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Ambon

Dive & Kayak
New Zealand

Science
Black Sea

Portfolio
Jeroen Verhoeff

Dive Medicine
Vitamins Help Divers

Rob Stewart's
Sharkwater

PHILIPPINES
The Visayas

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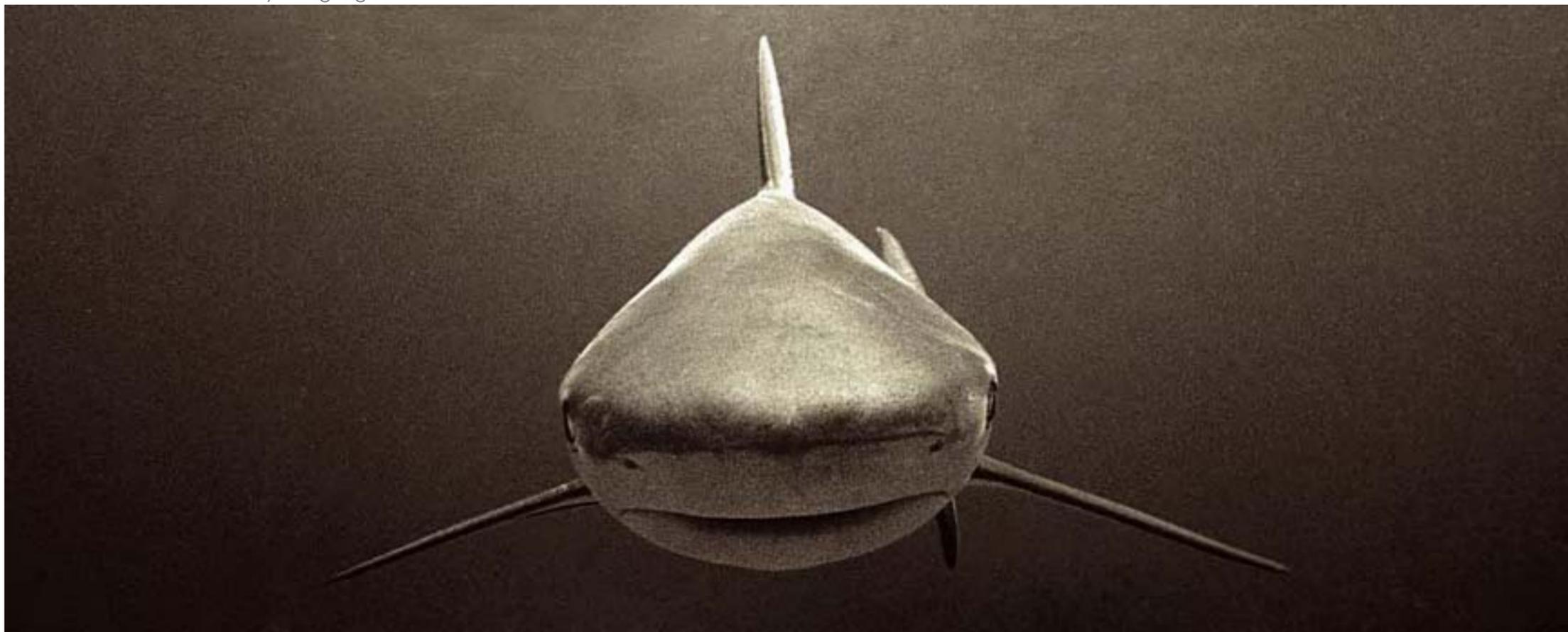
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Caribbean Reefsharks, by Wolfgang Leander
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Caribbean reefshark. Photo by Wolfgang Leander



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Shark Conservation:

Growing from Indifference to Awareness

The first time I consciously realized that sharks are at risk was when I read a Rolex ad in which David Doubilet, the Henri Cartier-Bresson of underwater photography, was being quoted as saying that sharks needed to be protected from humans, not the other way around. Even though I thought it was much more than just a gag, it did not really hit me hard.

Of course, I knew of the finning problem, and I must have been aware of the statistics. However, statistics are lifeless unless you are a passionate statistician (which to me seems like a contradiction in terms). But it was a most devastating personal experience that turned me into the sort of shark conservationist I am now.

While living in Ecuador (1997 - 2003) I could afford the luxury of going to the Galapagos Islands at least twice a year. When I first dived the Galapagos, I was struck by the sheer abundance of sharks: white tipped reef sharks, scalloped hammerhead sharks, and the most elegant and sleek of the requiem sharks, the omnipresent Galapagos shark.

To my growing dismay, however, every time I went back I noticed that the shark population was dwindling—it was the direct result of indiscriminate shark finning in what is supposed to be a marine sanctuary where sharks are officially protected from being fished. What I discovered was not "statistic"; it was the *real* thing I could painfully see for myself. Places

that were once "shark infested" (what a delight for sharkpeople like me!!) in 1997 became "cleansed" of sharks within a few years.

After looking into this more closely, I sadly became aware that the authorities did very little to enforce the laws, to say it politely. In a country where corruption is a deeply ingrained legacy of Spanish colonialism coupled with a remarkable lack of understanding for environmental problems, I felt that there was very little hope to reduce, let alone stop the senseless slaughter of sharks merely to cut off their fins.

In March 2005, I free-dove for the last time in a small island of the archipelago where I would normally see many Galapagos sharks. It was my preferred spot to observe and photograph these magnificent predators. On this last dive, I saw none. The sharks were gone, fished by the local *aleteros*, or shark finners, as I was later told by dive operators. I was outraged and decided to boycott the Galapagos. From what I hear, the massacre of the sharks in the Galapagos are being called—the the Galapagos are being called—still goes on, probably more clandestinely as organizations such as The Sea

Shepherd and WildAid actively assist the Galapagos Marine Park authority to enforce the existing laws against shark finning.

For a protest article, I wrote about shark finning in the Galapagos Islands. Visit my website (**www.oceanicdreams.com**) and click "Galapagos" to read it.

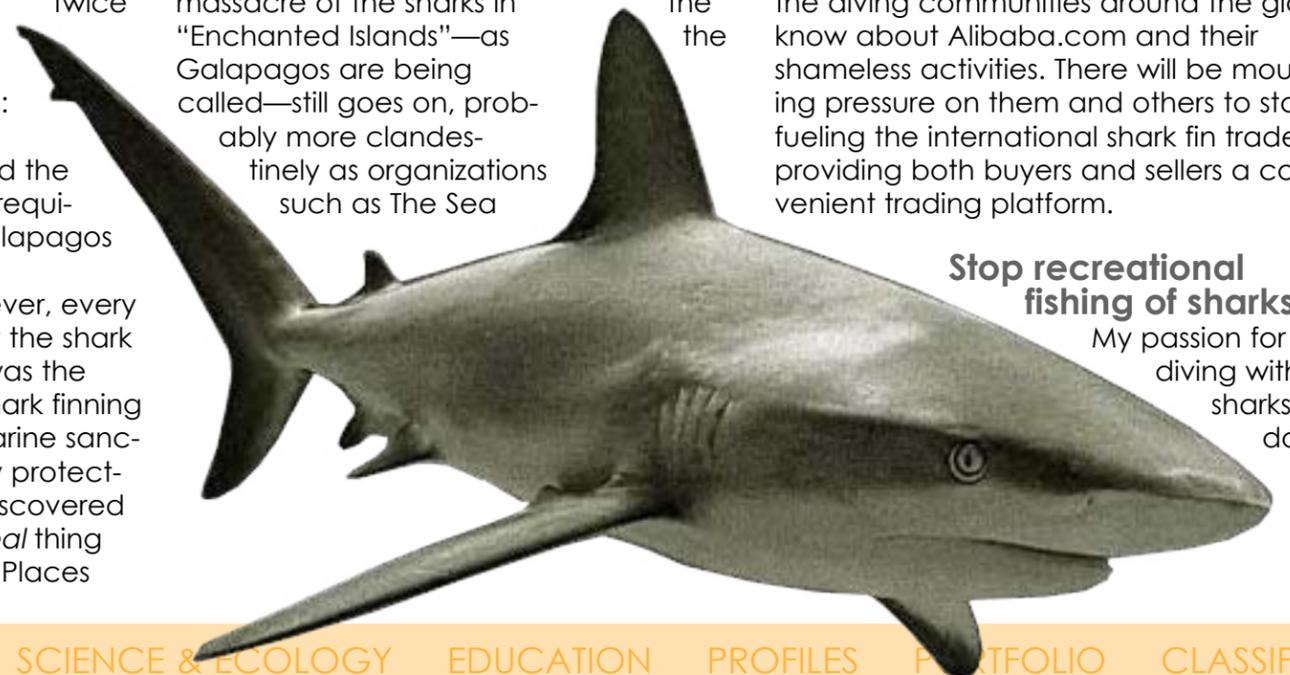
Stop online trade of shark fins

Unfortunately, Ecuador and the Galapagos are only paradigmatic. The problem is world-wide—just as global as the shark fin trade is, which is now being promoted on the Internet by such companies as the Chinese online broker Alibaba.com in which Yahoo.com has a 40% stake worth one billion dollars. It was only by accident that I discovered the shark parts trading activities of Alibaba last fall.

The Ocean Realm Society, the Shark Research Institute, The Sea Shepherd and many other organizations, which I subsequently alerted, immediately took up the issue and spread the news. By now, the diving communities around the globe know about Alibaba.com and their shameless activities. There will be mounting pressure on them and others to stop fueling the international shark fin trade by providing both buyers and sellers a convenient trading platform.

Stop recreational fishing of sharks

My passion for diving with sharks does not



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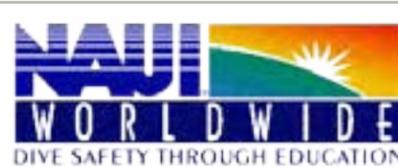
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diminish with age. Quite the contrary, the older I get, the more fanatical I become about interacting with sharks. I am now 66, and I prefer to dive in what I consider the last paradise for sharks on earth—the Bahamas. While sharks might get fished occasionally by sportfishermen in Bahamian waters, they seem to be safe from commercial fishing and the so-called recreational shark fishermen who are doing their share to decimate the shark populations. I simply believe that it is wrong to fish sharks for “fun” knowing what is at stake.

Talking about the Bahamas, recreational fishing in the Bahamas will be substantially curbed as the Bahamian authorities have introduced very stringent fishing regulations a couple of months ago that will make it rather unattractive for foreign anglers (mostly Americans from Florida) to fish in the Bahamas—a smart and responsible move by the Bahamian government. Good news for the sharks and other big game fish!

I only wish those macho shark anglers, and others who do not care about the survival of sharks, would have the chance to dive close to a large tiger shark, which is what I did recently at Tiger Beach in the Bahamas. Tiger sharks have the reputation of being “man-eaters”—a ludicrous term for any shark. Sharks, even large ones, don't eat “man”.

Tiger sharks have the reputation to be ‘man-eaters’, a ludicrous term for any shark. Sharks, even large ones, don't eat ‘man’

They occasionally bite people, and very rarely do humans die from shark bites.

Don't kill sharks, swim with them!

This is how I described my first encounter with tiger sharks to some friends:

“I just got back from a shark diving trip in the Bahamas where I could, for the first time in my life, free-dive with tiger sharks sized between 7 and 12 feet (2.5-4m). The experience was so overwhelming that I cannot adequately describe what I felt. Let me say just this, I wish people who are scared of sharks, hate sharks, or love to fish them as a recreational activity, could face tiger sharks in their habitat just once. A humble glance into the dark eyes of these majestic creatures would probably change their lives forever as they would feel a sense of awe in the fact that to save the oceans they would have to protect the very shark that is looking at them.”

What you can do to help

What can be done to stop the mindless killing?

Create awareness, educate the public relentlessly, boycott places where shark products are being sold, join conservationist organizations and promote shark diving. Individuals who love sharks should go out and tell their story.

One example worth mentioning is the work of a German baron, Jupp Kerckerink zur Borg. Jupp is a retired advertising executive, who has decided to dedicate much of his time to the cause of shark preservation. Have a look at his website and see what he does. Go to **Sharkprotect.com**.

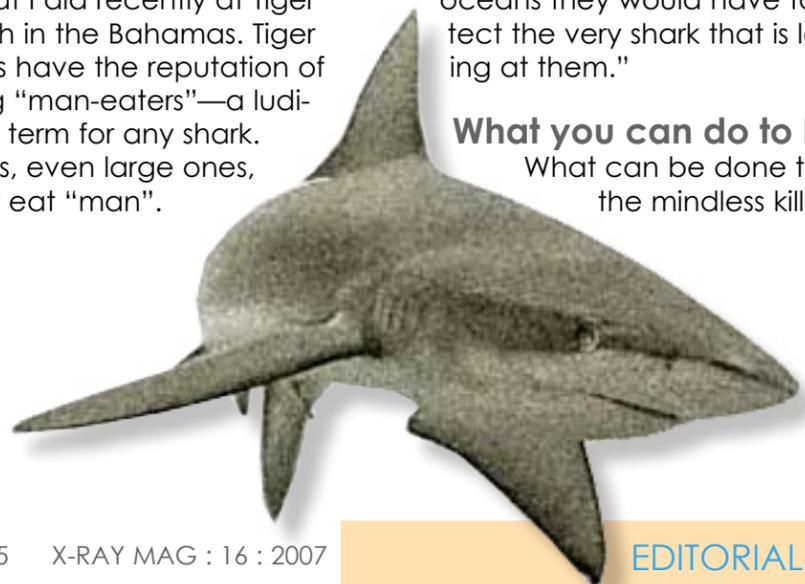
Leading marine biologists should unite outside of academia and make forceful attempts jointly, such as public manifestos and coordinated press conferences in those countries where shark finning is an issue, to induce government leaders to enact a complete ban on finning immediately world-wide, not just in national waters. Scholars have much to say, not only to their students and fellow scientists. When scholars speak up publicly, the non-academic world listens. Professors, to the front!

Shark fishing has to be controlled and monitored effectively on a global basis before it is too late.

“Too late” can be sooner than we all think.....

—Wolfgang Leander
Director of Shark Preservation
Ocean Realm Society
www.oceanicdreams.com

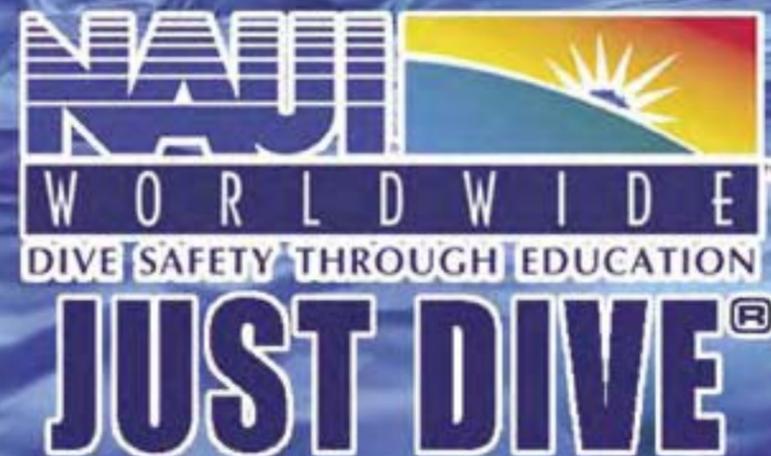
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Don't miss Mark Cheng with
Jet Li in the movie “Rogue” this spring!





X-ray mag

News edited by Peter Symes & Catherine GS IIm

Antarctic sea star from the area that the Larsen B iceshelf once covered

THOMAS SAUCÉDE

NEWS



C D'UDEKEM, ROYAL BELGIUM INSTITUTE FOR NATURAL SCIENCES



That is, until the two ice shelves, dubbed Larsen A and Larsen B, collapsed in 1995 and 2002 respectively, exposing its secrets to the world. This meant that scientists were now able to study, collect and catalogue the unique wildlife beneath the two ice shelves; they didn't have to peek through holes drilled into the ice any more.

Together with the excitement of exploring an ecosystem untouched for millions of years, there was also a sense of urgency. "This is virgin geography. If we don't find out what this area is like now following the collapse of the ice shelf and what species are there, we won't have any basis to know in 20 years' time what has

changed, and how global warming has altered the marine ecosystem," said Gauthier Chapelle, a biologist from the International Polar Foundation.

And so, for ten weeks, the scientists, hailing from 14 nations, lived aboard the research vessel *Polarstern* and conducted the very first comprehensive survey of the

A new species of *Epimeria*, a 25-mm-long amphipod crustacean found near Elephant Island

The Antarctic octopus normally lives in deeper water

What the ice was hiding Antarctic Lifeforms

Last year, 52 scientists spent the Christmas and New Year season working in the bitter Antarctic cold aboard an upgraded research ship, millions of kilometres away from family and friends. Although they were away from family and friends during the festive period, we suspect that they would not have wanted it any other way. In fact, chances were high that these 52 scientists could not have asked for a better

Christmas present.

They had departed from South Africa on 23 November 2006, on this historic mission to find out about one of the world's little-known ecosystems and its indigenous marine life. Their destination was the Weddell Sea where, for at least 5,000 years, two ice shelves shielded the sea bed for an area of 10,000 square kilometres.

These deep-sea sea cucumbers are abundant in the Larsen B area. They are all heading in the same direction—for some unknown reason



Edited by
Peter Symes

region. They carried with them hi-tech, sophisticated sampling and observation equipment including a vehicle that is remotely operated and equipped with a camera.

In all, the discoveries made during the expedition has given us a glimpse of what life must have been like under the Antarctic ice. Picture a world filled with deep-sea lilies, long-limbed sea stars, amphipod (shrimp-like) crustaceans, settlements of gelatinous sea squirts, glass sponges, orange starfish, clusters of sea cucumbers...

Scientists have managed to collect about 1,000 specimens, some of which have adapted to the unique conditions under the ice, while others are new to



This ice fish has no red blood pigments or red blood cells as an adaptation to low temperatures

science.

The latter include an ice fish that has no haemoglobin (red blood pigment) or red blood cells. This characteristic allows its blood to flow more freely, saving on energy used to pump blood through its body. There is also a venomous sea anemone that lives on a snail's shell, in a symbiotic relationship in which it provides protection for the snail in exchange for transport to food

long.

"We were in the unique position to sample wherever we wanted in a marine ecosystem considered one of the least disturbed by humankind anywhere on the planet," said Julian Gutt, a marine ecologist and chief scientist on the expedition.

He added, "we also found the first hints of a shift in the species composition." This was exhibited, for instance, by

sources.

There are also 15 potentially new amphipod species, some as large as ten centimetres

the presence of sea squirts, which would not have survived under the ice cover. Abundant settlements of these creatures were found latched on the sea bed previously covered by Larsen B.

Gutt believes that a fully mature community would require several hundreds to thousands of years to develop.

Although the expedition ended its stint on January 30th, the story does not end here. The scientists have taken about a thousand specimens for further analysis. Explained Dr Gutt, "The results of our efforts will advance our ability to predict the future of our biosphere in a changing environment."

The first findings from this analysis are expected to be announced in September. ■

Antarctic Lifeforms

These large glass sponges, found at Larsen A, are extremely slow-growing and must therefore have already existed before the recent disintegration of the ice shelf



SUGANTHI DEVADASON MARINE RESEARCH INSTITUTE

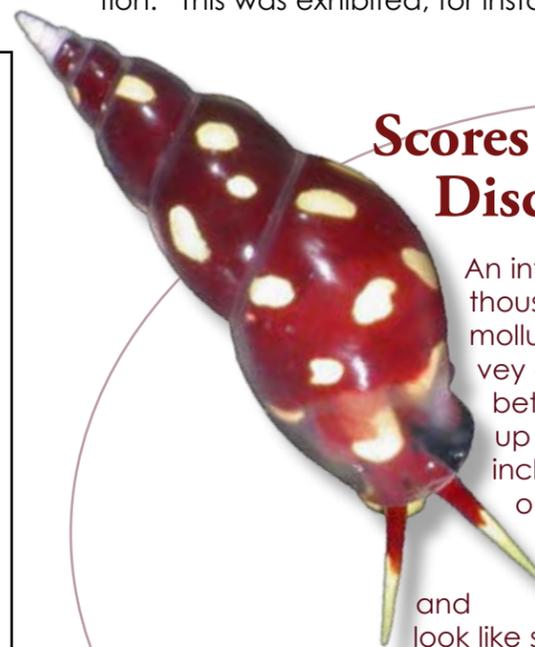
India: New Coral Species Found

No less than thirteen coral species new to science have recently been identified in the Gulf of Mannar Marine National Park. These discoveries come as the gulf's existing coral reefs are found to be deteriorating rapidly, with their coverage shrinking by 30 per cent over the last two decades according to a four year survey conducted by the Suganthi Devadason Marine Research Institute (SDMRI) in the 560km² park.

According to the report, 117 species of coral exist in the park but according to the report by the

SDMRI team live coral is present only on a 78km² area in the park. That is 32km² less of the coral cover found 20 years ago.

"The degradation happened mainly because of destructive fishing and sewage disposal," said J. K. Patterson Edward, Director, SDMRI. ■



Scores of New Marine Species Discovered Off Philippines

An international team of scientists has discovered thousands of new species of crustaceans and molluscs in waters off the Philippines. From a survey conducted in 2004-05, the researchers found between 150 to 250 new crustacean species and up to 2,500 new mollusc species. The discoveries include a variety of new shrimp species: fat salmon-coloured shrimp with antennae longer than their bodies, mustard and tan shrimp with thick front appendages that bend like bananas, and lavender shrimp with segmented tails that look like stacked purple marshmallows. At

a ceremony at the Philippine National Museum a new five-year program to study and discover additional fauna, titled Census of Philippines Deep-Sea Biodiversity, was announced.

