas

An exciting new study hosted by the CCU's Costal Carolina University study-abroad scheme will allow its students at a cost of US $2000 dollars per head. To participate in a series of lectures, discussions, analysis of research papers and best of all personal encounters with many different species of shark.

CSI – Shark?

Experts and conservation enforcement offers have a new weapon in their fight against the illegal marketers: A database. The database will contain DNA profiles of nine protected species of sharks his will enable fisheries officers to prosecute poachers in the courts. "Having DNA fingerprints for these species gives us a legally defensible method of checking evidence in cases of illegal fishing," said fisheries biologist Rory McCauley of the Australian Department of Fisheries. Interest in this database may well come from government agencies in the US, South Africa, and Asia. "Illegal fishing is a global issue", added Dr Ho – explaining that this system could be adapted to any species. ■

Whale sharks on the rebound?

Constant sighting of whale sharks in both the Phillippines and Thailand may indicate improving.

Sightings of whale sharks along the seas in Barangay Buhisan in the Phillippines is an indicator of an improving environmental condition in the 60,000-hectare Davao Gulf, an council official said.

"This is the result of the consciousness of the people in the barangay as they become vigilant in guarding their waters of illegal activities including illegal garbage disposal." Whales could also be seen almost every week.

Meanwhile there has also been regular sightings of a group of five whale sharks about 8 metres long were just seen again at the famous diving point of Richelieu Rocks near Surin Islands in Thailand. The whale sharks are looking for plankton near the islands as there are rich sources here, and as this is also a favourite place for divers whale sightings are common but not always guaranteed. In Thailand they are mostly found near the Richelieu, Purple and Red rocks in the Andaman Sea. ■

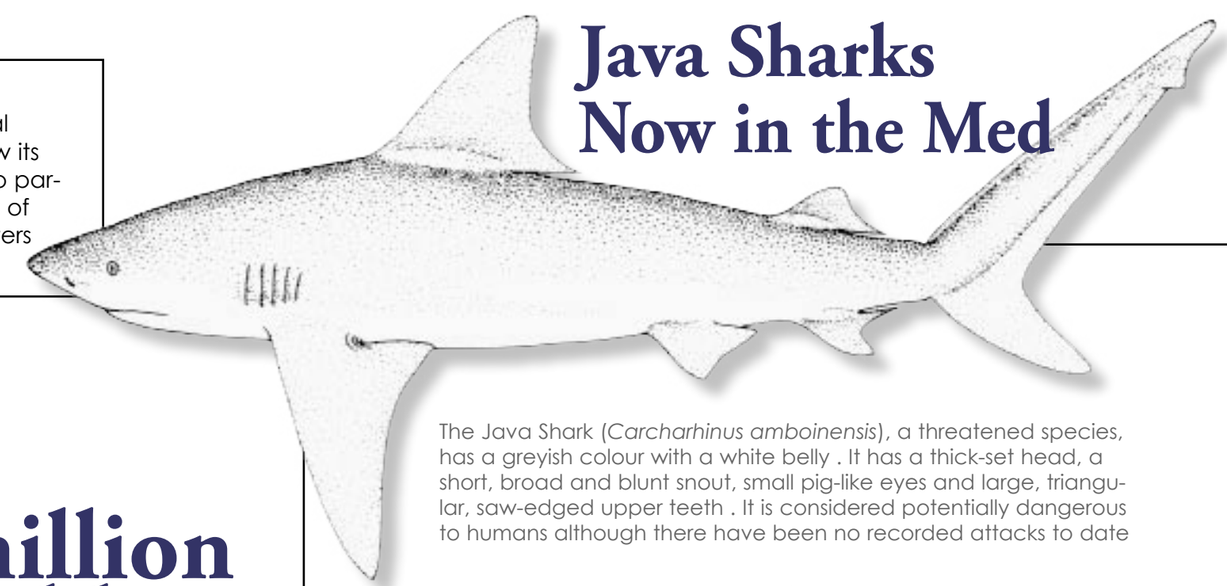
UNIVERSITY SALZBURG

400 million years old

An American scientist is hoping to use medical technology to better understand the inner workings of a 400-million-year old shark which is the oldest known intact shark fossil in the world. The shark has been encased in rock for 400 million years and is almost flat but John Maisey, a paleontologist with the American Museum of Natural History in New York, plans to use CT scan to allow him to construct a three-dimensional picture of the ancient shark and use computers to calculate its original shape.