The new initiative is just one of a series of scientific expeditions in the region. This past fall, a team from Conservation International announced the discovery of 52 new species off Indonesia, including a walking shark. ■



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Edited by Peter Symes



This Bali catshark is distinguished by its trout-like colors and leopard-like spots



This species of shark recently discovered in Indonesia, called a whitefin smooth hound, closely resembles similar sharks found as far away as Mexico

20 New Species of Sharks and Rays Discovered

Twenty new species of sharks and rays have been discovered in Indonesia in a five-year survey of catches at local fish markets by Australian researchers.

Images: CSIRO

(AUSTRALIAN COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION)

At least 20 previously unknown species of sharks and rays have been found not by using high-tech mini-submarines or expensive deep-sea diving operations. Instead, investigators travelled to Indonesia's fish markets over a period of five years, checking out what was for sale.

The survey by scientists from Australian Commonwealth Scientific and Industrial Research Organization (CSIRO) was part of a broader project working toward improved management of sharks and rays in Indonesia and Australia.

"Indonesia has the most diverse shark and ray fauna and the largest shark and ray fishery in the world, with reported landings of more than 100,000 tons a year," said William White, a co-author of the study. "Before this survey, however, there were vast gaps in our knowledge of sharks and rays in this region."

The Jimbaran shovel-nose ray is among at least 20 new species found during a five-year survey of Indonesian fish markets

First real survey since 1860

The survey represents the first in-depth look at Indonesia's sharks and rays since Dutch scientist Pieter Bleeker described more than 1,100 fish species from 1842-60. At the time, scientists in Europe rejected Bleeker's finds, saying they doubted such high levels of diversity could exist among marine life. The survey also forms the basis of a new field guide called, *Economically Important Sharks and Rays of Indonesia*, which is available in English and Indonesian.

The guide represents the first in-depth report of Indonesia's sharks and rays since Bleeker's work in the mid 1800's.

From 2001 to 2006, researchers photographed and sampled more than 130 species on 22 survey trips to 11 ports across Indonesia. More than 800 specimens were lodged in reference collections at the Museum Zoologicum Bogoriense at Cibinong, Java, and the Australian National Fish Collection at Hobart. So far, six of the new species have been described in scientific journals. These are the Bali Catshark and Jimbaran Shovel-nose Ray found only in Bali, and the Hurtle's Whipray only in West



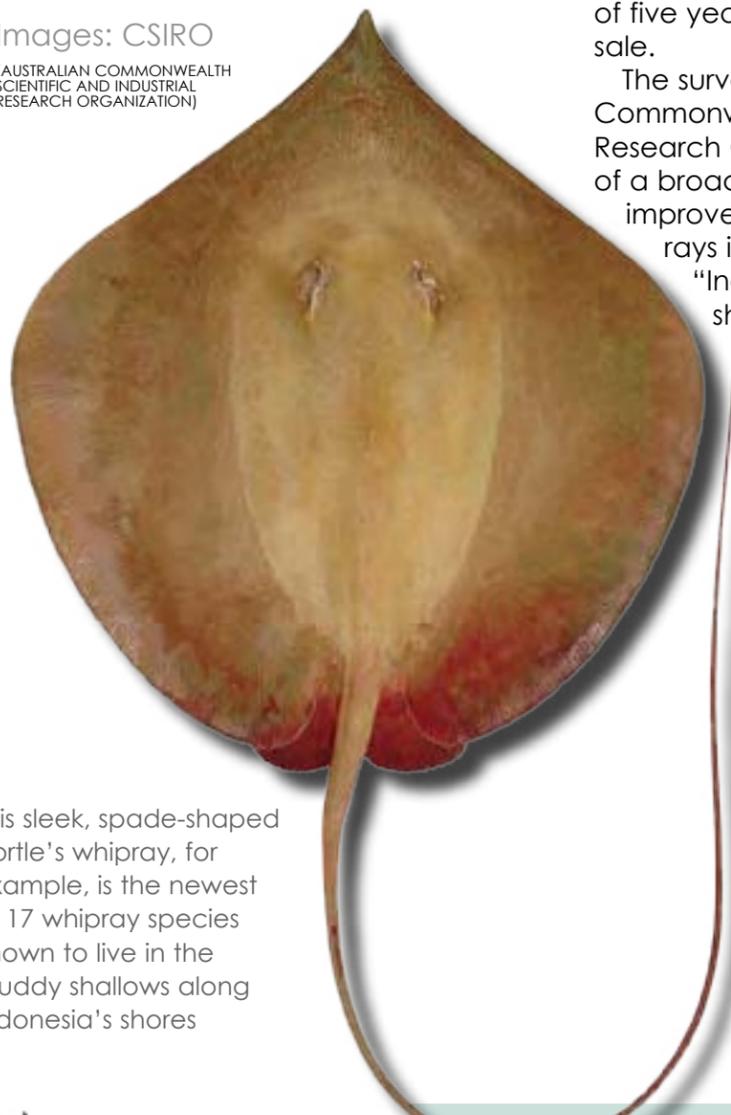
Papua. Scientists are preparing to describe a further 14 of the species.

"Good taxonomic information is critical to managing shark and ray species, which reproduce relatively slowly and are extremely vulnerable to overfishing," White said in a statement. "It provides the foundation for estimating population sizes, assessing the effects of fishing and developing plans for fisheries management and conservation." The island region also has the world's largest shark and ray fishery, White said, with reported landings of more than 100,000 metric tons a year.

The new finds come only shortly after two expeditions off the coast of Indonesia revealed a remarkable "lost world" of marine species also new to science. One of the most unusual finds were two new small epaulette sharks that swim among coral reefs and have an odd way walking around in the bottom on their pectoral fins, while hunting for mussels and crabs and the things that live in the sand.

SOURCE: CSIRO ■

This sleek, spade-shaped Hurtle's whipray, for example, is the newest of 17 whipray species known to live in the muddy shallows along Indonesia's shores



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Atlantis Reef Project Completes Phase One Construction

On February 22, the last structures and sculptures were deployed to complete the project launch and first phase of construction. When completed, there will be approximately 5,000 individual pieces of sculptures and columns, set along five concentric circles with eight spokes on the wheel meeting in a central plaza. The site will cover 600,000 sq ft and rise to within 25 feet of the ocean's surface. ■





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World's Northernmost Coral

These photos were taken in deep water, under very difficult conditions

Where's the world's northernmost coral? Off Sørøya in Finnmark, Northern Norway.

Local fishermen have known about it for years, because their trawlers often pull some of it up. Over the past few years, researchers have been diving to the deep in mini-sub to chart it and photograph it. They've found one reef after another and want to make sure that oil exploration efforts don't damage it.

"The coral is gorgeous and some of the most special that Norwegian nature has to offer," Jan Helge Fosså of the marine research institute (Havforskningsinstituttet) told newspaper Aftenposten. He's been leading the research group that has responsibility for the coral mapping project.

The world's largest cold water coral reef was found off Lofoten, the scenic archipelago that stretches into the Norwegian Sea

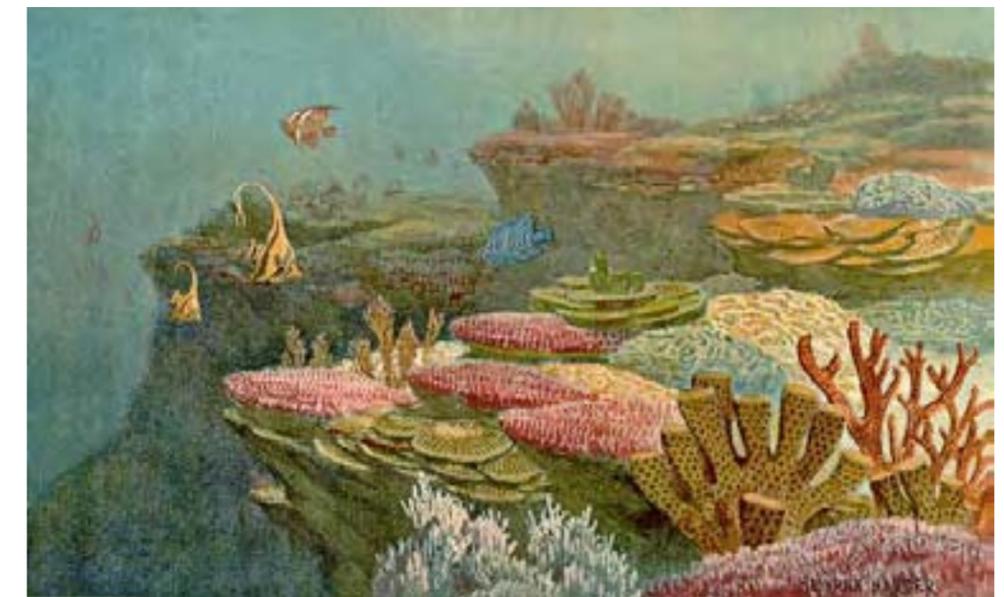
west of Narvik. It lies at a depth of 300-400 meters about 110 kilometers west of Røst. The reef itself is about 35 kilometers long and three kilometers wide.

Environmental groups are also keen to preserve the coral reefs, with more than 1,000 of them lying outside Træna. WWF Norge claims they're endangered even though they're large, and is demanding better monitoring and protection for them. SOURCE: AFTENPOSTEN ■

Ancient Corals Predict Future of Global Climate

Much like scientists can read the rings of trees to determine climate changes that tree has endured, researchers can "read" coral. For example, by analyzing the coral's strontium-calcium ratio, scientists can measure how much rain fell as much as 6500 years ago. In a recent study, in fact, researchers with the British Antarctic Survey concluded that the periodic and normal increase in monsoons in the Indian Ocean paradoxically result in stronger droughts in Indonesia and Australia.

While this trivia may not have much import for the typical suburban mom, the implications of this research are fairly staggering. Simply, corals provide a giant, untapped library of information about the



Impression of ancient coral reef, by Heinrich Harder (1858-1935)

planet's past. According to Nerilie Abrams of the British Antarctic Survey, "There is a lot more we can learn from the corals. It's a

matter of analyzing them." Of course, we can't analyze them if we're destroying them. ■

HAVFORSKNINGSINSTITUTTET

Edited by
Peter Symes

Moscow in February—for a Westerner, that brings up certain associations; one, is the image of the bitter cold that devastated Hitler's armies during WW2, and which adults don't recall, the footage of the tight formations of soldiers and missile batteries parading across the Red Square with the politbureau saluting them from the top of the Lenin mausoleum. Boy, were some of us scared that the Ruskiies or Commies were coming, watching those grainy images during the cold war.

How things have changed

An Ikea store now greets you when you leave the airport, giant billboards for mobile phones and cars are everywhere and, on the Red Square where the tanks were, is now a skating rink full of laughing kids. And across the square, opposite Lenin's mausoleum, the classy department store Gum is now full of designer stores. Here, you can find Vero Moda and Armani, and have a cappuccino and a crepe when you take a moment to rest your legs at one of the mall's fancy cafés.



Shopping-shopping



Moscow has come a very long way in a very short time. The city is now cool and hip, with Communism and all its shortages being seemingly distant memories already. In the streets, you now see so few Ladas and other sputtering putt-putts that you could easily mistake Moscow for any other European city, if not for the Cyrillic lettering everywhere and the overwhelming grandeur of the city. Moscow is big, and it's got big buildings everywhere. It is

strange, foreign, mystic, yet undeniably European, too, and comes with a lot of history.



The Dive Expo

A sense of history and the classic past greets you at Gostiny Dvor, where the Golden Dolphin Dive expo is held. Where else in the world is an international dive expo held on marble floors and in a building with colonnades and chandeliers, but in Russia? If there was a prize for the most classy venue, this expo would take 1, 2 and 3 place!

The atmosphere is relaxed, especially for the first two days of the four day show. As in many other parts of the world, the general public have jobs to go to during the week and so, attend the show during the weekend, making Thursday and Friday seem more characteristic of a trade show.

As Russia doesn't have much of a native dive equipment manufacturing industry—aside from a couple of companies doing wetsuits and spearfishing equipment—a number of the big American, Western European and Asian brands were present either as themselves or represented by their local distributor. Or both, with somebody from Headquarter's lurking in the background. I spotted several

high ranking dive industry professionals discretely walking around somewhat incognito without name tags or wearing company apparel. Either they were just there on a covert fact-finding mission or they were there to meet or help their local reps but were steering clear of the gruntwork. Since they were not able to speak Russian, that would be understandable. The language barrier is certainly prevalent and goes both ways—the Cyrillic letters don't help the average Westerner either. But a lot of the younger Russians had remarkably good English skills; it was mostly the older generations who could be hard to communicate with.

Upbeat dive industry

The show was very dynamic and the enthusiasm that characterises

The Golden Dolphin



Moscow International Festival "Golden Dolphin" is a special exhibition, dedicated to diving, spear fishing and leisure on the water. It is the largest diving show in Eastern Europe. More than 210 exhibitors from 33 countries were gathered this year in Moscow. Among the exhibitors there were Russian and foreign manufacturers, distributors for diving and spear fishing equipment, underwater photo and video-housing; training scuba schools, dive-tourism companies, tourism representatives; photo and video studios, film makers and photographers; well-known journalists from leading international diving publications. And of course the whole palette of dive training agencies: PADI, SSI, PDA, IANTD, NAUI and CMAS were all vying for the interest of new divers.

Report from Golden Dolphin 2007

By Peter Symes & Andrey Bizyukin

Moscow's COOL



The Golden Dolphin



Irina Kochergina took third place in the category, Seas, Lakes & Rivers of Russia, with this poetic and stunning image

Кинозал, means movie theatre. Simple, no?

a young industry was almost tangible. In other places in the world, there seems to be an almost weary sentiment in comparison, following years of recession in the industry. But Eastern Europe seems to be on the upswing. While the restraints of communism now lie some years back, there still seems to be a lot of pent up energy and yearning for freedom and adventure that is still being unleashed. This energy was a nice sensation. What was more stressful was the noise level, at times. For one thing, there were constant and repeated public announcements made over a supercharged PA system that forced any on-going conversations you might be engaged in, to stop involuntarily. The other thing, was the stage, which had ongoing fashion shows, rock bands or award ceremonies of some sort. I did not fancy that they permitted smoking in the building. I hated having my clothes stinking of tobacco smoke after a day at the show. But that was not enough to ruin an impression of an otherwise very nice show. Aside from the big international manufacturers, there were a lot of Russian dive clubs and a range of Russian dive and tour operators. I don't suspect that many from the West have yet gone on a dive trip to Russia, but I have—both to the White Sea and Lake Baikal—and I can vouch for the impressiveness of the diving, which is quite something. So, if you are looking for a new and different experience, perhaps look in this new direction.

The resort and operators seem to be quite able and willing to handle outside tourism on a level that is fully on par with what is offered elsewhere. Once you're there, everything works remarkably smooth,

though there is the occasional bureaucracy, which still rears its ugly head and makes for a hair-pulling experience. Getting visas, for example, takes quite some time, effort and money. But once you arrive, you get through the airport and taxi faster than anywhere else. It took us 20 minutes from the time we arrived at the gate to the moment we were sitting in the taxi heading into the city. Beat that.

The main purpose of the show was to get new divers into diving

The show is the brainchild of Gennady Grutsya and he is a piece of history himself. Now a wealthy man, whose printing business manufacturers half the envelopes produced in all of Russia, and sponsor and president of the Golden Dolphin, he was formerly in the Soviet special forces and military advisor or instructor in Libya. Who would have guessed? He explains that he has been into photography since childhood. He later got into CMAS photography competitions. He has dived all over the world, including, of course, Russia itself from the White Sea to Kamtjatka. Six years ago, he started photo exhibitions in Moscow; the first ones were only 500 square meters. In the following years, Russian divers wanted to adjoin their dive-expo to the photo-exhibition, and the joint venture was then called the

President and founder of Golden Dolphin, Gennady Grutsya, is happy, too, that the old divisions of the Cold War are now long gone



Golden Dolphin. The main purpose of the show was to get new divers into diving, says Gennady Grutsya. This was not easy as diving was only for the middle class and rich people. Diving was tied in with economic development.

"In Russia, we will see more middle class people, and we are confident in the future," he said. Now, there are about 200,000 divers in Russia. Considering the dive industry there is only considered to be 12 years old, that is





Celebrities

The show also hosted a number of celebrities, conferences and talks.

The triple spear fishing world champion, Pedro Carbonello, was present, and Natalie Tirukalo, course-director in HSA, held a master class about the handicap divers training. The master class of underwater video and photography was headed by Igor Dvinjaninov, director of The Underwater Videography faculty VGIK with cameraman Grigory Jablochnikov letting the audience in on his secrets.

The round table debate, "Tourism Safety and Dive Industry Development in Russia", took place here also, to which all dive professionals, dive centers, tour operators, instructors and clubs were invited. Representatives of the Russian Tour Operators Association, Russian State Tourism Agency, Rescue Service Ministry and the Russian Foreign Ministry also took part in the discussions.

The technical divers visiting the show would not miss the presentation given by

Pascal Bernabé, the legendary French cave diver and record holder for the deepest dive on SCUBA. His record dive was done off the island of Corsica, where he reached the staggering depth of 330 meters. Such a dive was only made possible thanks to the support and sponsorship of a number of diving companies and the help of a team of good friends.

The audience had many questions for Pascal Bernabé and vividly discussed the record, technical details, modern decompression programs, the problems connected with unreliable equipment and various amusing anecdotes. There were many questions related to diving beyond the depths of 120 meters in caves and on wrecks. All visitors got complete information about future master classes, expeditions and the champion's upcoming schedule.

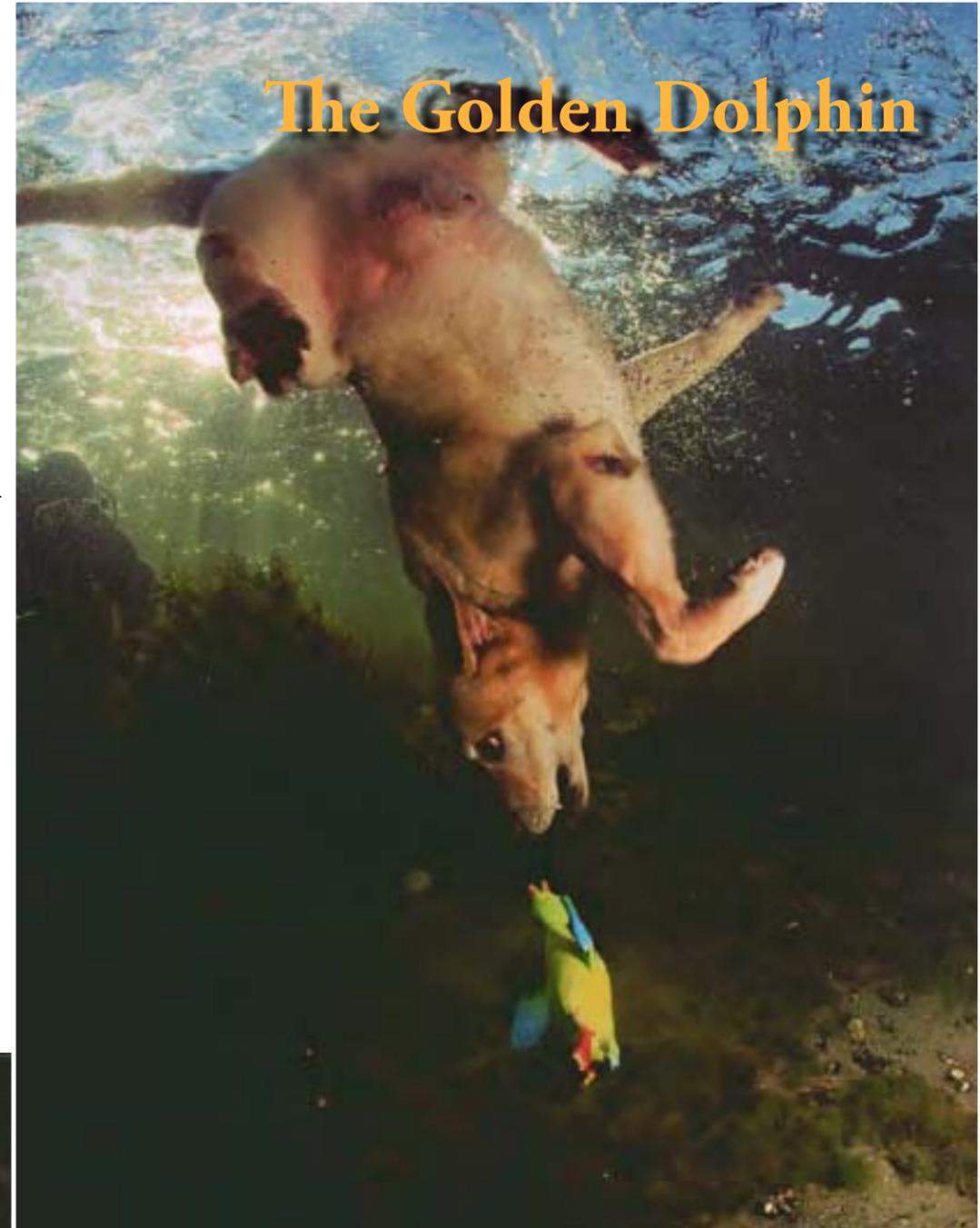
Visitors with children had the option to leave kids at a specially equipped children's playground where skilled animators were entertaining the kids.

Underwater World award

Russia's maritime history and legacy goes as far back as any European nation—this great country was and is among the leading powers in the world.

In honour and recognition of the many great people who were pioneers, or devoted their lives, to the Big Blue—whether geologists, biologists, historians, doctors, sportsmen, travellers or writers—a national "Underwater World" award was inaugurated. It was awarded to Yana Churikova and Oleg Sedov who captained the legendary four masted bark *Krusenstern* on its 60-year anniversary around-the-world tour in 2005-06. At the ceremony, the famous Russian singer, Edita Pyekha, performed assisted by the "Valaam" chorus from the institute of Singing Culture.

VI Moscow International Photo and Video Festival "Golden Dolphin" had participation from 89 photographers from 15 countries who had entered 452 images. The five-person jury included Gennady Grutsya, Jury



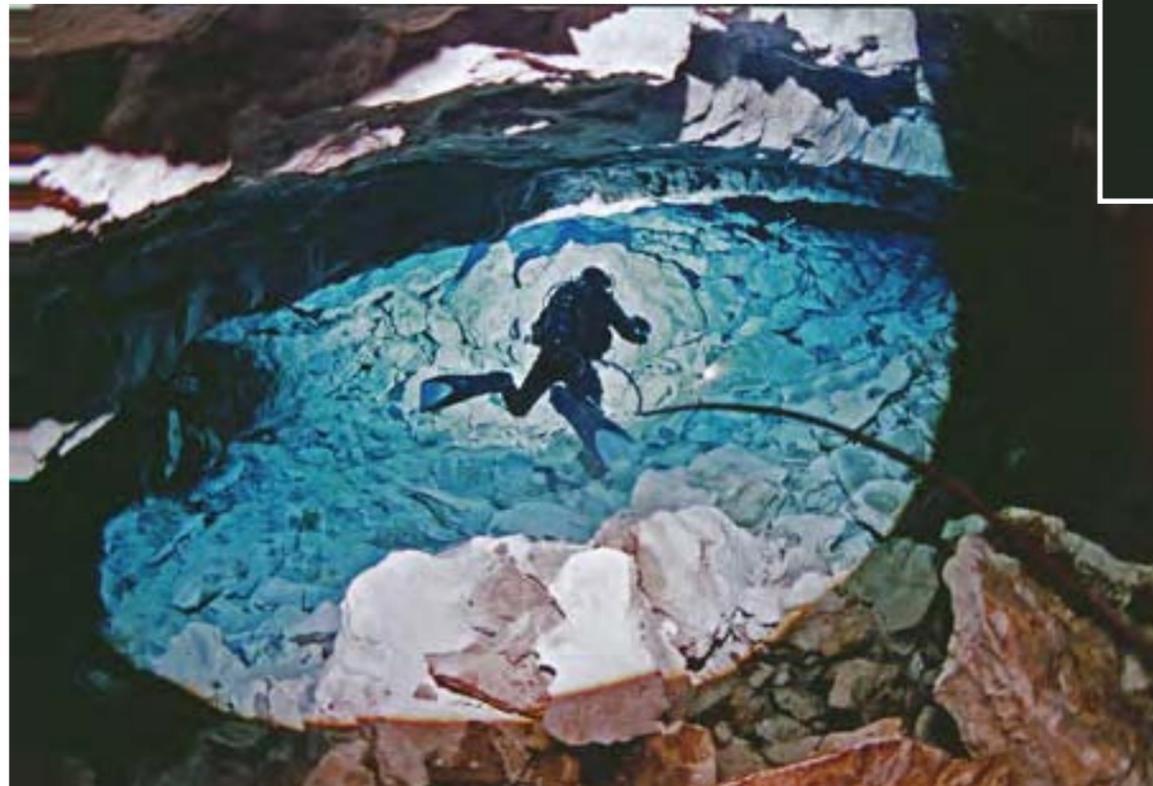
The Golden Dolphin

Pascal Bernabé's presentation held the packed audience captive. As second, X-Ray Mag's Andrey Bizyukin translated

not a bad number. The first PADI center in Russia didn't start until 1996 (the federation is from 1958 though) and Gennady Grutsya started diving with this center, Aquanavt, in 1997.

Gennady Grutsya stresses the importance of the presence of foreign guests and media to have Golden Dolphin firmly stitched into the fabric of the international diving community, "Once we were a closed society, now we are open." He got the inspiration for Golden Dolphin from traveling to all the biggest dive shows on the planet from Antibes and DEMA to Düsseldorf and what not. He combined all the best elements from each show into the Golden Dolphin. The show now covers 5,000m² and is growing by 1,000m² a year.

The coveted Golden Dolphin Statuette. CENTER: Andrey Oborin 's entry won second place in the category, Seas, Lakes & Rivers of Russia



Mihael Semenov won the category, Seas, Lakes & Rivers of Russia, using an unusual model

Trankvilichky, Alexander Evteev, Vladimir Vyatkin and Maxim Gubatov. All winners were awarded Golden Dolphin trophies and cash prizes.

In the video category, more than 90 films from 17 countries were entered. They were shown non-shop in a specially equipped cinema hall. Another first at the film festival was Andrey Makarevicha's Round Table in which the producers

and judges of the festival participated. Andrey Makarevicha presided over the competent jury.

By the end of the four day event, more than 15,000 people passed through the tillers. The next Golden Dolphin expo is scheduled for 14-17 February 2008, once again at Gostiny Dvor—a stone's throw from the Red Square. ■





Congratulations to the first four NAUI instructors in Denmark. In NAUI course director, Michael Henriksen, stands in the back (photo). The four new instructors—Armin, Jens, Lars and Michael—look forward to start teaching after a hard but very interesting and giving course. Armin will work in Holland and Austria, the others will operate in Denmark

DAN and NAUI are pleased to announce their alliance to work together for the greater good of diver safety. Effective immediately, DAN is the official dive accident insurance provider for NAUI Worldwide.

NAUI has discontinued its Dive & Travel Insurance Program and is endorsing the Membership and Dive Accident Insurance programs offered by DAN. "We've always supported DAN's mission," says Jim Bram, President of NAUI, "and the quality of their insurance program is well known. We value what DAN provides to the dive community, and we hope that our joining in this alliance will contribute to DAN's continuing success for many years to come, while allowing NAUI to focus on maintaining

the strength and quality of its diver education programs."

Divers currently carrying NAUI's Dive & Travel Insurance will be notified of the change as their policies come due for renewal, and they will be offered the opportunity to join DAN. In addition, NAUI dive centers and instructors will be provided materials on DAN and its programs, including the DAN Student Membership Program.



Visit NAUI During the following International and Regional Trade Shows in 2007!

<p>Asia TDEX Show – Bangkok, Thailand (May 24-27) MIDE Show – Kuala Lumpur, Malaysia (July 6-8) CDEX Show – Beijing, China (August 25-27) CDEX Show – Hong Kong (September 14-16)</p>	<p>Europe The Dive Show – Birmingham, England (October) USA Ocean Festival – Ft. Lauderdale, FL (April 20-22) Scuba Show – Long Beach, CA (June 2-3)</p>	<p>DEMA – Orlando, FL (October 31-Nov 3) Plan to visit the NAUI booth at each of these shows to catch up on the latest news, view new products or get together with your fellow NAUI members</p>
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Navy Submarine NR-1 to unlock the secrets of the Gulf

Exploring the Mexican Gulf for a Sign of Early Americans

One early morning in March, a research expedition steamed out of the Port of Galveston, Texas, for the Flower Garden Banks National Marine Sanctuary—about 180 kilometers off the coast of Texas and Louisiana. Led by Robert Ballard and Kevin McBride, the expedition consists of a 44-meter-long Navy research submarine NR-1, the world's only nuclear powered research submarine, two ships and a remotely operated vehicle (ROV).

When humans first trekked from Asia to North America, perhaps as long as 25,000 years ago, the continent was gripped by ice sheets and glaciers. Those early immigrants probably travelled along the shore, where finding food and shelter would have been easier. The trouble for archaeologists is that as the ice melted, the seas rose and covered any traces of this early migration. Now, marine geologists and archaeologists are hunting for underwater clues in the Gulf of Mexico.

NR-1 and the remotely operated vehicle (ROV) Argus will use high definition cameras to record biological and geological features of the ocean floor and help archeologists locate and examine where shorelines may have been in the past. These sunken shorelines may hold relics and clues of ancient people.

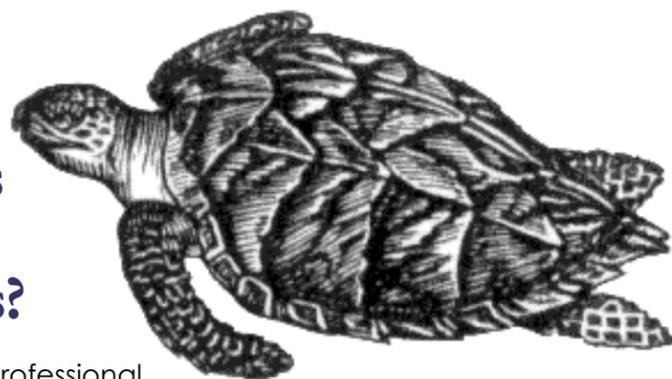
The submarine and ROV will survey the bottom of the reef, 120 meters deep, which is thought to have been the location of the shoreline some 20,000 years

ago. The reef is built atop large reserves of salt, and Ballard says it's possible that Native Americans would have mined it from caves or tunnels. "We're confident something is out there; we just need to see if we can find it," Ballard said at a press conference. The research isn't all archaeology; scuba divers from one of the research vessels will also observe conch, parrotfish, and manta rays on the shallow reefs. ■

Artist's impression of NR-1 at work



Edited by
Willy Volk



Pro Wrestler Gets into the Ring to Fight...for Turtles?

Hijo del Santo is a Mexican professional wrestler. Recently, Santo announced that, in addition to fighting Spandex and mask-wearing meatheads in the ring, he plans to fight overfishing, turtle egg hunting and pollution along Mexico's west coast. During a news conference—that included the presentation of a mock movie trailer announcing "Santo vs. the Enemies of the Sea"—the wrestler pledged to raise consciousness about how human actions

damage the ocean. To do this, he plans to join forces with conservation group, WildCoast, and work to stop sea turtle consumption in Mexico, defend protected beaches and promote gray whale protection. He also intends to visit coastal communities in northern Mexico and distribute educational comics featuring his character confronting threats to the ocean.

While it's easy to make jokes at Santos' expense, you have to admire his dedication to working on such an important cause. Interestingly, Mexico's pro-wrestlers are a very activist group, using their celebrity to raise awareness in everything from presidential campaigns to battles for affordable housing.

SOURCE: SIGN ON SANDIEGO ■



China Completes Its First Helium-Oxygen Saturation Dive

On December 30, 2006, 12 Chinese divers working with the Shanghai Salvage Bureau of Ministry of Communications completed a string of 28 dives, working underwater for a combined total of 126 hours to change an oil field pipe. Though the divers had trained in a simulated environment, this was their first official dive to a maximum depth of 103.5 meters. This occasion marks China's first successful helium-oxygen saturation dive, which is similar to a space launch, except for two important differences: divers work under extreme pressure at extreme depth. ■

SOURCE: COM.CN

Missing Divers Found? US Air Force to Use DNA Analysis to Identify Recently Discovered Bones

Twenty-eight years ago, three American divers—Air Force Sgt. Donald Michaud, Airman 1st Class Jan Granroth and her brother, Mark—went missing after cave diving in Vouliagmeni Lake, an area known for treacherous currents. Michaud and Granroth were stationed at Hellenikon Air Base in Greece at the time. Late last year, the bones of three divers—along with American-made dive equipment—were located in a cave in the lake.



Vouliagmeni Lake near Athens, Greece

Though the general consensus seems to be that the bones belong to these divers, no one is certain. This month, the Greek government handed over the bone specimens to the Air Force, and now, Air Force pathologists are using DNA analysis to try to determine whether the bones are those of the divers. Experts say it should take four to eight weeks to positively identify the remains.

SOURCE: ESTRIPES.COM ■

Knitting for Dolphins

Recently, the US Navy made public its plan to use dolphins and sea lions to help protect the Pacific Northwest's coastline from terrorists. Training the animals to locate—and, in some cases, apprehend intruders—the Navy thinks marine animals are perfectly suited to this kind of work. However, some people don't like this proposal, and to demonstrate their displeasure for it, they've taken up...their knitting needles.

In an effort to raise awareness about the issue, an informal collection of women, men, teens and children in the Pacific Northwest have started a campaign called Knitting for Dolphins. Arguing that only a wetsuit would serve the mammals better, the knitters have decided that the symbolic act of creating sweaters for the animals is the best way to get the word out. No word yet on what colors suit dolphins most.

SOURCE: KNITTINGFORDOLPHINS.COM ■

Woman Does Extreme Knitting...Underwater

Diver Laura Apps-Green likes to do some different things while she's diving. While on a family trip to Sharm El Sheikh this winter, Apps-Green claims she "was just lying on the beach and thought I would do a dive and take my knitting with me."

Of course! What a common thought! Later that day, she made her extreme knitting debut at the bottom of the Red Sea.

Though she didn't actually complete the knitting project she was working on at the time, she plans to complete it soon. Meanwhile, Apps-Green claims she's looking to take her extreme sport elsewhere. Who knows?

Maybe she'll figure out a way to combine swimming the English Channel, knitting and raising money for charity.

SOURCE: EVENINGNEWS24 ■



Larry Smith Passes Away in Indonesia

Eric Cheng of Wetpixel.com writes: Larry Smith, beloved dive pioneer, guide and critter expert in Indonesia, passed away on March 20, 2007, in Sorong, Indonesia. Larry spent two days in a hospital in Fakfak with what everyone thought was pneumonia. He was on his way to Bali when he passed away at the Pertamina hospital in Sorong from complications associated with pneumonia. Our heart-felt condolences go out to his family and friends.

Letters and images have been pouring in for the last two days, and we'd like to share them here. If you would like to share your condolences or a story about Larry, please leave a comment at the end of this page. To send in images and video, please **contact us**.

LARRY SMITH FAMILY MEMORIAL FUND The Benefit of the Larry Smith Family

A memorial fund has been established for Dewi and Breezy, Larry's wife and daughter. The Benefit of the Larry Smith Family honors Larry's dedication to his family, friends and marine world. To donate to the fund, you can:

1. Donate via Paypal or credit card (you can donate via credit card without signing up for an account);
2. Send a check payable to "The Benefit of the Larry Smith Family" to:
The Benefit of the Larry Smith Family
6113 Fox Ridge, Angleton, TX 77515
3. Wire money directly into the account. For more information on how to do this, contact the Smith family at smithdive13@hotmail.com.

Edited by Peter Symes



A photograph of the *Dunkleosteus terrelli* fossil skull upon which the study was based

Dunkleosteus *who?*

It was ten meters long, weighed four tons and ate anything in the ocean that got in its way. Meet *Dunkleosteus terrelli*, a prehistoric fish that lived 400 million years ago. It was equipped with the most powerful jaws of any fish ever; its bite rivalling that of the T-rex and modern alligators.

"*Dunkleosteus* was able to devour anything in its environment," said study leader Philip Anderson at the

It would bite a shark in two

Department of Geophysical Sciences of the University of Chicago. Anderson and Mark Westneat at the Field Museum in Chicago, used a fossil of *Dunkleosteus* to produce a computer model of its muscles and its bite. They found it could bite down with 5,000 kgs of force, which translates to 5.5 tonnes per cm² at the tip of a fang. And it was

fast, opening its jaws in just one-fiftieth of a second. That action would have created suction to draw prey into its

mouth. Fish typically have a powerful bite or a fast bite, but not both, the researchers said.

Dunkleosteus was one of many species of placoderms, a diverse group of armored fishes that dominated aquatic ecosystems during the Devonian period, from 415 million to 360 million years ago.

The creature's powerful bite would have allowed it to feed on other armored aquatic creatures of the time, including sharks and arthropods. ■

Warming Oceans Will Contain Less Oxygen for Fish

As the temperature of the world's oceans increases due to global warming, there may be more and more areas where oxygen in the water is either limited or absent, and that could have a deadly effect on huge numbers of marine species.

The so-called "dead zones" are caused by excessive levels of nitrogen in the oceans. Nitrogen is a component of most commercial fertilizers, and rivers carry the residue of these fertilizers from farms to the ocean. Here, it nourishes phytoplankton giving rise to algae blooms. When these algae die and rot, it consumes great quantities of oxygen.

As a consequence, the number of man-made dead zones—areas of the ocean where oxygen is either depleted or gone—has grown to more than 150 in the last 50 years, some of

them several thousand square kilometres in size.

But now, because of global warming, it is possible that the number of such zones, where fish that need oxygen cannot thrive, could rise even higher. ■



Mexican Government Passes Sweeping Shark Protection Legislation

In February, the Mexican government published sweeping new regulations and protections for sharks, including: a ban on shark finning; an extension of the moratorium on new commercial shark fishing permits; and extensive protections for great white sharks, whale sharks, basking sharks and manta rays. The new rules and regulations come after ten years of debate and the broad support of researchers, scientists, conservation groups, eco-tour operations, local citizens and, of course, divers. Hopefully, other less conservation-minded Latin American nations will follow Mexico's example and publish similar restrictions. SOURCE: WWW.PR.COM ■

Why Does Ocean Air Smell So Good?



Why does the air at the seaside have such a delightful and distinctive smell? Scientists have not known the full story until now. The gas that gives ocean air its fishy, tangy smell is dimethyl sulfide, or DMS, and is produced by ocean-dwelling bacteria.

Scientists had long known that bacteria could be found consuming decay products in places where plankton and marine plants such as seaweed were dying. But while it was known that quite a lot of bacteria could produce DMS no one knew how.

It turns out that a single bacterial gene is responsible

for the mechanism that converts the plants' decay products, called DMSP, into DMS. But the bacteria only switch on the gene if the DMSP is around.

Understanding how the odorous gas is produced could be important because it is implicated in cloud formation over the ocean and helps some animals find food. Some seabirds rely on DMS as a homing scent to find food. On one occasion the researchers opened a bottle filled with the DMS-producing bacteria only to be bombarded by hungry seabirds. ■

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Maldives Oceanic Dreams

Edited by
Willy Volk

Saving the Tuna



"Sustainable management of the world's tuna fisheries should be possible, if the will can be found."

Bluefin Tuna Given a Breather

The European Commission has published reduced quotas for the fishing of tuna for 2007, part of a global agreement to prevent the immensely popular fish from being hunted to extinction.

The total bluefin tuna catch for the EU as a whole was set at 16,779.55 tonnes for the year, down from 18,301 tonnes in 2006.

The move follows a decision by an international commission to cut the total hunt of bluefin tuna in the Atlantic Ocean and Mediterranean by 20 percent by 2010. ■

Regulators Aim to Slow Decline in Tuna

Tuna stocks are quickly disappearing, some critically, due to ineffective management of fishing on the high seas, the WWF has warned.

WWF's new briefing paper, *Tuna in Trouble: Major Problems for the World's Tuna Fisheries*, details rampant illegal, unreported and unregulated fishing, unsustainable quotas and far too many boats competing for the remaining tunas.

Despite efforts by some governments within tuna Regional Fisheries Management Organizations, populations of important species such as bluefin tuna are critically depleted. Atlantic bluefin, used for high-end sushi and sashimi, is severely overfished, and the spawning stock of Southern bluefin in the Indian Ocean is down approximately 90 percent.

by small mobile fleets. Tuna theft in the ocean could grow rapidly if moves to stop illegal fishermen operating elsewhere push them into its seas, Alejandro Anganuzzi, head of the intergovernmental Indian Ocean Tuna Commission (IOTC), told Reuters.

The European Union has granted €7 million to help Indian Ocean nations combat illegal fishing and has entered into a surveillance partnership with the Indian Ocean Commission to fight "illegal, unreported and unregulated fisheries in the region." ■

Pacific Nations Ask for Help with Poachers

Meanwhile, Pacific nations are asking New Zealand for more help in catching poachers targeting lucrative tuna stocks.

Illegal fishing and over-fishing is costing the region billions of dollars a year.

The United Nations has already warned that tuna resource management is failing, raising fears that stocks could collapse.

New Zealand sends air force patrols to look for poachers, but countries such as Vanuatu want more patrols, as they do not have the resources to monitor the fishery.

And the Marshall Islands have now asked New Zealand for more help, a request the Foreign Minister Winston Peters says he is treating sympathetically.

Dr Simon Cripps, director of WWF's global marine programme, said that the talks in Japan provide an opportunity for nations to implement practices to protect tuna as well as the well-being of other coastal communities.

"Sustainable management of the world's tuna fisheries should be possible, if the will can be found," he said. "But many governments are routinely ignoring scientific advice, failing to implement the available conservation and management measures, turning a blind eye to illegal fishing and not prosecuting those who flout the rules." ■

International Action Plan on Tuna

Delegates from some 60 nations adopted the first joint plan to combat overfishing of tuna at their meeting in the western Japanese city of Kobe in January.

The plan, while short on specific measures, committed five regional tuna regulatory bodies to sharpen their efforts to manage tuna fishing, to rebuild stocks and minimize environmental damage from tuna fishing.

The plan calls for each nation to share information on fishing boats, cooperate in monitoring illegal fishing boats and report the outcome. ■

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PADI.com got a face lift

www.padi.com has been revamped. The new user-friendly interface is available in seven languages: English, German, French, Italian, Spanish, Dutch and Portuguese. The website is divided up into three main topics: "Start diving", "Keep diving", "Teach Diving". "My PADI" is available to already certified PADI divers as personalized area. After logging in, it is possible to view certifications, to keep an online log-book and to share one's diving experiences with other divers.

New International Standards for Diving

In January 2007, six standards for Recreational Diving Services were approved by the member countries of the International Organization for Standardization (ISO).

These new ISO standards will be published in mid-2007 and provide international standards for three levels of divers, two levels of instructors and a service provider or dive centre. Each of these standards equate to a PADI certification or member level, which means that, in effect, a diver or member holding one of these qualifications can also be said to have met the requirements of the relevant ISO standard—as though they had gained two credentials at once.