"Obviously we can't chop it up or section it mechanically, but CT scanning allows us to look inside the fossil to see its anatomy in greater detail." Says Maisey. The Campbelton specimen is the size of a small, modern shark and. It is a rare find, because it includes skin, cartilage and bone. Because sharks are mostly cartilage, they don't usually fossilize well. ■

Java Sharks Now in the Med



The Java Shark (*Carcharhinus amboinensis*), a threatened species, has a greyish colour with a white belly . It has a thick-set head, a short, broad and blunt snout, small pig-like eyes and large, triangular, saw-edged upper teeth . It is considered potentially dangerous to humans although there have been no recorded attacks to date

The sighting of a huge and rare species of shark off Italy's Calabria coast is both good and bad news for the environment . The fact that a Java Shark has been spotted swimming near the town of Crotone is a sign that the Mediterranean in is relatively clean and healthy. On the other side it may be another ominous sign of global warming that this shark which usually inhabits tropical waters off Madagascar, Sri Lanka, Indonesia, Papua New Guinea and Australia are now being sighted in the Mediterranean. The Java, which is also known as the pigeye shark, can grow up to a length of three metres. It feeds on a variety of fish, rays and smaller sharks, squid, shrimps, cuttlefish, octopi, lobsters and marine gastropod and such a large predator would not be wandering around the Mediterranean if there were not plenty of prey for it to feed on.

"Tropicalization" of the Med

Italy's Central Institute for Scientific and Technological Research (ICRAM) said that it first observed this 'tropicalization' of the Mediterranean in 1995 and that the process is accelerating . "In recent years an increasing number of tropical species have been coming into the Mediterranean from the Atlantic Ocean and the Red Sea," says Dr. Alessandro De Maddalena, the president of the Italian Ichthyological Society. "It is normal for the odd Whale Shark and Tiger Shark to come here occasionally, but this trend is a little strange. "We're pretty sure they don't breed here, so they are coming into the Mediterranean because it's warmer . "In the long term this could be a problem for the Mediterranean species that are used to temperate waters".

Around 50 different species of shark have been identified in the Mediterranean up to now.

It is hard to predict which Mediterranean marine species are most exposed to the impact of global warming on their habitat.

Dr De Maddalena stresses though that the survival of the sea's 16 endangered species of shark and many other types of marine life is threatened by a much more immediate threat - the fishing industry . "Overfishing is a problem because it takes away the sharks' prey and because the sharks themselves are often caught in the nets too. ■

Great White Sharks Trek to Holiday Town!

Holiday makers looking to relax, swim and surf in the warm waters of Plettenberg Bay a holiday town this author knows well from growing up in South Africa are not alone in their pursuit. They are being joined by increasingly large numbers of Great White Sharks most likely enjoying the last of the sardine run in that area. The sharks have been sighted swimming close to shore and circling the beaches. National Sea Rescue Institute local station commander Ray Farnham said. "The sharks, ranging in length from 3.5 to 7m, are visibly patrolling along our stretch of coast". Marine biologists were quoted that the sharks will likely remain in the area until about the middle of this month. ■

EDWIN MARCOW

New Zealand considers protecting great white sharks

The New Zealand government is reportedly considering joining other nations, including Australia and the United States, in protecting the great white shark.

New Zealand Conservation Minister Chris Carter said. "They are an object of fear and fascination, but sadly there is growing evidence that this magnificent and rare species is in trouble internationally."

Carter said the great whites are often caught by mistake, their fins are sought in Asia, and trophy hunters will pay thousands for a great white.

Among actions being considered by the government, are fines of as much as $250,000 for deliberately killing a great white. ■

EDWIN MARCOW

Counting Sharks at Myrtle Beach, South Carolina

For most people drawn to the warm waters to swim and surf – seeing sharks are about the very last thing they would want to see. Unless you are one of the researchers from Coastal Carolina University – who make their annual trek to the coastal waters of Georgetown County.

"If shark or stingrays populations are declining, it could indicate problems for other species", said Dan Abel, associate professor of marine science at Coastal Carolina University. The professors and students go into the waterways several times a week through from May to November. Through a catch and release program sharks and stingrays population fluctuations can be monitored.