The six standards are listed here with their PADI equivalencies:

These ISO standards will become an international benchmark that can be used to compare divers' qualifications. This means it will be easier for divers to travel and easier for dive professionals to work internationally.

There have been similar European standards in place for several years, and it was because of the success of the European Norms (ENs) that the new ISO standards were developed. Once the ISO standards are published, the ENs will be updated to exactly reflect the content of them, so that the ISO standards and the ENs will be identical. Governmental bodies may not be familiar with PADI credentials, but they will certainly be familiar with ISO standards. They are used as measures of quality for a huge range of things in most of the world. ■



ISO (International Organization for Standardization) is the world's largest developer of standards. ISO standards also have important economic and social repercussions, not just to engineers and manufacturers for whom they solve basic problems in production and distribution, but to society as a whole.

They are useful to industrial and business organizations of all types, to governments and other regulatory bodies, to trade officials, to conformity assessment professionals, to suppliers and customers of products and services in both public and private sectors and, ultimately, to people in general in their roles as consumers and end users. ■

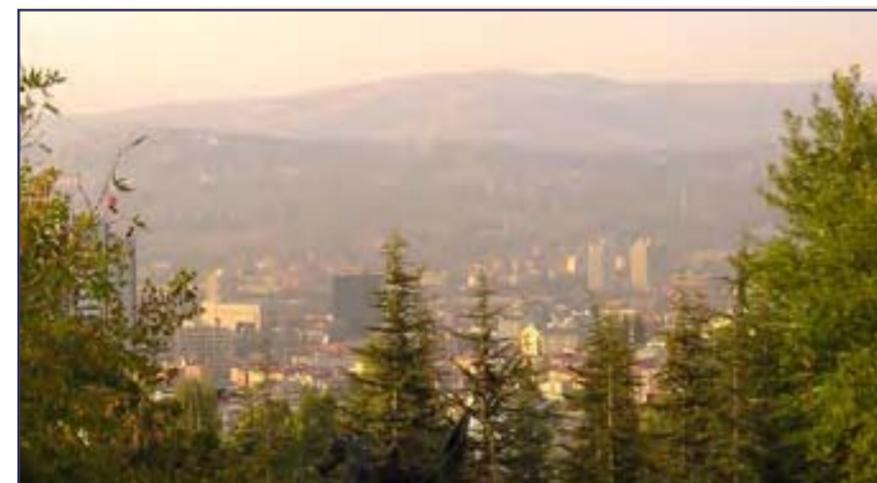
ISO Level	ISO Standard	PADI Equivalent
Diver Level 1 - Supervised Diver	ISO 24801-1	PADI Scuba Diver
Diver Level 2 - Autonomous Diver	ISO 24801-2	Open Water Diver
Diver Level 3 - Dive Leader	ISO 24801-3	Divemaster
Instructor Level 1	ISO 24802-1	Assistant Instructor
Instructor Level 2	ISO 24802-2	Open Water Scuba Instructor
Service Provider	ISO 24803	Diver Centre or Resort

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View of Ankara from the botanical garden

Number of Diving Courses Grow in Landlocked Turkish Capital, Ankara

Gazi University Natural Sports Location and Reservation Center (GÜDAK), in collaboration with Ankara Nature Activities Center (ADAM) Diving School, have begun a new underwater diving course in Ankara, writes Turkish daily, *Today's Zaman*.

There are now three diving programs in Ankara. The course is limited to 35 students because the diving practicum takes place in the Aegean coastal city of Fethiye. It will give both theoretical and practical training to a larger number of students.

Participants will receive certificates from both the Turkish Underwater Federation and the World Underwater Federation (CMAS). The cost for the course is YTL 350. ■



RSTC Endorses DAN Diabetic Guidelines

The latest guidelines from DAN (Divers Alert Network) for those with diabetes allow for some individuals with diabetes to dive. After a thorough overview of these guidelines RSTC (Recreational Scuba Training Council) unanimously endorsed the guidelines DAN has advised diabetics against diving for many years until the mid-1990s when they determined that a percentage of their members were not only diabetic but those with insulin requiring diabetes. This information led DAN to launch a study, which ran from 1997 to 1999 to determine the possibility of those with diabetes being able to dive. The finding of that study prompted the Undersea and Hyperbaric Medical Society (UHMS) and DAN to hold a workshop in 2005 with the diving medical experts from around the world to seek formal guidelines for diabetes and diving. These guidelines can be found on the home page of DAN www.diversalertnetwork.org, by searching for "diabetes". ■





Vandenberg's sinking getting closer?

A World War II troop carrier that saw duty in the Cold War and had a role in a movie is destined to become the largest artificial reef in Florida.

The 533-foot *Gen. Hoyt S. Vandenberg*, will be towed to waters off Florida's Key West and sunk as an artificial reef, probably in one year, the U.S. Maritime

Administration has announced. The Vandenberg Artificial Reef will be a world-class dive site for all levels of diving experience. This site will be the signature dive of Key West and the Florida Keys, and will become one of the most famous warm-water wrecks in the world. All four upper decks will be opened to divers, with access vertically through the 18 stair towers, elevator shafts and cargo holds. The spaces will also be accessi-

ble horizontally through seven by ten foot holes in the hull. The fuel tanks, tank-top and first platform will be sealed and ballasted to insure upright positioning. But first the *Vandenberg* will be towed to Colonna's Shipyard in Norfolk where crews will spend months removing asbestos, lead paint, PCBs in wiring and thousands of pounds of waste oil, according to federal officials.

The *Gen. Hoyt S. Vandenberg*

has seen a long and varied history. Launched in 1944 as the troop transport, *USNS Gen. Harry Taylor*, she served in the Pacific. After the war, *Taylor* transported European refugees to new lives in the US and Australia. Called to action again in 1957, the ship transported refugees from the Hungarian Revolution to Australia. In 1961, she was acquired by the US Air Force and completely re-fitted as a missile-tracking vessel, carrying the highest technology

of the day. Newly commissioned in 1963 as *Gen. Hoyt S. Vandenberg*, she served in the Cold War between the super powers and in early NASA programs. A documentary is in production to record and preserve the ship's history.

On the Net:
Artificial Reefs of the Keys:
www.bigshipwrecks.com ■

England: Napoli Disaster – How divers can help?

Project AWARE is deeply concerned by the developing scene of destruction caused by the grounding of the *MSC Napoli* off the East Devon Coast. Dive Centre Fathom and Blues based in Portland and many other concerned divers from Devon and Dorset have contacted Project AWARE to seek advice, assistance and ask what could be done to ensure the environmental damage created during the clean-up operations are minimised.

There are also some hazardous substances that need to be professionally cleared first. The agencies working together to coordinate the response to the *MSC Napoli* incident have appealed to the public to help them get on with the massive task of clearing the wreckage from the shoreline.

The key messages are:

- Please stay away from the shoreline at Branscombe and nearby beaches.

- Please don't use coastal footpaths that are closed.
 - Please take care where you park at Beer.
- Work currently continues to remove oil from the stricken cargo vessel, and operations are expected to start soon to remove the first of the 800 containers from the ship's deck. Hundreds of other containers will later have to be removed from the *Napoli's* hold. ■



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HMAS Adelaide

Green Light Given to Sink Her as Artificial Reef

The Australian Federal Government has given the go ahead for the *HMAS Adelaide* to be sunk off the New South Wales central coast as a dive wreck. The *Adelaide* will be sunk about 30 metres off the coast of Terrigal early next year. The wreck is expected to provide a great boost for tourism in the region. Due to the proximity of the central coast to Sydney it will attract lots of additional tourists—between 10 and 20,000 extra people is expected.

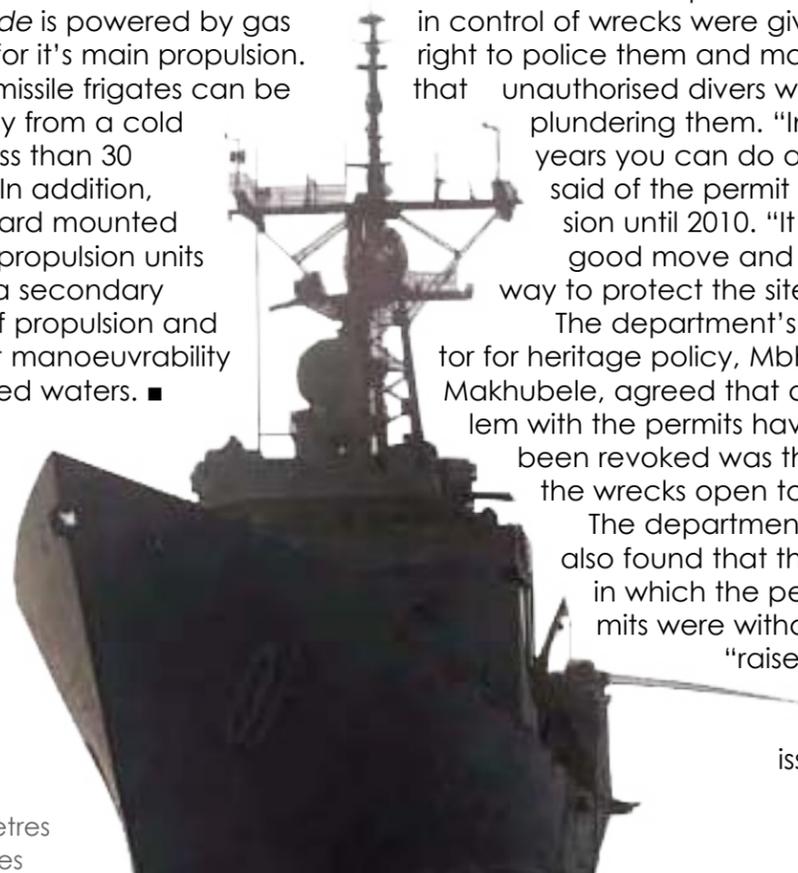
HMAS Adelaide is a long-range escort frigate with roles including area air defence, anti-submarine warfare, surveillance, reconnaissance and interdiction. The ship can simultaneously counter threats from the air, surface and sub-surface. *Adelaide* was the first guided-missile frigate to be home-ported in Western Australia. The ship has participated in the 1990-91 Gulf War, peacekeeping operations in East Timor in 1999 and was deployed to the Arabian Gulf as part of the International Coalition against Terrorism in 2001 and 2004.

Built in the United States, *Adelaide* was commis-

sioned on 15 November 1980 and was the first of six guided-missile frigates to be delivered to the Royal Australian Navy (RAN). *Adelaide* is the second ship in the RAN to carry this name. The first was a light cruiser that served from 1922 to 1945.

Adelaide is powered by gas turbines for its main propulsion. Guided-missile frigates can be underway from a cold start in less than 30 minutes. In addition, two forward mounted auxiliary propulsion units provide a secondary means of propulsion and excellent manoeuvrability in confined waters. ■

Launched: 21 June 1978
 Displacement: 4,100 tonnes
 Length: 138.1 metres
 Beam: 14.3 metres



South Africa: Five-year Ban on Shipwreck Diving Lifted

Historic shipwreck divers can re-apply for their salvage permits after the South Africa Department of Arts and Culture recently lifted its controversial five-year ban. It has also been decided that divers could re-apply to salvage wrecks until 2010.

For one of the teams, which were forced to stop salvaging in 2001 when all permits were revoked, it means an opportunity to salvage the remaining 60 percent of the *Oosterland*, a ship that was transporting Huguenots to South Africa and sank in 1697.

The team's partners spent millions of rands, and it spent thousands of man hours underwater on the *Oosterland* before the ban came into effect.

Another salvor said that while the permits were revoked, the wrecks lay "waiting to be pillaged and for Mother Nature to destroy them". He added that the only way to protect the sites was to issue permits as divers in control of wrecks were given the right to police them and made sure that unauthorised divers were not plundering them. "In three years you can do a lot," he said of the permit extension until 2010. "It's a very good move and the only way to protect the sites."

The department's director for heritage policy, Mbhazima Makhubele, agreed that a problem with the permits having been revoked was that it left the wrecks open to pillage. The department had also found that the way in which the permits were withdrawn "raised serious legal issues". ■

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wreck rap



Shipwreck Enthusiast Locates Plane Missing Since 1967

Last summer, Michael Barnette, author of *Shipwrecks of the Sunshine State*, found something unusual resting in 60 feet of water off the Florida coast. From its shape, he could tell it wasn't a boat. An examination of underwater photos and a thorough search of official documents revealed that he had discovered a *Coast Guard Grumman Albatross*, a 60-foot long airplane that could take off and land from land or sea. Lost since 1967, the location of the plane had remained a mystery for nearly 40 years—until Barnette and his friends came across the wreck last summer. According to Barnette, "We were very careful not to disturb the site in any way. We treated it with respect, realizing that it could be the final resting place for the three brave men," whose bodies were never recovered. Barnette hopes to commemorate the site in some way and is looking for surviving family members of the crew, if there are any.

SOURCE: SP TIMES ■



Napoleon in his study, Central part of painting by Jacques-Louis David, 1812

Is Shipwreck Off Israel the Key to Napoleon's Holy War?

A mysterious shipwreck discovered outside the Mediterranean port of Acre, Israel, may throw light on Napoleon's attempt to conquer the Holy Land.

Marine archaeologists from the University of Haifa were led to the wreck by an 200 year old map, which they found in a British archive. It was

drawn by a British soldier in 1799 and showed the formation of the British fleet off the coast of Acre as they faced a blockade of Napoleon's ships. The British Royal Navy were helping the inhabitants of Acre defend their city against the French. The map also showed a sunken ship at exactly the spot where the

wreck was found.

The ship, which is 30 meters long and 9 meters wide, was first discovered in 1966, but systematic excavations have only just begun. Scientists are hoping to discover whether the ship was involved in battles in 1799 or 1840 and whether it was a French or British vessel. SOURCE: CNN ■

Persian Gulf Shipwreck Remain a Mystery



The first video taken from the ship was made last October.

The remains of a merchant ship belonging to either of the two superpowers of Ancient Persia, namely the Parthian (248 BC - 224 AD) or Sassanid (224-651 AD) empires, recently discovered off the Iranian port of Siraf in the Persian Gulf continues to be a challenge for the archaeologists.

Not only does its origin remain a mystery but its location at a depth of 70 meters below the waters of the Persian Gulf makes the excavations technically challenging and expensive as only commercial divers using saturation diving techniques can work at these depths and there is a lack of this expertise in Iran.

Captain Mehdi Masoumi, formerly of the Iranian Navy, explains: "The need for such facilities has always been felt in Iran. The country's petroleum installations, which are considered vital for Iran must have become equipped with such technology long ago, but today we can see that it was never acquired. At present, enormous amounts of money is spent by the country's oil companies for hiring foreign divers to do the job at deeper levels. We do hope that the salvation of this shipwreck would

open the gates to this system in Iran."

In the meantime, the first step in bringing this Partho-Sassanid ship out of the water could be accomplished by taking out samples of the ship. This can be done using the existing facilities. However, even taking out small bits and pieces from such depth is a hard task which can only be achieved by few diving professionals, not exceeding five people in Iran.

Some Iranian experts hope the find can settle a dispute over the Persian Gulf, as some Arab states attribute this body of water to themselves, by calling it the Arabian Gulf. Some Iranian experts hope the discovered shipwreck will clearly show that this waterway has always been part of Iran (formerly Persia) throughout history, as it was used for commercial and military purposes 2000 years ago. ■

Raids in Spain Net 300,000 Artefacts

Spanish police have arrested 52 people accused of plundering 300,000 artefacts from excavation sites throughout Andalusia in the largest swoop against illegal archaeological treasure hunting in the world, the interior ministry said.

The coins, urns, sculptures and mosaics from Iberian, Roman and Islamic settlements were stolen at night using metal detectors, historical maps of the digs and excavation manuals, police said. ■



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Iran and Australia to Cooperate on Underwater Archeology?

In a recent meeting between Taha Hashemi, director of the Research Center of Iran's Cultural Heritage and Tourism Organization (ICHTO), and Gregory Laurence Moriarty, Australian Ambassador in Iran, the two sides stressed the need for expansion of cultural and archeological cooperation, especially in the area of underwater archeology.

Pointing to the existence of numerous historic relics from different periods of time in the northern and southern waters of Iran, Hashemi said that Iran is intending to make use of the

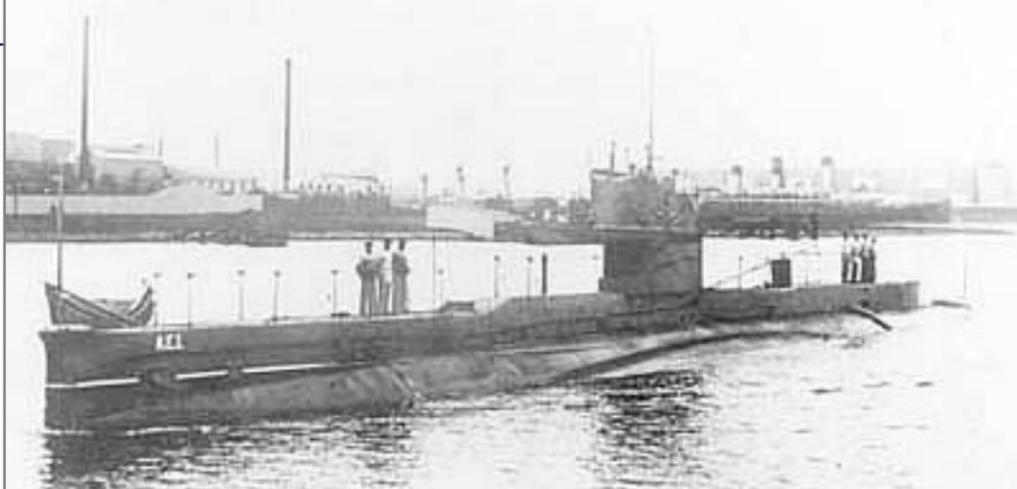
experiences of countries with long background in underwater archeological activities such as Australia.

Stressing the importance of culture as a means to create cultural bridge between nations and expand their cooperation, Hashemi further asked the Australian official for a more inclusive cooperation with Iran in different areas of research including archeology, renovation, anthropology, civilization history and tourism. He also announced that ICHTO's Research Center is ready to cooperate with Australian universities and research institutes in the above-mentioned areas. ■

wreck rap



The Royal Australian Navy is searching for the RAN submarine HMAS AE1, which disappeared with its full crew near Rabaul in September 1914 while patrolling near Rabaul on the island of New Britain, in what was then German New Guinea



Australia Searches for WWI Sub

The Australian navy began a search for the nation's first submarine in a bid to end the mystery over what happened to the vessel, which disappeared in the Pacific in the first months of World War I. It may have been found in Papua New Guinea waters.

The submarine, the AE1, vanished in September 1914, with the loss of all 35 crew while patrolling near Rabaul on the island of New Britain, now part of Papua New Guinea. It was the first major loss of Australian life in World War I, and followed Australia's first military action of the conflict when troops had captured a German radio base at Rabaul. "I am hopeful that this search will shed some



light on to the whereabouts of the AE1 and provide some answers to the relatives of those brave crew members,"

assistant defence minister Bruce Billson said in a statement. Billson said investigations suggested that the submarine could have sunk after running aground or colliding with a submerged object near the Duke of York Islands. The AE1 and its sister ship, the AE2, were purchased from Britain and arrived in Australia in May 1914. Both were commanded by British officers with a mix of British and Australian crew.

In August 1914, five days after Australia declared war on Germany, the AE1 was dispatched to support the military operations against German forces on New Britain. The AE2 was also lost during World War I. It sank in April 1915, in Turkey's Sea of Marmara after penetrating the Dardanelles during the Gallipoli campaign. Unlike the AE1, the AE2's crew all survived. Australian submarine hunters found the wreck of the AE2 in 1998.

SOURCE: REUTERS AND ABC ■

Submarines Discovered Off Isle of Man

UK Divers have discovered three submarines off the Isle of Man which are believed to be WWII German U-boats. Divers from BSAC club Castle Rushen Divers together with shipwreck expert Adrian Corkill located the vessels using sonar scanning equipment. The club has already dived one of the submarines, situated approximately 20 miles off of the island. It lies at 52m and is fairly broken up. Further exploration dives on the submarines using rebreathers are planned for late April or early May when sea and weather conditions improve. The remaining two vessels lie at a depth of 40-50m and 64m. SOURCE: DIVE ■

Plan Aims to Raise WWII U-boat

In Ireland, an ambitious plan has been presented to raise a U-boat from the sea bed off County Donegal. If it gets the go-ahead, the aim is to house the boat in a museum where people can get a glimpse of one of the iconic vessels from WWII. A number of U-boats lie 70 metres deep off the coast of Donegal in the Republic of Ireland. Even in the murky depths the outline of the U-boat is quite clear, with divers saying the aerals and periscopes are still intact. ■



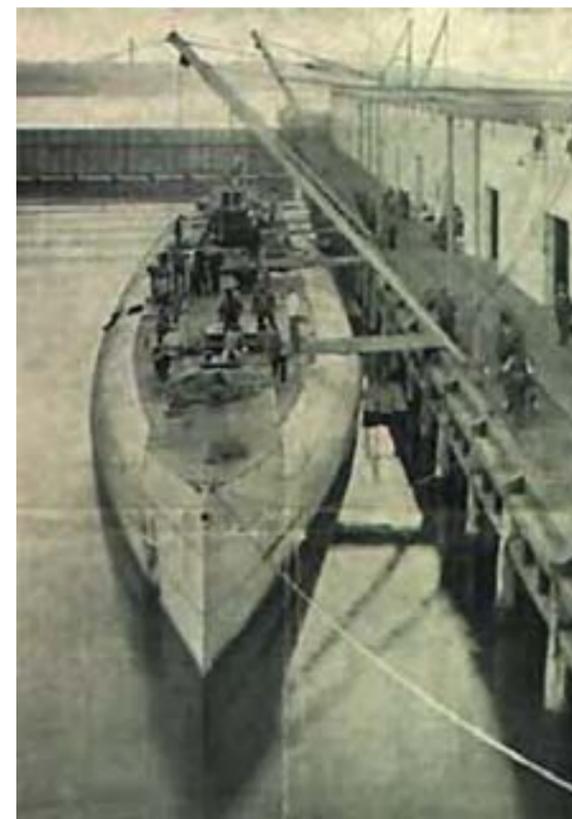
Submarine anyone? US Navy seeks new owner for vintage submarine

The U.S. Navy, is looking for someone to take over the recently decommissioned USS Dolphin, one of the oldest submarines in its fleet. The Dolphin, a one-of-a-kind research vessel, was decommissioned Jan. 15. In a notice dated Jan. 24 and published in the Federal Register, the Navy said it will accept offers for the sub-



USS DOLPHIN Location: San Diego, CA

marine from government agencies, museums, nonprofit organizations or similar institutions wishing to operate the submarine as a museum. The Navy said it hopes to keep the vessel in its home port of San Diego. Any new owner will be required to maintain the sub in good condition. ■



Deutschland unloading in New London, 1916.



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Did you know?

Merchant Submarine

A merchant submarine is a type of submarine intended for trade, and being without armaments, they are not considered warships like most other submarines. The intended use would be to avoid naval blockades or to dive under Arctic ice. Strictly speaking, only two submarines have so far been purpose-built for merchant shipping use, though standard or partly converted submarines have in many cases been used to transport smaller amounts of important cargo, especially during wartime. ■

Edited by Peter Symes



Groupers and Moray Eels Hunt Cooperatively

Groupers and morays that hunt together caught almost five times more prey through mutual hunting than they would otherwise, according to recent findings

Groupers (*Plectropomus pessuliferus*) and Giant moray eels (*Gymnothorax javanicus*) have been

observed working with each other to catch prey in the Red Sea. Intraspecific group hunting has received considerable attention because of the close links between cooperative behaviour and its cognitive demands.

Obviously, fish of different species can communicate, and underwater filming revealed that both partners benefited from the association. Their normal hunting strategies are quite different. Groupers are semi-benthic piscivores, which hunt in open water. Moray eels, on the other hand, sneak through crevices to corner their prey in holes. Prey avoid eel

predation by swimming into open water and avoid grouper predation by hiding in crevices. A coordinated hunt confronts prey with a multi-predator attack that is difficult to avoid.

It is remarkable that different species of fish have actually created a language, taught each other the language, developed a plan, work together harmoniously to carry out the plan and do not eat each other in the whole process.

The partner that successfully caught and ate the fish was not showed any aggression from the unsuccessful partner. Groupers initiated the hunt by visiting the giant eels and shaking their heads vigorously. The head is shaken three to six times a second just a few centimetres in front of the moray's head, and the soft part of the dorsal fin is erected. The morays respond by leaving their crevices, with the moray and grouper then swimming off across the reef. The fish would stay together from a few seconds to up to 44 minutes. ■

Alien Mysids Invade Great Lakes

A half-inch-long shrimp from Eurasia has made its way to Lake Ontario and could threaten the lake's food chain. The tiny critter, called the bloody red mysid, like so many other invaders, most likely was brought to the lakes through the ballast water of an ocean-going ship. The species is native to the Baltic and Black Sea region. Lake

Ontario is an almost perfect home for them, since they prefer shallow waters with rocky bottoms. Their discovery has set off alarms for biologists, who fear they could upset the food chain in the lakes, which has already been compromised by other invasive species. ■



New Study Says Nassau Grouper is Disappearing

Over the past eight years, Dr. Enric Sala and fellow researcher Rick Starr have used various types of tracking equipment to monitor the grouper spawning site at the Glover's Reef

Atoll in the Belize Barrier Reef. In January 1999, the fish experts found approximately three thousand one hundred adult Nassau groupers. This year, they discovered only five hundred and seventy examples of the species. "This dramatic decline in grouper numbers is mostly due to over fishing," says Enric Sala. "The Nassau grouper is going down in Belize, and the only way of recovering the numbers, the only way of saving the grouper from extinction, would be a moratorium on Nassau grouper fishing." ■

New Billfish Species May Have Inflated Population Estimates of White Marlin

Scientists from the Guy Harvey Research Institute at Nova Southeastern University and NOAA Fisheries Service has confirmed the existence of an enigmatic billfish species that closely resembles the heavily-fished, over exploited white marlin. Known as the roundscale spearfish, this species has been

found in the northwestern Atlantic Ocean, where its distribution overlaps that of the white marlin—a prized game fish that bears a close resemblance. This means that recent population assessments of the white marlin may have been overestimated. ■



South African Abalone to Come Under International Trade Controls



South Africa has taken a decisive step towards stemming the illegal harvest and trade of its endemic abalone populations by listing the species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). ■

US: Puget Sound Fighting Sea Squirt Invasion

Tunicates, or sea squirts, are threatening to take over Washington state's Puget Sound. One species has covered New England's Georges Bank—a massive underwater shelf in the Atlantic Ocean—in 225 km² of slime, while another has hurt the Prince Edward Island shellfish industry in eastern Canada. ■



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Caspian Caviar Export Quotas Set, But Beluga in Limbo

Exports of caviar from three Caspian Sea sturgeon species will be permitted this year by the international organization that controls trade in the luxury delicacy after a year when no Caspian exports were allowed. Exports of beluga, the world's most valuable caviar, are not yet authorized for 2007. ■

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Some Caribbean Coral Resistant to Global Warming?

Most coral species can only survive temperature fluctuations of about 12 degrees. If water temperatures vary more than this, corals can suffer bleaching, aspergilliosis or other lethal diseases. So, thanks to global warming, corals' days are numbered, right?

Maybe not

According to Drew Harvell, Cornell professor of ecology and evolutionary biology, Caribbean gorgonian sea fan corals show surprising warm-weather tenacity. In fact, they not only show temperature resilience, but they seem capable of boosting their cellular and enzymatic defenses to fight lethal microorganisms as temperatures rise. In other words, what doesn't kill coral might make them stronger. As such, Harvell and other scientists have begun examining the so-called "hardy corals" to see what clues they can learn and apply to other, weaker corals.

SOURCE: SCIENCEDAILY ■

Great Barrier Reef, Crown-of-Thorns and Global Warming What's really going on?

In December, a massive outbreak of the deadly crown-of-thorns starfish (COTS) has been reported at Bait Reef, off the Whitsundays.

A COTS control boat has been searching the Whitsundays to remove any starfish on the COTS control program, finding 120 starfish a day, or 30 COTS per 40 minute dive. When a diver finds more than one COTS every ten minutes, it's defined as a COTS outbreak. The amount of COTS at Bait Reef is about three to four times more than what's considered sustainable.

However, recent "early warning" surveys suggest a crown-of-thorns starfish outbreak is not an imminent threat to corals on the Great Barrier Reef. Researchers from the Australian Institute of Marine Science (AIMS) Great Barrier Reef Long-term

Plant-Grazing Fish Boost Resilience of Stressed Reefs

Australian researchers have found that grazing by large herbivorous fishes plays a key role in the ability of coral reef ecosystems to recover from bleaching events and maintain resilience in the face of thermal stress due to rises in ocean temperatures. Reefs subjected to grazing by large herbivo-

Monitoring Team have been undertaking surveys of reefs between Cairns and Cooktown, which are thought to be the source of the coral eating pest.

Meanwhile, scientists also warn that the hysteria surrounding the impact of climate change on the Great Barrier Reef could lead to less being done to protect it from immediate threats such as pollution and over-fishing.

Recent reports based on a study by the Intergovernmental Panel on Climate Change have predicted that the reef will be extinct within decades as a result of rising sea temperatures caused by global warming.

But reef experts claim the impact of climate change on the reef is more complex and say that other threats are far more immediate. ■

rous fish species exhibited resilience in recovery, recruiting new corals to the reef and keeping algal growth in check, the reef areas from which large fish were excluded showed a distinct erosion in reef quality with assemblages of algae and plant life overgrowing the reef and preventing the recruitment of new coral.

SOURCE: CURRENT BIOLOGY 17, FEBRUARY 20, 2007

WWW.CURRENT-BIOLOGY.COM ■

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Turkey

New Tourist Submarine Heading for Bodrum

The submarine is planned to be 38 meters long, 4.5 meters wide and 3 meters high with a 47-person capacity. The submarine's top speed will be 20 miles per hour and dive to a depth of 40 meters allowing tourists to experience Turkey's fascinating underwater life and archaeological treasures for 12 months of the year.

The submarine is expected to cost around \$1.3 million and would be built in Tuzla or Bodrum. The submarine is estimated to carry 50,000 tourists per year, reported the Doğan News Agency. ■

Diving into History in Kaş

The Kaş Underwater Historical Research Association has created an underwater archeological park by sinking a replica of *Uluburun*, an ancient shipwrecked ship, off the coast of Kaş. In August 2005 another *Uluburun*, *Uluburun-II*, sailed to Cyprus, following the same route the original ship did 3,300 years ago. Upon the return of the ship from Cyprus, the Kaş Governor proposed that the boat remained where its precursor had been discovered. In the following days, the idea of a harbor reflecting the life of the Bronze Age, in which *Uluburun-II* could be exhibited, came up. From this sprang the concept of an underwater archeological park. In September, the Society for Naval History constructed the *Uluburun-III*, destined to be sunk for the archeological park. *Uluburun-III* is not the only artifact in the park. Imitations of the original ship's load of copper and bronze bullion, earthenware pots and Kenan amphorae have also been planted on the wreck, according to the plan of where the originals were found when the shipwreck was discovered in 1982.

SOURCE: TURKISH DAILY NEWS ■

Crimea

AccessCrimea launches Diving Tour Off Balaklava

AccessCrimea, the leading tour operator in Crimea, is now offering a week long diving tour to Balaklava in the south-west of Crimea. Balaklava is in a unique and fascinating location that offers an intriguing mix of history and natural beauty. It was the location of the Crimean war of 1854 between Russia and Britain, France and Turkey, and the southern-most point that the Germans reached in the second World War. Balaklava's clean waters and magnificent scenery make this a great destination for

diving, exploring or just lying on one of its many wild beaches.

Balaklava offers 30 dive sites with an array of shipwrecks, underwater caves, vertical walls and even an old Soviet submarine factory built into a mountain. Balaklava is the diving destination for people who want to experience the new and exciting.

The founder of AccessCrimea is from Britain but has resided in Crimea for five years. He said, "Many divers today are looking for something new and off the beaten path. Balaklava is the destination for such divers. There's a lot more to this trip than just diving; the tour includes a day in Kiev and two tours to Crimea's main sites; the ancient cave towns at Bakhchisarai and the historic palaces of Crimea's stunning south coast." ■



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Bonaire Dive Into Summer

This summer everyone is invited to experience the Caribbean's top-rated dive destination with Bonaire's new summer-long promotion, Bonaire Dive Into Summer 2007. Taking place June 3 through September 29, 2007, this island-wide event will focus on scuba diving through a series of specialty topics: Family, Fotography, Fish and Fun!

There is no registration fee to participate in Bonaire Dive Into Summer (select activities may have a nominal cost involved) and all activities are open to anyone on the island wishing to take part. ■

Curacao Prepares for Second Annual Dive Festival

Curaçao is pleased to announce the dates for its Second Annual Dive Festival: May 26 through June 2, 2007. Ranked among the Caribbean's best islands for diving, called one of the top destinations for new divers, home to "Mushroom Forest"—one of the top dives in the world, and rated best in the Caribbean for shore diving, Curaçao is, or should be, on any diver's wish list of places to visit. ■

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Red Sea Resorts Booming in Off-Season

Despite being the off travel period, Egypt's Red Sea resort town is seeing a boom in vacationers coming from colder European nations. Russians and Germans have flocked to Hurghada on the Red Sea for relaxation and sun.

According to hotel manager Ashraf Ahmed of the Dana Beach Resort, this is one of the best February's for the resort. Hundreds of Russians have escaped freezing temperatures in their home country for the warm and friendly confines of Egypt.

"This is great for the hotel and for Egypt because at a time when we usually do not have that many visitors, the temperatures in Europe are very cold, so people want to come here and get some warm weather," Ahmed said.

However, even the hotel manager is skeptical of the way all-inclusive resorts are heading in Egypt. He believes that there needs to be a more concerted effort to offer more of Egypt to the millions of visitors the country receives each year. ■

Edited by
Peter Symes

Architect and designer
Joachim Hauser

Estimated cost
£300 million

Projected completion
December 2007

Hydropolis in Dubai is the world's first luxury underwater hotel

Dubai Getting an Undersea Hotel for Rich Abyss Fans



of the largest contemporary construction projects in the world covering an area of 260 hectares. The \$600 million hotel is due to open at the end of 2007 and will incorporate a host of innovations that will take it far beyond the original blueprint for an underwater complex worthy of Jules Verne

"Hydropolis is not a project; it's a passion," explains Joachim Hauser, the developer and designer of the hotel. He developed it out of a passion for water and the sea and goes much deeper than just building a hotel underwater. More than just curiosity, it is a commitment to a more far-reaching philosophy. "Once you start digging deeper and deeper into the subject, you can't help being fascinated and

you start caring about all the associated issues," he explains. "Humans consist of 80% water; the earth consists of 80% water. Without water, there is no life."

Hydropolis mimics the human organism in design with a direct analogy between the physiology of humans and the architecture. The geometrical element is a figure eight lying on its side and inscribed in a circle. The spaces created in the basin will contain function areas, such as restaurants, bars, meeting rooms and theme suites. These can be compared to the components of the human organism: the motor functions and the nervous and cardiovascular systems with the central sinus knot representing the pulse of all life. SOURCE: DESIGNBUILD-NETWORK.COM ■



Currently under construction in Dubai and taking shape 20m below the surface of the Persian Gulf, Hydropolis is the world's first luxury underwater hotel. It will include three elements: the land

station where guests will be welcomed; the connecting tunnel, which will transport people by train to the main area of the hotel; and the 220 suites within the submarine leisure complex. It is one

In order to enter this surreal space, visitors will begin at the land station. This 120m woven, semicircular cylinder will arch over a multi-story building

Hauser plans to incorporate many different elements associated with the sea. He views his creation as a place where those who do not dive, or do not even swim, can experience the tranquillity and inspiration of the underwater world



Budget Airline Targets Maldives

Maldives can expect to see a rapid growth in the number of tourists from China, Hong Kong and Macau following the introduction of direct flights from the region with a new budget fare airline.

According to chief executive, Andrew Pyne, Viva Macau aims to bring residents of Macau, Hong Kong and the Pearl River Delta to exciting destinations like the Maldives at fares that represent great value for money.

The Maldives have been a favourite destination from China and the Pearl River Delta region since the Maldives received Approved Destination Status (ADS) from China in December 2002. The Maldives have seen a robust increase in Chinese arrivals as a result. ■

Global Warming & Tourism

Scandinavia's coastlines can become the new Riviera attracting tourists fleeing the scorching heat and drought around the Mediterranean. This is approximately the scenario painted in a recent report from EU's environmental directorate on the effects of global warming, which can have devastating effects on Southern Europe. For countries like Spain, Greece and Italy, the extra degrees not only put the poorest and the elderly at risk but also may mean an enormous decrease in revenues from tourism.

Scotland

Meanwhile, diving could spark an economic boom in Scotland. A £20,000 study is to be carried out to see if diving off the Berwickshire coast could spark an economic boom.

The research has been commissioned by Scottish Enterprise Borders to find out if income from diving could be increased to benefit more of the region. The Eyemouth and St Abbs area is renowned throughout the UK for its varied and exciting marine life and it is thought that more than 20,000 divers visit the area each year.

Indonesia

Indonesia could lose about 2,000 islands by 2030 due to climate change, says the country's environment minister told Reuters. Rachmat Witoelar said studies by U.N. experts showed that sea levels were expected to rise about 89 centimetres in 2030, which meant that about 2,000 mostly uninhabited small islets would be submerged. "We are still in a better position. Island countries like Saint Lucia, Fiji and the Bahamas would likely disappear."

Indonesia, which consists of 17,000 islands, has been trying to avert such a scenario by reducing reliance on fossil fuels and switching to bio-fuels, he said. "We are optimistic it can be prevented." ■

Edited by
Peter Symes



Scientists to map world's deepest sink hole with "intelligent" ROV

Diving Deep: Robot Explores Waters in Central Mexico for Life

Plunging more than 1,000 feet underground, the world's deepest known sink hole, Mexico's Cenote Zacatón, has only been partially mapped; its true depth remains unknown. In mid-March scientists returned to Zacatón, to further investigate the hole and to resume tests of a NASA-funded robot called the Deep Phreatic Thermal Explorer (DEPTHX). DEPTHX—a bulbous, yellow pod—is designed to survey and explore Earth's most extreme regions, as well as, potentially, outer space. DEPTHX is a completely autonomous—some might say "intelligent"—probe designed to map underwater caves,

measure geochemical properties of the water, search for microbes and other life forms, and bring back samples for subsequent analysis. Amazingly, DEPTHX even creates 3-D maps of the areas it explores as it swims, and then uses those maps to navigate back to the surface.

Zacatón first achieved notoriety when two divers attempted to reach the bottom in 1994. One of them, Sheck Exley, died in the attempt. The other, Jim Bowden, survived, descending to a record depth of 925 feet.

SOURCE: PHYSORG.COM ■

Turtle Tourism Gain Momentum

The Tourism Department of Orissa in India has drafted ambitious plans to attract foreign tourists by developing infrastructures like roads, small huts and tents at the turtle nesting sites of Devi and Rushikulya river mouth areas—the two major nesting grounds of the endangered Olive Ridley sea turtles.

States like Goa and Kerala have recently started programmes to woo overseas tourists by keeping a few sea turtles in some pens near the sea beach, but Orissa is lagging behind to promote the eco-tourism idea, even though millions of turtles come each year here for nesting, said a turtle conservator.

Artificial turtle hatcheries constructed by the forest offi-



File photo: Kurt Amsler

Divers to lay artificial reefs near Pulau Tioman

At least 300 local and foreign divers will deploy artificial reefs that will be home for the marine life in Soyak Island off the famous Tioman Island. The event is a conservation effort under the Pahang Regent Reef project launched four years ago. ■

cial on the nesting ground—to protect the turtle eggs from the predators like dogs, jackals and other animals—could be used to attract tourists. After emergence of the hatchlings from the hatcheries, the tourists could release the baby turtles as is done in other countries. ■

Longest UW Cave Found

In January, German Robbie Schmittner and Englishman Steve Boagarts managed to connect two rivers in the Yucatan peninsula previously thought to be independent. In so doing, the pair have discovered what appears to be the world's longest underground river. The total length of the river measures 153.6 kilometres (95 miles) with a maxi-

mum depth of 72 meters (236 feet). The aquifer also ranks ninth on the list of the world's longest known underground caves. The discovery occurred in January just south of Cancun, and is the culmination of three years of research. The system has been named "Sac Actun," after the Mayan name for the larger of the two branches. SOURCE: JURNALO.COM ■

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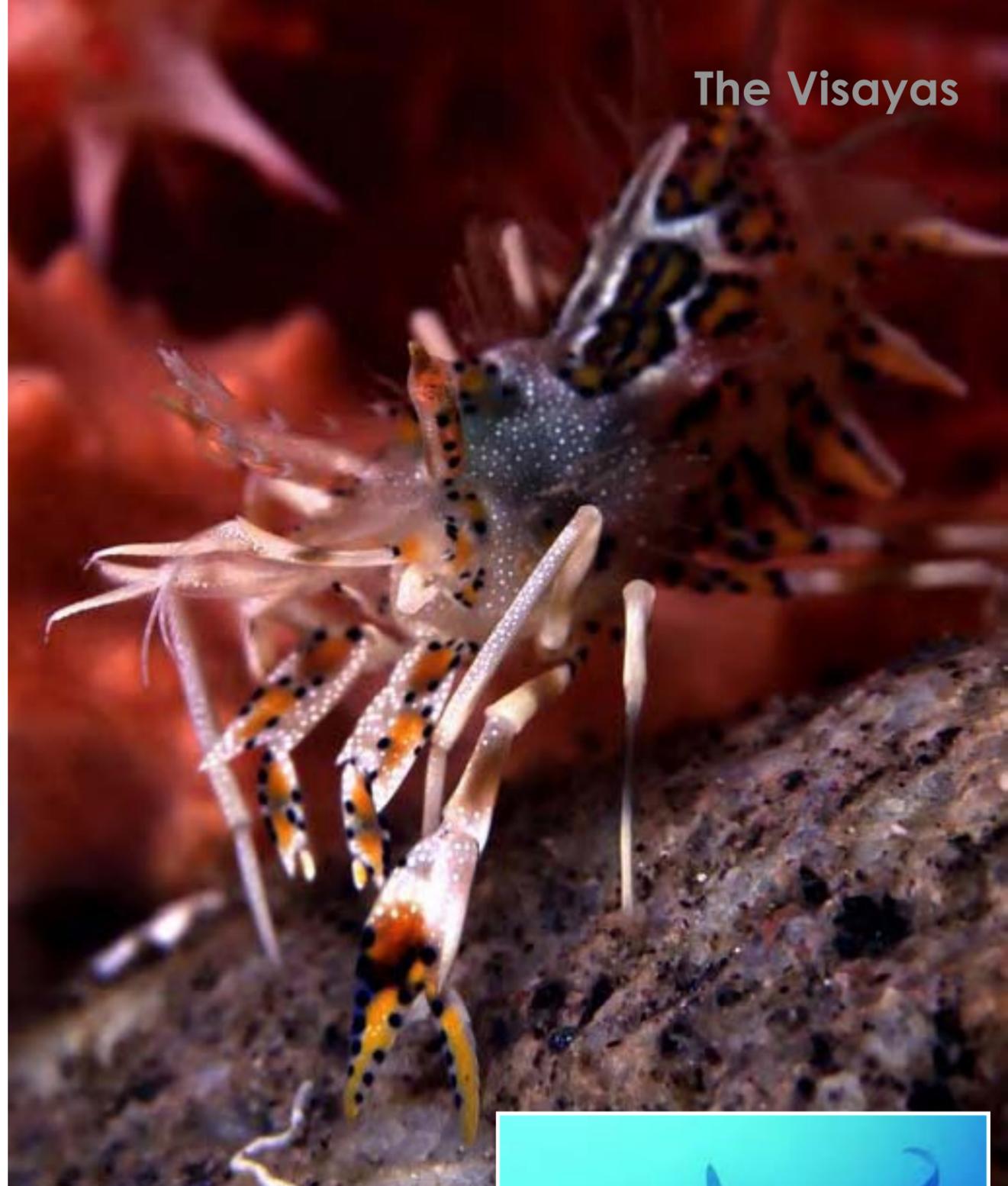
Tailgating the lone dugong, KAT, on Cocos (Keeling) Islands. Photographed by Karen Willshaw ~ underwater.com.au member



Diving The Visayas

Text and photos by Nonoy Tan





The “Visayas” is a group of islands that comprises the central portion of the Philippine archipelago. A few Visayan islands are popular among travelers, such as Cebu and Boracay; while the majority remain low-profile but nonetheless exquisite. I have been regularly diving in the Visayas during the last six years. I go there primarily to take underwater photographs of marine life, and at the same time enjoy its tranquil ambiance. The diving destinations are all situated in small towns, away from the urban bustle of Cebu City—a metropolis with an international airport and my gateway to the serene islands.