"If the local shark population is not carefully managed, an unpredictable ripple can go through an entire ecosystem", Abel said.

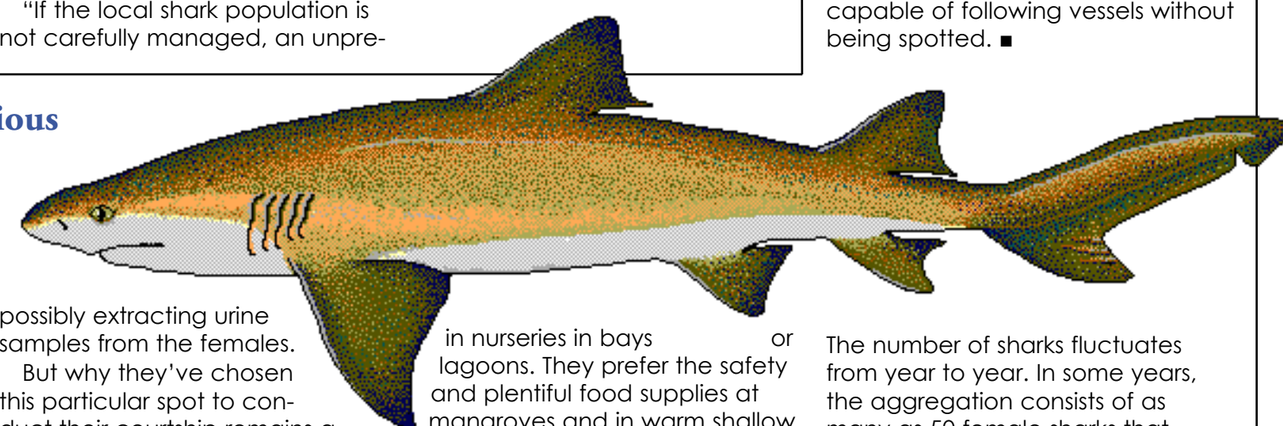
"If sharks aren't around to feed on large fish, those fish in turn eat more smaller fish, which in South Carolina can lead to large populations of sea trout or red drum and a corresponding drop in smaller fish – important to the ocean environment". ■

Robosharks? Pentagon's next spy recruits could be sharks

Soon we may be able to get inside the mind of a shark and experience how it is to swim silently through the ocean, sensing faint electrical fields, homing in on the trace of a scent, and navigating through the featureless depths for hour after hour. Engineers funded by the US military's Defense Advanced Research Projects Agency (DARPA), have succeeded in creating a neural implant designed to enable a shark's brain signals to be manipulated remotely, controlling the animal's movements, and perhaps even decoding what it is feeling.

Neural implants consist of a series of electrodes that are embedded into the animal's brain, which can then be used to stimulate various functional areas. Pentagon hopes to exploit sharks' natural ability to glide quietly through the water, sense delicate electrical gradients and follow chemical trails. By remotely guiding the sharks' movements, they hope to transform the animals into stealth spies, perhaps capable of following vessels without being spotted. ■

Professor discovers mysterious gathering of lemon sharks



Why was about 100 adult lemon sharks hovering over the ocean floor in about 90 feet of water off the Jupiter inlet in Florida? Professor Samuel Gruber, who's an authority on sharks, has been trying to find the answer to this phenomenon which hasn't been observed elsewhere in the world

Gruber's initial theory is that female sharks are emitting chemical signals called pheromones that attract male sharks. He plans on collecting water samples around some of the female sharks and testing the water chemistry or possibly extracting urine samples from the females.

But why they've chosen this particular spot to conduct their courtship remains a mystery. Does it have something to do with a combination of the currents, water temperature, and its salinity?

While little is know about the adult lemon sharks, juvenile lemon sharks congregate in nurseries in bays or lagoons. They prefer the safety and plentiful food supplies at mangroves and in warm shallow waters. Because so many gather in such a small place, the sharks are particularly vulnerable. The aggregation of lemon sharks near the inlet could prove attractive to commercial and recreational fishermen as well as divers.

The number of sharks fluctuates from year to year. In some years, the aggregation consists of as many as 50 female sharks that produce 600 to 700 babies per reproductive cycle. If the site gets heavily fished, it could decimate the lemon shark population all along Florida's coast.

Once the sharks reach about 3 years old they vanish. ■