Malapascua Island

Malapascua Island can be reached in four hours travel by land, plus a half-hour by boat northwards from Cebu City. It is not a difficult journey. Roads are mostly paved, and transportation facilities are very accessible. There are several dive sites around the island, but the main attraction is Monad shoal where

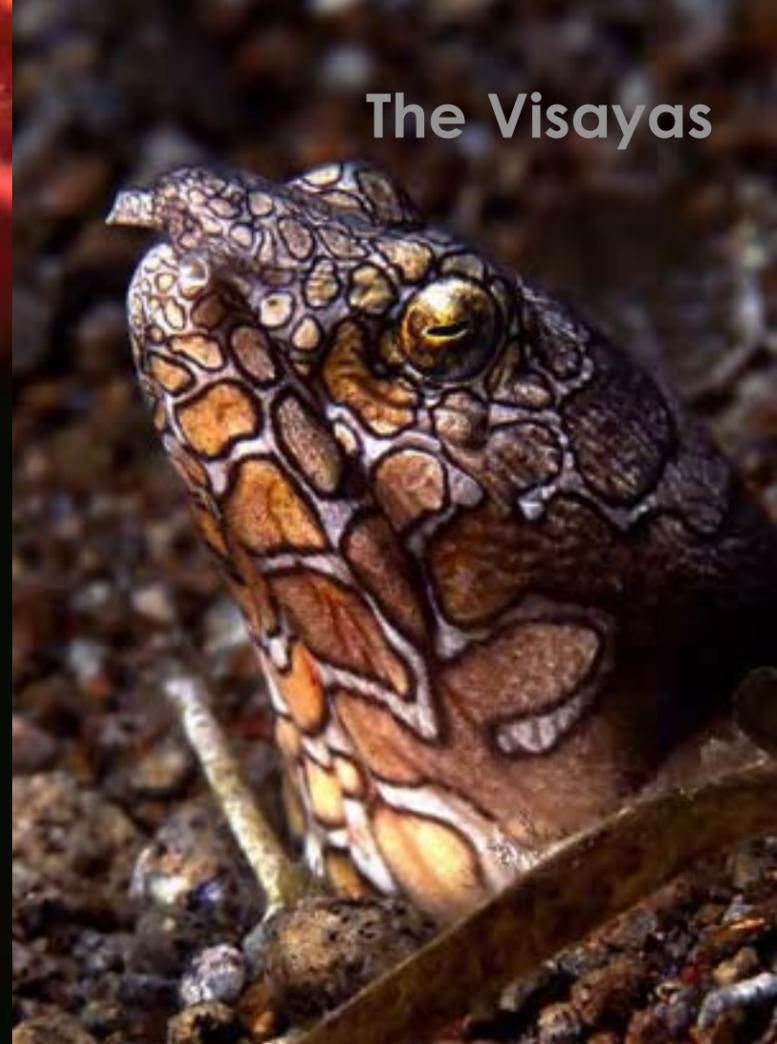
there are daily sightings of thresher sharks. Each dawn, the sharks approach from the deep onto the shoal for routine cleaning by small cleaner fishes. The thresher sharks linger around, while divers enjoy the spectacle. Soon thereafter, the sharks head back into the deep. After the early morning encounter with the sharks, the rest of the day

can be spent diving nearby sites that showcase a lush variety of corals and marine inhabitants such as grey bamboo sharks, white tip sharks, snake eels, seahorses, nudibranchs, sea hares, lionfishes, mantis shrimps, and all sorts of crabs. There are at least a dozen dive sites, and that justifies three to four days of diving on Malapascua Island.



ABOVE: The Visayas map; The Philippines map
 TOP: Mating Pair of Nudibranchs, *Kentrodoris rubescens*
 FAR RIGHT: The rare Horned Bumble Bee Shrimp
 INSET: Thresher shark. PREVIOUS PAGE: Picturesque scenes like this one are commonplace in the Visayas

ROLF MEUHLEMANN



Thorny Seahorse, Gorgonian Pandalid Shrimp; Bend Stick Pipefish; Napoleon Eel; Longhorn Cowfish

Cabilao Island

Cabilao Island can be reached in two hours of travel southwards (by land) plus another hour (by boat) from Cebu City. Upon reaching the island, visitors can feel its intense serenity. Life here is extremely laid-back. This atmosphere compliments the exotic nature of the marine life, which makes Cabilao a fascinating place for underwater photog-

raphers. The popular subjects include the bend stick pipefish, pygmy seahorse, dragonet, Pegasus sea moth, stargazer, cockatoo waspfish, marbled snake eel, etc. These creatures can be easily found with the help of the local dive guides who have an astonishing ability to spot them. There are seven dive spots around Cabilao Island and two to three days stay on the island is ideal.

Balicasag & Panglao

A few hours from Cabilao is the island of Balicasag, which has at least five dive sites. Here, I find an abundance of fish including schools of barracuda and jacks. This is a good place for wide-angle photography. Also, macro subjects abound particularly nudibranchs of the genus *Nembrotha*. Another observation is the unusual plumpness and size of



NEXT PAGE: *Nembrotha* nudibranchs of Balicasag Island are plump. These two individuals of different species are attempting to mate



ABOVE: Ambon Scorpionfish. INSET LEFT: Nudibranch, *Chromodoris reticulata*

main island of Bohol. This part of the Philippines is one of the richest in terms of culture and history. After Balicasag, Panglao and Bohol, the next destination is Dauin.

Dauin

Dauin is a small coastal town in the south-east portion of the Negros Island accessible by boat from Bohol. The travel is about an hour and a half. The town maintains a marine sanctuary where scuba divers come to see bizarre critters such as the Ambon scorpionfish, striped frogfish, horned bumblebee shrimp, flamboyant cuttlefish, mimic octopus, flying gurnard, napoleon snake eel, velvet fish, etc. There is not much coral

cover at Dauin. It is largely sandy. But because it hosts an interesting array of interesting subjects, this site is a favorite among serious underwater photographers and muck divers. Fortunately, the local dive guides here are masters in spotting these creatures. There are a few dive sites close to Dauin that also generate surprise finds of rare critters. Thus, a one to two weeks stay in the area is highly recommended.



Phidiana nudibranchs laying eggs



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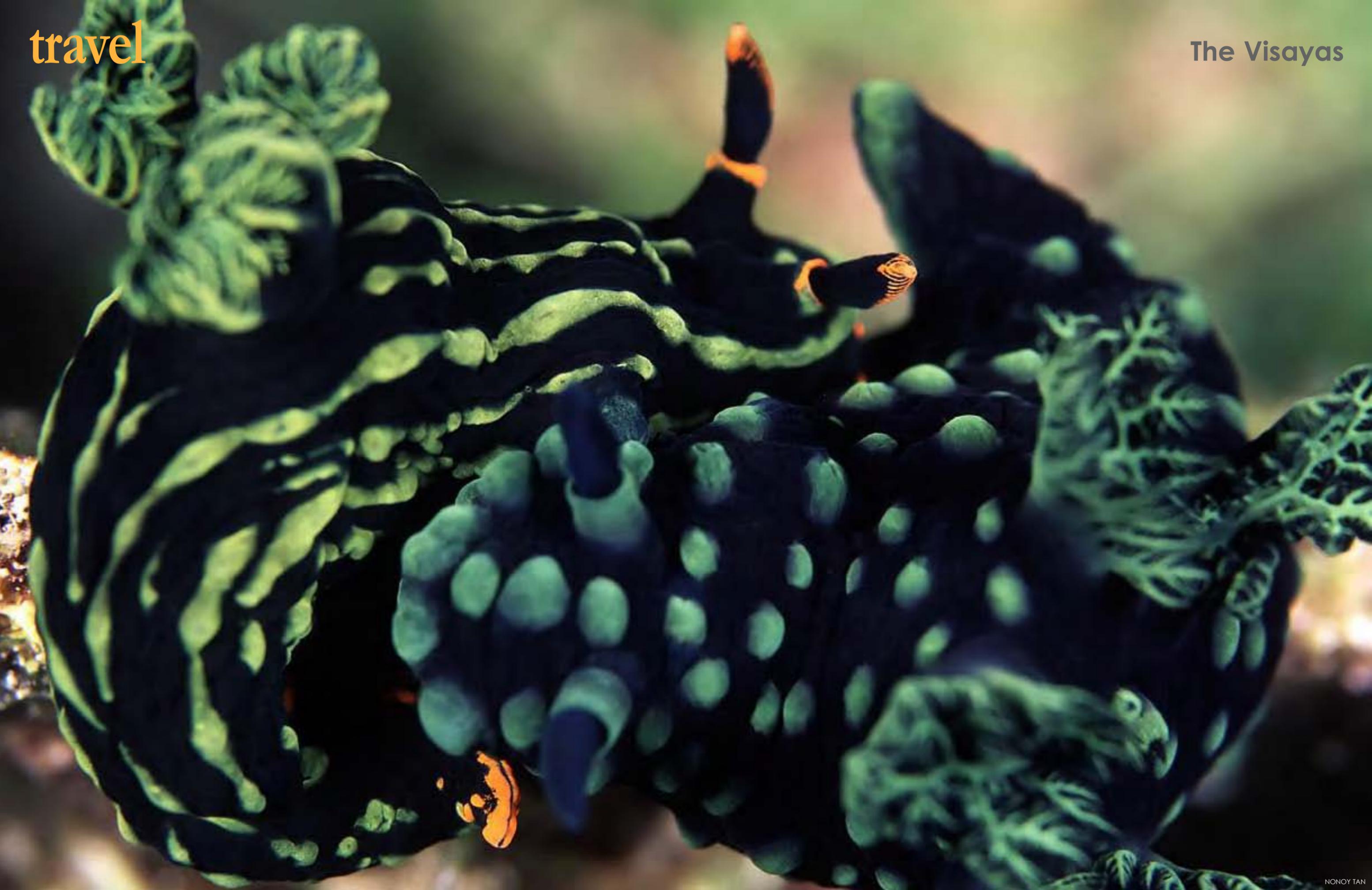
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LEFT: Giant Frogfish. ABOVE: Flying Gurnard. RIGHT: Convict Blenny. PREVIOUS PAGE: Two different species of nudibranchs trying to mate

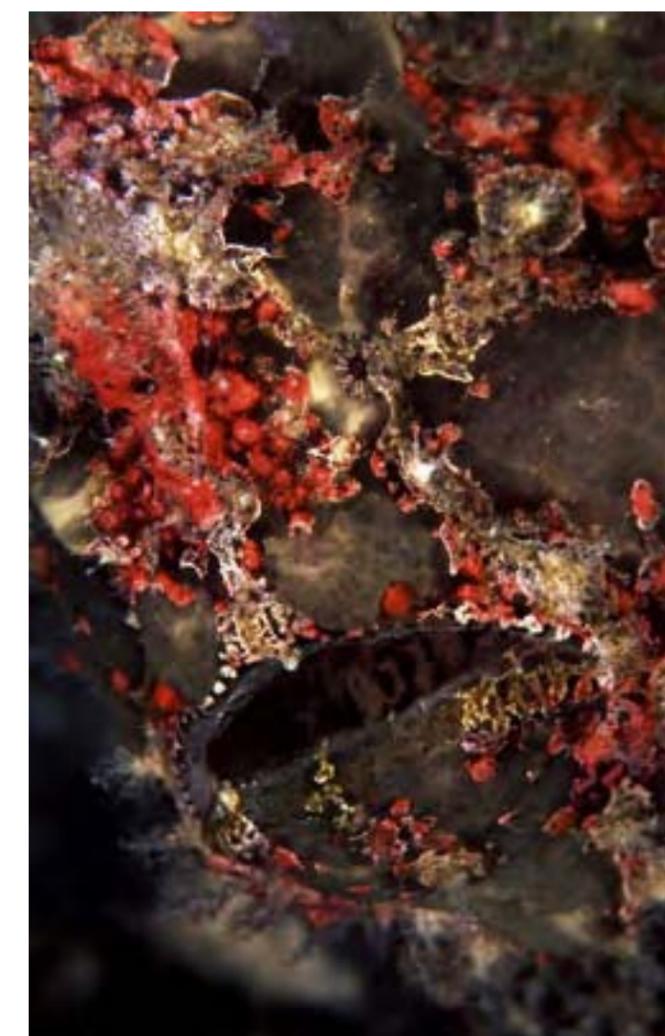
Siquijor

An hour travel by boat from Dauin is the island of Siquijor. The dive sites around the island also offer excellent macro photography subjects as well as night dives. The least known site is located within an abandoned wharf called "Lazi Pier." It is found south-east of Siquijor Island. The pillars of the wharf that extend to the sea bottom are densely populated by soft corals, tubastrea, and gorgonians. These in turn are home to frogfishes and a wide range of nudibranchs. There are nine other dive sites located at the West side of the island. At low tide each late afternoon, young children approach the ebbing waters to harvest stranded sea urchins. They open these echinoderms in order to expose an internal roe, which is scooped out and eaten raw. Sashimi

lovers like me can also get into the action. The approach of darkness provides magnificent opportunities for night diving as well.

Dauin and the islands of Siquijor, Panglao, Balicasag, Cabilao and Malapascua are a mere sampling of diving destinations in the Visayas. New dive sites continue to be explored, while old and forgotten ones are being rediscovered. The aggregation of many islands and at least 100 dive sites in the Visayas makes it an indispensable itinerary when diving in the Philippines.

There is a wide assortment of dive operators and resorts in the Visayas, ranging from the high-standard to the rugged. As a regular visitor to these islands, I dive with Sea Explorers in Cebu City, because of their professionalism and experience.



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CLOCKWISE FROM ABOVE: During the low tide, young children enjoy a snack of sea urchin; Bad hair day? No, it's a Striated Frogfish; Artificial reefs such as this vehicle provide shelter for marine life; Cuttlefish



Nonoy Tan



Nonoy Tan is an award-winning underwater photographer based in Manila, the Philippines. For more information or to order prints directly from the photographer, please email: nonoytan@yahoo.com.

Buy Nonoy Tan Nudibranch Calendars, framed prints, t-shirts, mugs or greeting cards at The X-RAY MAG Store and help save the seas. A percent of all sales goes to ocean conservation. www.cafepress.com/xraymag

Dive Info:
Sea Explorers
www.sea-explorers.com
PADI Dive Guides
www.padidiveguides.com
Starfish online dive guide
www.starfish.ch ■



fact file

The Philippines

X-ray mag



History During the 16th century, the Philippine Islands became a Spanish colony; In 1898, they were ceded to the US following the Spanish-American War. The Philippines became a self-governing commonwealth in 1935 under elected President Manuel QUEZON who had to prepare the country for independence after a 10-year transition. The islands fell under Japanese occupation in 1942 during WWII. US and Filipino forces fought together to regain control from 1944-45. July 4, 1946 marks Philippine independence. A widespread rebellion of the people forced President Ferdinand MARCOS into exile after 21 years of rule in 1986 when Corazon AQUINO was installed as president. During her presidency, there were several coup attempts, which affected political stability and economic development. In 1992, Fidel RAMOS was elected president who enjoyed a presidency marked by greater stability and progress on economic reforms. The US closed its last military bases on the islands in 1992. President Joseph ESTRADA, elected in 1998, was impeached on corruption charges and was succeeded by his vice-

president, Gloria MACAPAGAL-ARROYO who was elected to a six-year term in May 2004. Armed communist insurgencies and Muslim separatists in the south continue to threaten The Philippine Government. Government: Republic; Capital: Manila

Currency Philippine peso (PHP); Exchange rate: 53 peso per US dollar; 63 peso per Euro

Geography Southeastern Asia, archipelago between the Philippine Sea and the South China Sea, east of Vietnam, mostly mountains with narrow to extensive coastal lowlands; Coastline: 36,289 km; Elevation: lowest point: Philippine Sea 0 m; highest point: Mount Apo 2,954 m Agriculture: rice, coconuts, corn, sugarcane, bananas, pineapples, mangoes, pork, eggs, beef, fish Natural resources: timber, petroleum, nickel, cobalt, silver, gold, salt, copper.

Climate Tropical marine; northeast monsoon (November to April); southwest monsoon (May to October). Environmental

issues: Uncontrolled deforestation especially in watershed areas; soil erosion; air and water pollution in major urban centers; coral reef degradation; increasing pollution of coastal mangrove swamps that are important fish breeding grounds.

Population 86,241,697. Percent of population below poverty line: 40%, Ethnic

groups: Christian Malay 91.5%, Muslim Malay 4%, Chinese 1.5%, other 3%. Religions: Roman Catholic 83%, Protestant 9%, Muslim 5%, Buddhist
Language Filipino and English

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Dive Travel The best time to visit the Philippines is during the period from November to June. Precipitation is lowest during April and May. Temperatures are cooler during December to February (26-27°) and warmer between March and May (29°)

Web sites

Philippines Department of Tourism
www.wowphilippines.com.ph
Philippines Convention & Visitors Corp.
www.dotpcvc.gov.ph
Historic Churches of Cebu
www.ngkhai.com
Bais Dolphin Watching
www.wowphilippines.com.ph

Dive Books

Philippines Travel Guide by Jens Peters
www.amazon.com ■

Map of The Philippines



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Diving the Spice Islands of Indonesia

AMBON

“Have a great time, but keep your head down!”
This was the response I received from a diving friend after announcing I was planning a visit to Ambon. At least he knew where it was; my announcement to friends in Toronto drew blank stares. When I mentioned the Spice Islands, a dawn of recognition crept into their eyes. It was a place they’d vaguely heard of but had no idea whatsoever as to their location.



Ambon

LEFT TO RIGHT: Pintu Kota coral gardens; Zebra crab in anemone; Fishing boat on a beach of Latuhalat. PREVIOUS PAGE: Ambon coastline

Tucked away at the eastern end of the Indonesian archipelago, Maluku province consists of roughly 1000 islands scattered in the Banda Sea near New Guinea. Formerly known as the Moluccas during Dutch colonial times, the region has long attracted the attention of merchants, adventurers and explorers. Nowadays, it is attracting the attention of divers eager to explore its underwater treasures.

My journey began back in June of '05 in Singapore. While attending "Celebrate the Sea", I met Mike Hillis and John "Buck" Randolph, the owners of Unexplored Adventures. Their company is comprised of two distinct identities, Maluku Divers and Spice Island Explorers. After regaling me with tales of pristine diving, a fascinating history and a lack of tourists, I was immediately intrigued. Inevitably, the subject of the past violence came up. In 1999, tensions between Christians and Muslims flared and the resulting violence effectively put the brakes on tourism in the region for

several years.

Happily though, a peace treaty was signed in 2002 and things have been pretty quiet ever since. "There hasn't been a westerner killed here since the Second World War!" Mike added with a grin. I was sold!

Six months later, the week before Christmas, I found myself on a packed midnight flight from Jakarta bound for Ambon. I wasn't really sure what to expect; attempts to obtain information on the Internet were rewarded with 6-year-old stories about the unrest. Descending through the clouds my eyes were greeted with verdant islands cloaked in green. Seven flights, five stopovers and countless hours after leaving home, I touched down at Ambon's beautiful new airport.

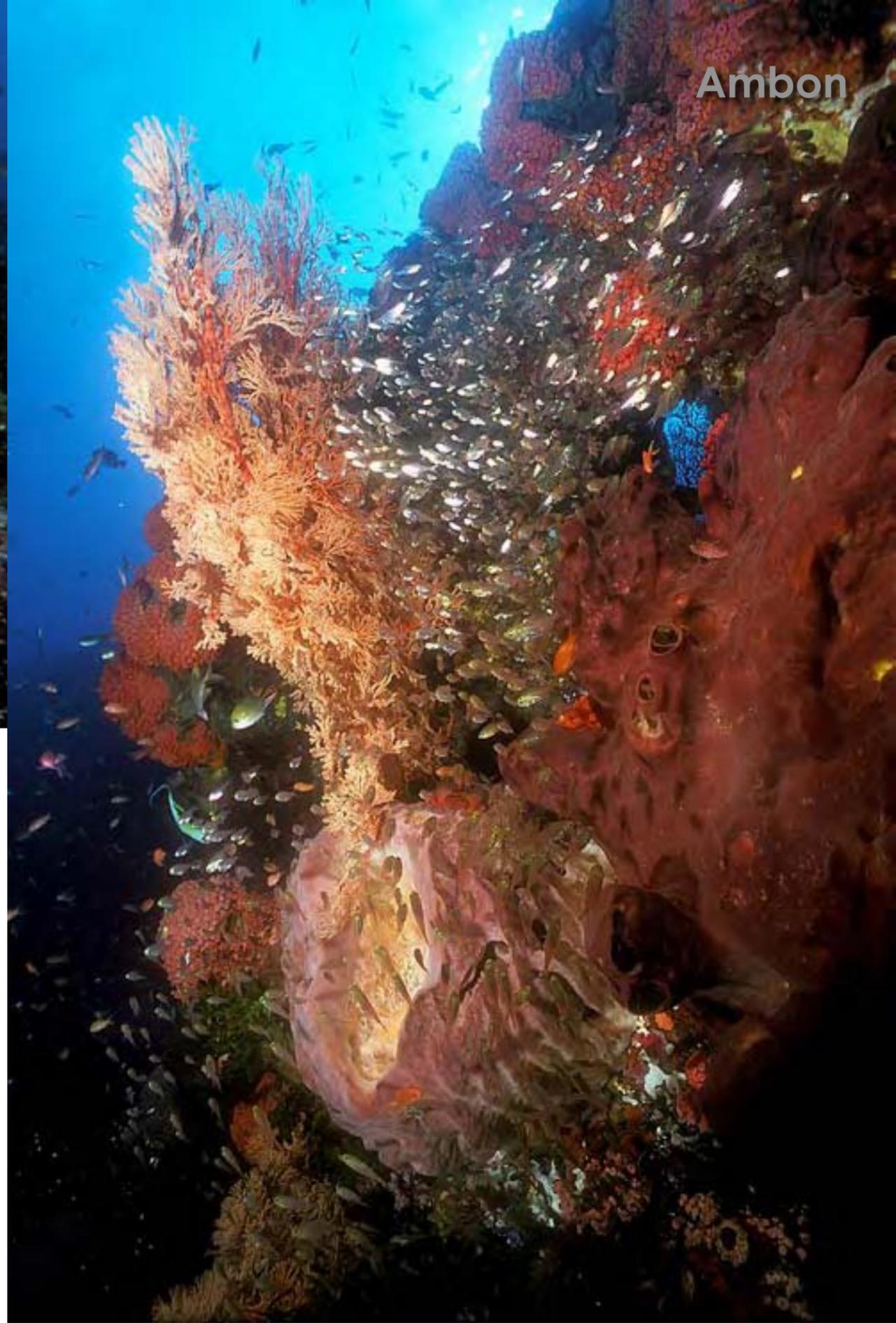
Normally, the transfer to the resort is made by a 15-minute boat ride, but due to rough weather the previous evening, they opted to pick me up by car instead. One hour after leaving the airport, I had finally arrived at the dive shop! Located

in Latuhalat, on the southwestern corner of the island, the resort is nestled across the road from the beach. Out front, the azure waters of the Banda Sea stretched out towards the horizon. Just off the beach, expanses of jagged volcanic rock could be seen offshore during low tide, contrasting sharply with the lush forest-clad hills lining the shore.

Opening in July of 2005, Maluku Divers works closely with the local community. All 14 members of the professional, well-trained staff are from the surrounding area, including dive guides Toby and Nus.

In fact, Toby is something of a celebrity. During his working stint in Manado, he discovered a new species of pygmy seahorse that was named after him!

After a virtually sleepless night on airplanes and still burdened with jet lag, I decided to take it easy on the first day. Over breakfast, I asked Buck about some of the things that had been seen that week. Upon hearing the magic words harlequin shrimp and rhinopias, my eyes



Muck diving

Early the next morning, with visions of harlequin shrimps and rhinopias dancing in my head, we headed out across Ambon Bay. At first, we seemed to be headed straight for the airport. I mistakenly assumed we were on our way to pick up some more guests before the dive! We soon anchored a few metres from shore near a concrete jetty, with an array of fishing boats providing a colourful backdrop. Underwater, my eyes were greeted with a barren, rubble-strewn slope descending down to 22m. While seemingly devoid of life, there was more here than meets the eye; for this was Laha, Ambon's premier muck-diving site.

Within moments of entering the water,

the critters started coming fast and furious. The stony bottom provided the perfect habitat for snake eels. Along with the more familiar crocodile and Bonaparte's species was another variety with a massive, grey head. Underneath the muffled roar of the fishing boats, the slope was home to a collection of seahorses in colours of yellow, orange and chocolate brown.

Care had to be taken however, as the entire area was crawling with scorpionfish; devil scorpionfish, Ambon scorpionfish and false stonefish mingled with pygmy lionfish in colour phases of red, copper and yellow. The critter parade continued; during the next 50minutes, we saw hingebeak shrimp, emperor shrimps on sea cucumbers, cowfish, morays and flying gurnards. During our safety stop, we came across an enormous cluster of urchins. Many creatures could be seen hiding among and adjacent to the protective spines, including blue-eyed cardinalfish,

instantly lit up like a Christmas tree! I also had a chat with three guests who had arrived from Singapore a few days earlier. After hearing their enthusiastic accounts of the diving, I was beginning to wonder if the rest day was a bad idea...

CLOCKWISE FROM INSET LEFT: White Pigmy Seahorse; Pulau Tiga Reef; Pintu Kota corals





banded pipefish, leaf scorpionfish, dragonets, nudibranchs and a pair of giant frogfish, one green and the other black.

Back on the boat, I was grinning ear to ear! However, Toby looked rather sad, as he had searched in vain for the elusive harlequin shrimps. He came to the unfortunate conclusion that the hapless creatures had met their demise courtesy of a hungry eel. Poor Toby was so upset, he wanted to spear every eel in the vicinity and cook them all for dinner!

Laha 2

For our second dive, we motored over the other side of the jetty, but a bit further out in the bay to Laha 2. Descending to 17m, the terrain here was

LEFT TO RIGHT: Red Pigmy Seahorse; Peacock Mantis Shrimp; Tanjung Sial

noticeably different. In contrast to Laha 1, rocky outcrops accented with coral growth were dispersed across the sandy

slope. While the elusive rhinopias didn't make an appearance, there were plenty of other fascinating subjects on hand. Jawfish were everywhere; their dark blue faces, punctuated with gold eyebrows, peered out at us from their protective burrows. Toby beckoned me over to show me an unusual fish with a red head and blue body sitting on the sand. He later told me it was a jawfish, but unlike any I'd seen before.

Subsequent visits over the next ten days revealed a mind-boggling assortment of critters, including flamboyant cuttlefish, stargazers, blennies, cockatoo waspfish and frogfish in a rainbow of colours.

At the end of my last dive at Laha, Toby brought me a real treat. Balanced precariously between two metal rods,

was a jewel-like red and white fire urchin. Perched on top were four zebra crabs and a pair of Coleman shrimp! I photographed to my heart's content until my air was nearly gone. Then, Toby gingerly picked it up and carried it back to its original position further down the slope. I could have easily spent my entire trip diving this site alone!

Pristine diving

Ambon, along with the neighbouring islands of Haruku, Saparua, and Nusa Laut, are blessed with literally hundreds of dive sites. Unlike in some other parts of Indonesia, dynamite and cyanide fishing are virtually unknown here and the reefs are healthy and thriving. A wide variety of superb locations are

within a 20-minute speedboat ride from Maluku Divers. Nus Point features a slope dropping down to large bommie at 32m. An early morning dive here is good for sighting blacktip reef sharks, along with Napoleon wrasse and turtles. Higher up is another bommie with luxuriant coral growth and lots of reef fish.

Nearby Mahai has a nice wall descending down to 37m. Abundant coral growth is found here, including tubastreas and some big fan corals at 24m. In the shallows, the bottom is carpeted with a luxuriant meadow of golden-hued hydroids. Look but don't touch! Above, waves could be seen crashing along the rocky shoreline, while sunbeams added a magical touch.

Without a doubt, one of Ambon's

Spice Trade History

Despite the lack of tourists, a human presence has been in these islands for 1000 years. However, it wasn't the idyllic beaches or swaying coconut palms that attracted the first visitors. These are the fabled Spice Islands, home to some of the most hotly contested commodities in history: cloves, nutmeg and mace. Though native to the region, cloves were originally discovered on the islands of Ternate and Tidore located off Halmahera. Nutmeg and mace (the lacy red aril that surrounds the nutmeg seed) originated from the two small islands of Run and Ali, located south of Ambon in the Banda Sea.

The Banda people, the islands' original inhabitants, once traded extensively with India and possibly even China and Africa. Arab spice merchants arrived around the 9th century AD, setting up a trade monopoly with the Moluccas that spawned sultanates and mini empires throughout the archipelago. For five hundred years, the Arabs held a

monopoly on the spice trade and kept the location a closely guarded secret. It was the Arab traders that introduced nutmeg to the European palate, a move that ultimately sealed their commercial doom. It was only after Vasco de Gama successfully rounded the horn of Africa that the way was paved for European explorers to try and locate the source of the fragrant treasure. The race was on!

The Portuguese were the first to arrive. In the 16th century, the 18 survivors of Magellan's original expedition of 230 aboard the Victoria (Magellan himself was killed in the Philippines) returned to Spain with over a ton of cloves. Not only was this precious cargo enough to eradicate the Spanish monarchy's looming debt, it made the sailors wealthy for life.

The Spanish eventually wrestled control from the Portuguese, only to lose their holdings to the Dutch, who founded the Dutch East India Company. Cloves were planted on Ambon, which subsequently became the centre of the region's spice trade. The company was all-powerful, and controlled the region with brutal efficiency. Harsh laws were enacted, including the death penalty for the illegal possession of nutmeg.

The Dutch monopoly came to an end courtesy of a shrewd Frenchman by the name of Pierre Poivre. In a cunning move, Poivre (Latin for pepper) managed to sneak out a handful of nutmeg fruits preserved in brine. Hence, Peter Piper and his pickled peppers!

Within eight years, nutmeg trees were growing in Mauritius and the importance of the Spice Islands waned. Today, more nutmeg is grown in Grenada in the Caribbean and more cloves in neighbouring Sulawesi. It's hard to believe these tiny spices, common in any modern supermarket, had so much impact on world history.

crown jewels is Pintu Kota. On the shoreline, a natural archway, created by continuous erosion, spread above the water, along with a number of caves etched into the rock face. The surface currents here can be absolutely fierce! On one dive, it took a monumental effort to pull myself along the rope at the side of the boat in order to reach the mooring line. I was nearly out of breath and I had yet to descend! Fortunately, the current diminished noticeably by the time we reached the bottom. The rugged landscape along the shoreline continued underwater, with the centrepiece being a magnificent underwater arch mirroring the one on the surface. Underneath, surgeonfish and yellowtail fusiliers congregated in

large numbers. Descending further, we headed to a vantage point on the other side of the arch. The waters beyond are susceptible to strong currents, making it a magnet for big fish. Napoleon wrasses were quite prolific, along with large numbers of Oriental and harlequin sweetlips. On occasion, mantas can be found frolicking in the current. The visibility was superb, extending to approximately 35m. It was so clear in fact, that even at a depth of 32m, colours were still plainly visible. While enthralled by the show before me, I heard the frenetic banging of tank somewhere in the distance. I found out later that four big Napoleons were posing together right in front of Buck and he was frantically trying to get my attention!



TOP LEFT: Cloves and spices.
INSET: Whole nutmeg and mace, which is the red stringy skin wrapping the kernel



CLOCKWISE FROM LEFT: Ceratosoma; Blue Jawfish; Fisherman with catch; Whole nutmeg; Cuttlefish and leaf

Before I knew it, deco reared its ugly head. Ascending to the shallower water inside the arch, I sat down before a large fan coral and waited. Before long, the curious surgeonfish came in close to check me out. From a depth of 12m and up, spectacular swathes of coral decorated the rugged terrain. A glittering mosaic of fish billowed amongst them, including cardinalfish, Moorish idols, butterflyfish, fusiliers and lionfish.

At nearby Hukurila Cave, Buck had something special to show me. Descending through an opening reminiscent of a big chimney, we descended to a 24m. The site isn't really a cave but more of an enormous swim-through. The bottom had a healthy abundance of corals and barrel sponges. However, it was one particular fan coral that Buck wanted to show me. In it was a tiny pygmy seahorse. I marvelled as to how they even found it in the first place, as it was smaller than my baby fingernail. Even more remarkable was its colour. This specimen was white with minute red spots!

Tanjung Sial

One day, we made a very special trip. As the first blush of dawn kissed the horizon, we set out for the 90-minute trip to Seram. Fisherman perched on rocky outcrops, while children waved joyfully as we passed by. The northern portion of the island is predominantly Muslim, with the shiny domes of mosques accenting the villages fringing the shoreline.

The first site of the morning was Tanjung Sial, situated at the extreme southwestern tip of Seram Island. Translated as Bad Luck Point in the local dialect, it's aptly named, as many boats have been lost here due to the fierce currents that converge off shore. As the boat couldn't anchor too close to the point due to the currents, we



would have to swim along the wall just offshore to reach our destination. This was one seriously vertical wall! The sheer sides, plunging down to the depths, were practically devoid of growth. The current started to pick up as we approached the point. Along the way, a school of around 20 bumphead parrotfish passed by overhead. By this time, the wall had transformed into a slope and coral growth appeared. Sheltered areas provided a respite from the strong currents.

A few more bumpheads made an appearance; the big fish were shy though and fled if you got too close. A hawksbill turtle was more compliant, however, and posed for my camera.

Towards the end of the dive, Toby swam over to check on my air. As I was getting low and we had to do our safety stop in open water, he indicated for me to follow him up. I inflated my BCD, but nothing seemed to be happening. It was then I realized that a very strong down current was pulling me down. A lot of inflation was required before I was able to ascend. After the safety stop, I realized we had surfaced in the midst of a mini-whirlpool! Fortunately, we got out of it pretty quickly and, by the time the boat





Map of Indonesia with Ambon highlighted; Blenny in a bottle

Ambon

picked us up, we were some distance from shore.

Our surface interval was made at a beautiful white beach on Seram Island. Seram is much bigger than Ambon but has a fraction of its population. The wild interior is cloaked with extensive tropical rainforest with many species of parrots. After making a second dive at Tanjung Sial, we headed back towards Ambon and the island of Pulau Tiga where we had our surface interval and lunch.

Pulau Tiga

While not the location from the Survivor TV show, this Pulau Tiga was truly a world-class site! Upon descending to 24m, a short swim led to the edge of a large drop-off. After taking a seat on a barren section of the slope, we sat back and watched the show unfold. This site could easily be renamed the fishbowl, as an endless procession of species paraded by. A large school of surgeonfish was joined by fusiliers, bannerfish, long-nosed emperors, blue-fin trevally, Napoleon wrasse and a few bumphead parrotfish. Giant trevallies have also been sighted here.

I could have easily spent the entire hour right on that spot, but my computer had other ideas. Reluctantly, I headed for shallower water. The dive would have been impressive enough already, but the sights kept on coming. The slope was shrouded with a riot of corals bursting with colour. Cauliflower corals competed for space with profusion of multi-coloured fan corals and large barrel sponges. Tuna patrolled overhead, while the occasional turtle swam by out in the blue.

The site is also home to some super-sized groupers. Buck related a story of one of his encounters. On one occasion, he had been intently studying a nudibranch, when he turned around and found himself face-to-face with behemoth nearly four metres long, with a mouth wide enough to swallow a man's head! "It was the most terrified I've ever been in over 20 years of diving," related Buck. However, the big fish meant him no harm; it was merely curious. After a few moments, it swam away, leaving the shaken diver staring in awe!

Island Cuisine & Culture

That evening, a farewell party was arranged for the Singaporeans for their final night in Ambon. A traditional Ambonese dinner was prepared, starting off with some incredibly fresh tuna sashimi. The main courses followed, including koho koho (tuna salad), ikan bakar (smoked tuna), cholo cholo (dipping



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CLOCKWISE FROM ABOVE: Bonaparte's Snake Eel; Pulau Tiga corals; Yellow Seahorse

sauce with tomato and spices) along with side dishes of sweet potatoes, manioc and boiled bananas. Traditional Mollucan cuisine is quite healthy, as no oil is used in the preparation of the various dishes.

After dinner, we were treated to music. A lot of the staff joined in to perform some traditional Ambonese songs. Everyone sang very well, with terrific harmony. Ambon is the musical heartland of Indonesia and Ambonese

musicians are held in very high regard.

Before I knew it, Christmas Day had arrived. As a majority of the staff is Christian, they had the day off. After a late breakfast of nasi goreng, John, Alia and I strolled over to the local Protestant church. The voices of several hundred parishioners flowed out, along with the strains of a charmingly out-of-tune brass band playing hymns. Built in 1984, the church can seat 704 worshippers at a time. The ornately carved wooden chairs were fashioned in Jepara in Central Java, an area famous for its teak carving. All were donated by individuals, some as far away as Amsterdam. As the service concluded, throngs of people streamed outside, everyone dressed in their finest for the service.

We wandered inside, where we met the minister. A jovial man, he said it didn't matter whether you were Christian,

Muslim, Buddhist or Hindu; the important this was to be a good Christian, Muslim, Buddhist or Hindu. "It doesn't matter what religion you follow, as long as you follow the essence of it." Well put. Initially, I thought this would be a rest day due to the holiday. Luck prevailed in the afternoon, however, as Buck managed to secure a boatman. Nus also agreed to come along. I finally got to fulfill a long-time dream: to go diving on Christmas Day!

Wreck diving

All week, Buck had been raving about a great wreck he wanted me to see. Located in the bay across from Ambon town, it is the remains of a Dutch cargo ship sunk during WW11. While details remain sketchy, it is believed to have been deliberately sunk by the Dutch to keep it out of Japanese hands. It is

also BIG, being around 100m in length. Resting on a slope, the stern lies in shallower water, with the uppermost portions rising to 12m. The fore deck is at a depth of 32m, so bottom time can end up being relatively short.

Marking the site was a huge rusty mooring platform. There was no current as we made our descent down the mooring line. The imposing silhouette of the vessel soon became perceptible in the gloom. While visibility can range anywhere from 6-15m, it was definitely on the lower end of the scale. Despite being encrusted with all manner of growth, the vessel's features were still recognizable. Abundant tubastrea corals branched outwards from the sides. Numerous clusters of bubble corals carpeted the upper deck, while yellow and blue tunicates added splashes of colour. Prolific fish life congregates around the



Freak show? No, strange creatures from the deep!

CLOCKWISE FROM TOP LEFT: A pair of Frogfish; Scorpion Leaffish; Clown Frogfish; Stargazer Snake Eel

wreck, including large numbers of yellow snappers and big-eye trevally. A trio of eagle rays are also known to frequent the vicinity, but are shy and usually vanish at the appearance of divers.

The wreck is equally fascinating to macro



enthusiasts. Within

moments of our descent, Nus pointed out a perfectly camouflaged orange frogfish perched on top of a pipe. The vessel's surface is riddled with nooks and crannies, providing home to a myriad of frogfish of all sizes and colours. Also present in great numbers are some very large and well-camouflaged scorpionfish. At one point, while trying to take a photo, I nearly put my hand on one! The upper deck is home to some very large nudibranchs, peacock mantis shrimps, blennies and vivid purple tubeworms.

Barramundi cod, uncommon in many other areas, were also abundant. As the wreck is so large, it is impossible to see everything on one dive. Many dives are needed to appreciate all the site has to offer. The wreck is also penetrable and quite suitable for novices.

Night diving

For superlative night dives, the resort's

own house reef can't be beat! Literally right across the road from the dive shop, just off the beach, it consists of a sandy bottom with huge rocky outcrops festooned with coral, sponges and tunicates.

This is the home of big macro! Crustaceans are particularly abundant here. The numerous crevices and overhangs along the walls provide refuge for spiny lobsters. Along with the adults were some colourful juveniles with their blue and white tails and white antennae. Slipper lobsters were also common, including the biggest specimen I've ever seen. It must have been close to a metre long!

The walls were literally crawling with crabs; spider crabs, orang-utan crabs, coral crabs, decorator crabs and sponge crabs. On several occasions we found a lumpy asternodotis, a huge tan-coloured nudibranch looking like a bumpy brown

pancake with gills.

Each dive revealed a fascinating assortment of subjects, including ornate ghost pipefish, flounders, a minute juvenile leaf scorpionfish, Pegasus

seamoths, nudibranchs and flatworms. Every day, on the same spot on the wall, sat a beautiful little clown frogfish. On my last night dive, with one more shot left on the camera, he yawned for me!

Background

Over a delicious Christmas dinner of soto ayam (Indonesian chicken soup), I asked Buck how he came to be in Ambon. A helicopter pilot by profession, he has flown humani-

tarian and search-and-rescue missions around the world, providing aid to victims of plane crashes, sinking ships, war zones and natural disasters, including the Asian Tsunami. While flying in food and



CLOCKWISE FROM LEFT:
Emperor Shrimp on coral;
Fast Nudibranch; Two
Cuttlefishes; Moray Eel



supplies during the Ambon conflict, he immediately became enthralled with the island's people and history. Wanting to do something to help, he teamed up with long-time friend Mike Hillis and Unexplored Adventures was born.

The guys have big plans in the works. A brand-new resort is currently being developed a short 10-minute tricycle ride from the dive shop. Located right on the water, the resort will feature several cottages, a restaurant and a spa surrounded by tropical gardens. All palm trees will be left standing, with the resort being constructed around them. The cottages are being prefabricated off-site and will be furnished in a traditional Mollucan style.

The property also comes with some interesting historical relics. Along with the remnants of a trench, three Japanese bunkers are found along the shore. During the Second World War, Ambon was the scene of heavy fighting between Japanese and Australian forces. The Japanese constructed numerous trenches and bunkers all along the coast, many of which can still be seen today.

Ambon

On my last afternoon, Buck took me for a tour of the surrounding area. In the hills above Ambon City, a picturesque and very winding road lead to Soya village. As we ascended higher, the heady aroma of cloves permeated the air.

At various points along the roadside were sheets, each covered with the freshly harvested buds drying in the hot, tropical sun.

Arriving in Soya, we paid a visit to the village head and made a small donation. As this was the end of the road, we had to walk. After climbing many steps, we reached an area with a number of clove trees. Up here, the fragrant aroma of the ripening buds was even stronger. Also present, a short distance away, were some nutmeg trees. Unlike the cloves, the round, pale green fruits were not quite ripe. It's hard to believe these unassuming trees played such a major part in word history.

Afterwards, we headed back down to Ambon City. Lunch was at the aptly named Panorama café, which provided expansive views over the city. Sprawling along the meandering hillsides above Ambon Bay, Maluku's capital is home to over 200,00 people and is one of the largest cities in the entire region. Things are pretty quiet these days, although a few blocks in the downtown core still bear scars from the conflict. The wide streets are lined with many churches, including an impressive Catholic cathedral.

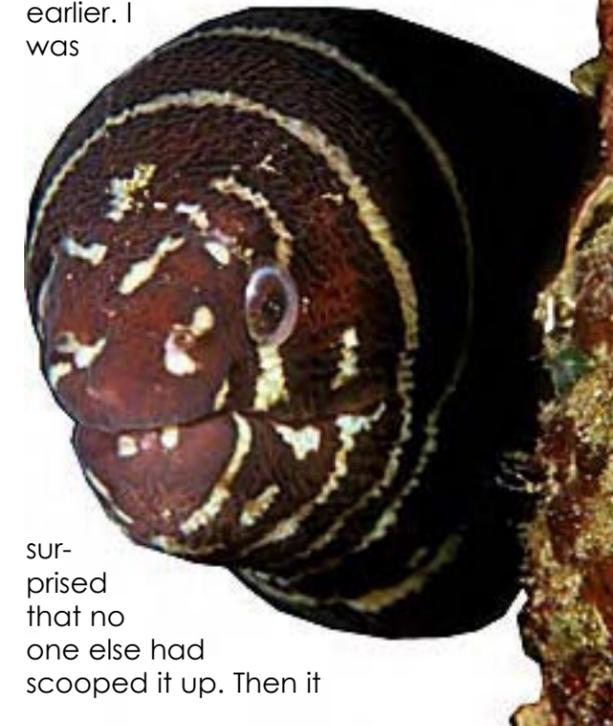


The people are friendly and cheerful greetings of "Hello mister!" are a common occurrence.

Tourists, especially Westerners, are a rarity and the locals are genuinely happy to see them.

Final thoughts

For my last dive, John asked me where I would like to go. That was a no-brainer; it had to be Pulau Tiga! While no Napoleons showed up, the fish life was even more prolific than on our previous visit. Towards the end of the dive, I spied something gleaming atop a bed of coral. It was the reef hook one of the guests had lost four days earlier. I was



surprised that no one else had scooped it up. Then it

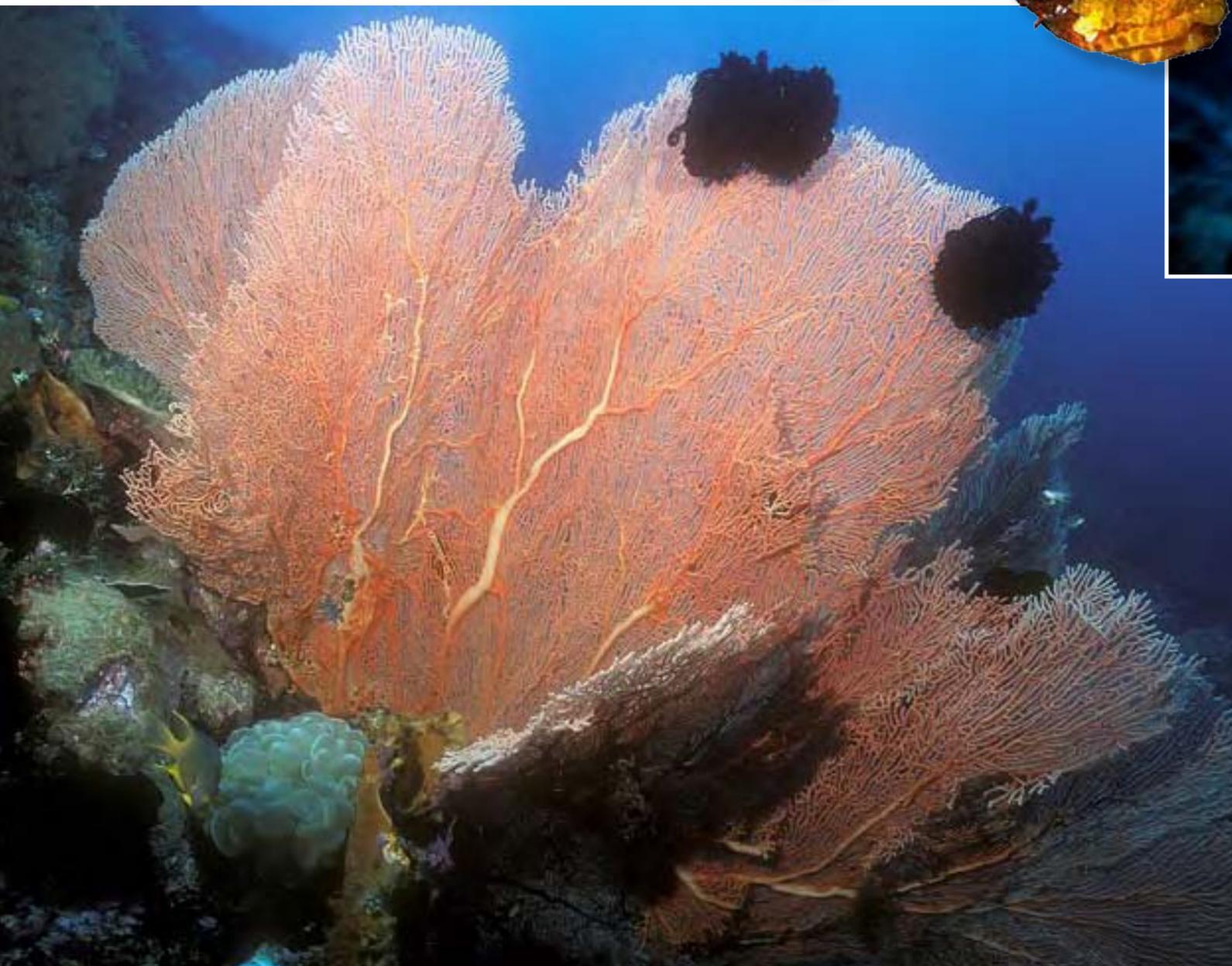
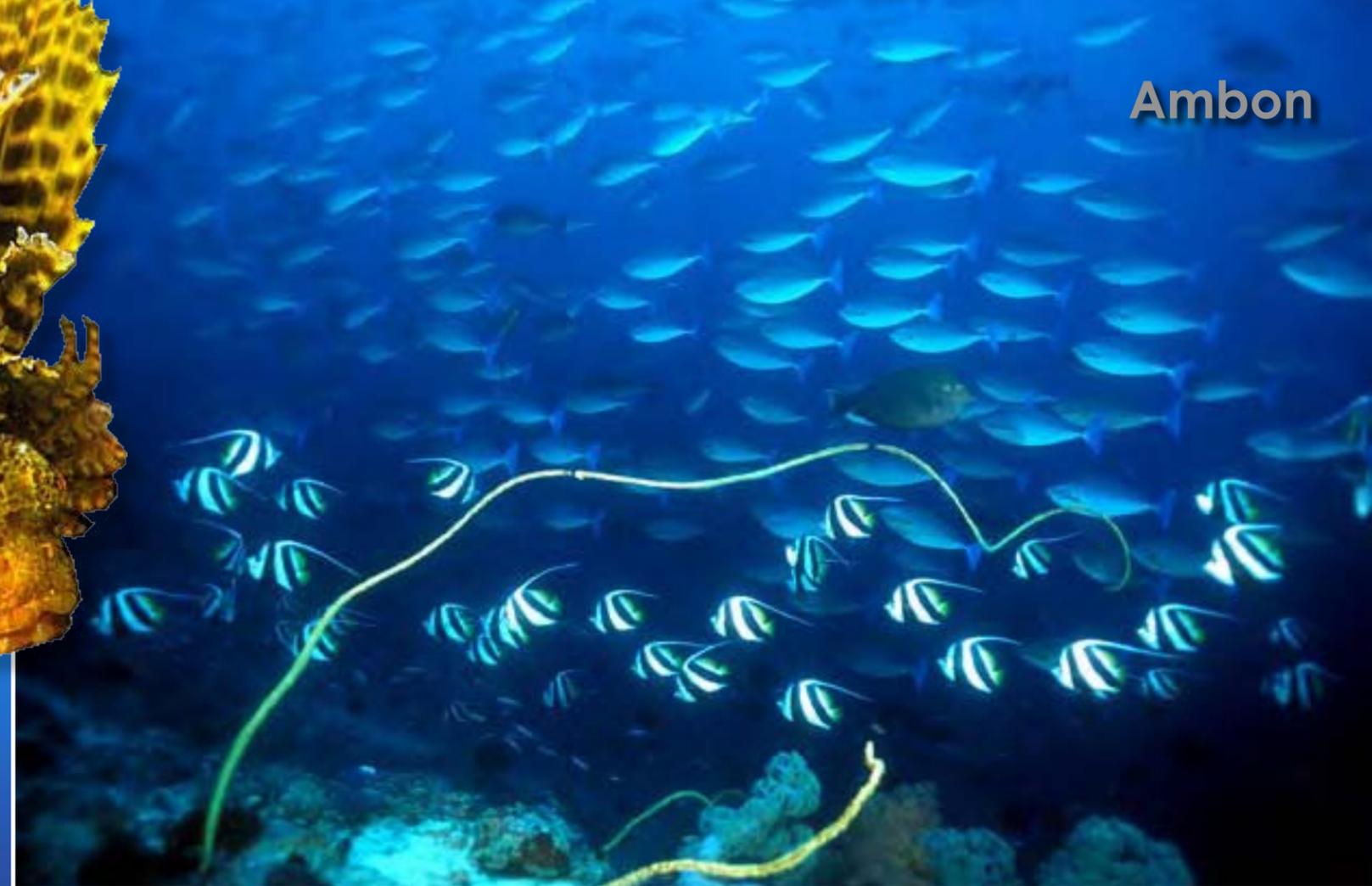
suddenly dawned on me; no one else had been here since! Here was a world-class dive site and we had it all to ourselves.

In the mid 1800s, the famous English naturalist Alfred Russel Wallace declared, "The species of fishes in Maluku are perhaps unrivalled for variety and beauty by those of any one spot on earth." I wholeheartedly agree!

Getting there

While seemingly far-flung, reach-

ing Ambon is surprisingly easy. Up to four flights a day arrive from Jakarta, Makassar or Bali. Lion Air allows an extra weight allowance of 30kg for diving equipment. For those with limited time, a convenient red-eye departs



Jakarta at midnight and arrives in Ambon at 7:00AM. This is a very convenient flight, as the early arrival means you can be geared up and in the water after breakfast.

If you are arriving from Singapore and connecting right away, be sure to get some rupiah before departing. I paid for my Indonesian visa on arrival (\$25.00US) and was given dollars for change. On hand to meet me was a representative from Unexplored Adventures who gave me my plane tickets for Ambon.

After rushing over to the domestic terminal to connect, I was hit with excess baggage fees (the curse of being a photographer) and they wouldn't take dollars. After somewhat heated negotiations and help from my driver, they

finally relented and I made a mad dash for the plane. Fortunately, they were holding it for me and I made it in the nick of time! Indonesian domestic flights are much more expensive to book outside the country. Mike booked my flight for me and had someone meet me on arrival to give me my tickets and drive me to the domestic terminal.

Scott Bennett is an underwater photographer and writer based in Toronto, Canada. For

more information or to order prints, visit his website at: Bennepix.com

CLOCKWISE FROM FAR LEFT:
Mahai Fan Coral; Yellow Dwarf Lionfish; Surgeonfish and Bannerfish; Red Dwarf Lionfish





SOURCE: WWW.CIA.GOV

fact file

Ambon, Indonesia



History In the early 17th century, the Dutch began to colonize Indonesia. From 1942 to 1945, the islands were occupied by Japan. After Japan's surrender in World War II, Indonesia declared its independence, but four more years passed mired by recurring hostilities and intermittent negotiations before the Dutch relinquished its colony. Indonesia is the largest archipelagic state in the world.

It is home to the world's largest Muslim population. Current issues include: poverty, terrorism, strengthening democracy after 40 years of authoritarian rule, financial reforms, corruption, human rights violations by military and police personnel, and avian influenza. Indonesia reached a historic peace agreement in 2005 with armed separatists in Aceh. It led to democratic elections in December 2006. Indonesia must continue to confront a low intensity separatist guerilla movement in Papua. Government: republic. Capital: Jakarta

Geography Indonesia is located in Southeastern Asia. It is an archipelago between the Indian Ocean and the Pacific Ocean, which consists of 17,508 islands, of which 6,000 are inhabited. Indo-



nesia straddles the equator. It has a strategic location along major sea lanes from the Indian Ocean to the Pacific Ocean. Terrain is mostly coastal lowlands with interior mountains on the larger islands. Lowest point: Indian Ocean, 0 m. Highest point: Puncak Jaya, 5,030 m. Coastline: 54,716 km. Natural hazards: floods occasionally, severe droughts, forest

fires, tsunamis, earthquakes, volcanoes. Environmental issues: deforestation; water pollution from sewage and industrial wastes, urban air pollution in, smog from forest fires. Indonesia is party to the following international environmental agreements: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands

LEFT TO RIGHT THIS PAGE: Girls going to church on Ambon; Town in Ambon; Global map highlighting Indonesia; Indonesia map highlighting Ambon



Economy Indonesia is a vast polyglot nation and has struggled to overcome the Asian financial crisis. It still struggles with persistent unemployment and poverty. It has inadequate infrastructure, corruption, a weak financial sector, poor investment, and unbalanced resource distribution among regions. The country continues to gradually recover and rebuild after the devastating December 2004 tsunami as well as from an earthquake in central Java in May 2006 that caused damages and losses over \$3 billion. The current administration faces declining oil production, lack of new exploration investment, subsidized domestic fuel straining the budget in 2005, weak monetary policy, a run on the currency, a 126% average fuel price hike, lack-luster growth through mid-2006, heavy increases in rice prices, increase in people under the poverty line. Economic reforms aim to improve the investment climate, infrastructure, and strengthen the financial sector. There has been progress in rebuilding Aceh after the 2004 tsunami. Aceh now shows more economic activity than before the disaster. Unfortunately, Indonesia suffered another tsunami in South Java and major flooding in Jakarta in 2006-7 causing billions of additional

dollars in damages.

Climate tropical; hot, humid; highlands are more moderate in climate

Population 245,452,739 (July 2006 est.) Internet users: 16 million (2005). Ethnic groups: Javanese 45%, Sundanese 14%, Madurese 7.5%, coastal Malays 7.5%, other ethnic groups 26%. Religions: Muslim 88%, Protestant 5%, Roman Catholic 3%, Hindu 2%, Buddhist 1%, other religions 1% (1998)

Currency Indonesian rupiah (IDR). Exchange rates: 1EUR=12,125.85 IDR, 1USD=9,087.04 IDR, 1GBP=17,850.90 IDR, 1AUD=7,354.02 IDR, 1SGD=5,988.11 IDR

Language Bahasa Indonesia is the official language and is a modified form of Malay. Other languages spoken: English, Dutch, local dialects (Javanese is the most common)

Health Be prepared and get your shots before you go to Indonesia. There is a high degree of risk for food or water-borne diseases including bacterial and protozoal diarrhea, hepatitis A and E, and typhoid fever. There is also a risk for vectorborne diseases in some locations.

These diseases include dengue fever, malaria and chikungunya. Bird flu, or highly pathogenic H5N1 avian influenza, has been identified among birds in Indonesia. It poses a very low risk, but check with your doctor before you go.

Decompression Chambers

Ambon - Rumah Sakit Angkatan Laut (RSAL) Halong, Ambon, Tel.62-911-52152
Bali - Sanglah General Hospital, USUP Sanglah Denpasar, Jl. Diponegoro, Denpasar 80114 Bali, Indonesia. tel. 62-361-227911

www.sanglahbalihospital.com
Jakarta - Rumah Sakit Angkatan Laut (Navy Hospital) Mintoharjo in Jl. Bendungan Hilir No.17, Central Jakarta tel. 021-5703081

Web sites

Indonesia Tourism
www.indonesia-tourism.com
Indonesia Tourism
my-indonesia.info/indexpromo.php
Tourism Indonesia
www.tourismindonesia.com

Dive Operators

Maluku Divers
www.unexploredadventures.com ■



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Edited by
Millis Keegan
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Upgrade this, update that. Not anymore. Using a computer that your life depends on means that you constantly need to be on top of your game. The DCAP-X dive computer from OMS can handle your dive calculation down to the itsy bitsy micron bubbles out of the box. Scheduled for release later this year.

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The PRO FLEX500 one-piece wet suit is available in 6,5 and 5 mm neoprene. For comfort, the suit is anatomically cut, and inner lined with fine plush. The knees and the forearms have durable pads to prevent wear and tear.

www.seacsub.it



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The "Hercules" is a great looking Swiss-made dive watch, with the added bonus of being mechanical. With automatic winding you can forget about changing the batteries.

www.zenousa.com



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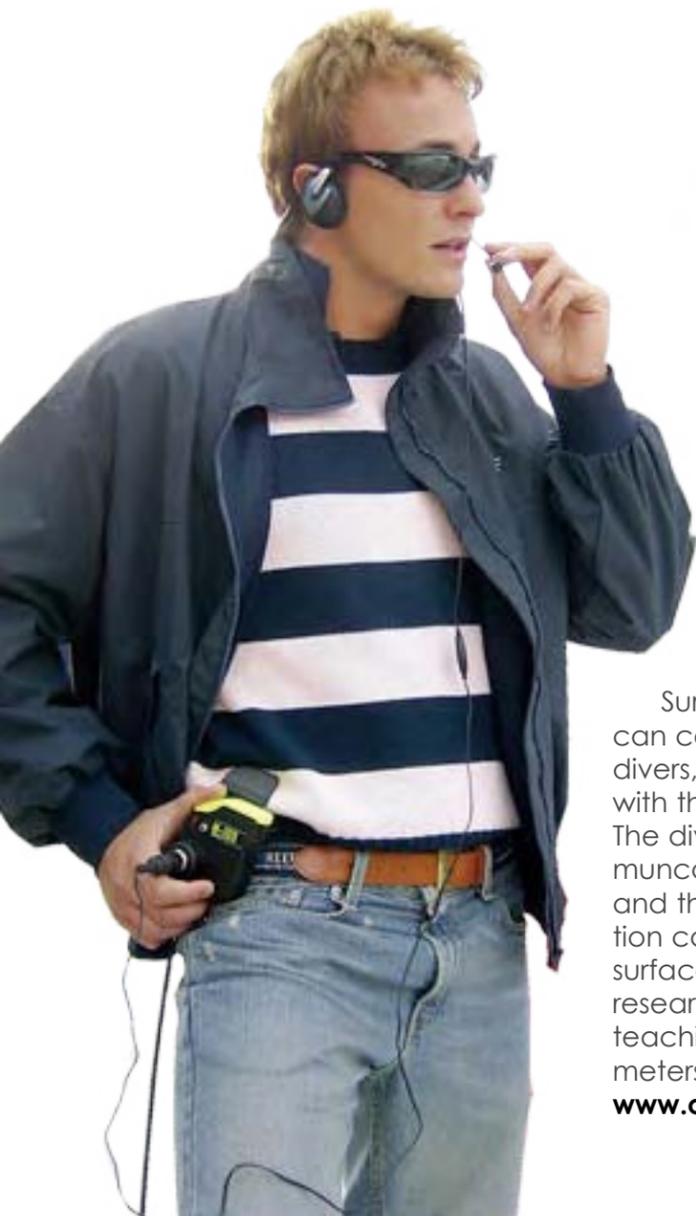
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Atom 2 computers recalled



The US Consumer Product Safety Commission, in cooperation with Pelagic has announced a voluntary recall of the following consumer product. Consumers should stop using recalled products immediately unless otherwise instructed.

Hazard:

When performing a switch from one gas to another during a dive, the dive computer's display will lock up and not return to the main dive screen that displays dive times. This can cause divers to enter decompression unknowingly or the diver could ascend prematurely, resulting in decompression sickness.

Incidents/Injuries:

Pelagic has received a report of two dive computers malfunctioning. No injuries have been reported.

Description and Models:

The recall involves Oceanic-brand ATOM 2.0 dive computers with serial numbers 1 through 2,079 (Revisions 2E, 3A, and 3B) and AERIS-brand EPIC dive computers with serial numbers 1 through 712 (Revision 1A), which can be accessed and viewed on the computer's display. Also, the serial number and date of manufacture are printed on the bottom of the unit (Oceanic ATOM 2.0 from August 23 to November 23, 2006, and AERIS EPIC from October 18 to November 14, 2006). This recall does not include any other Oceanic or AERIS brand dive computers.

Sold at: Authorized Oceanic dealers sold ATOM 2.0 dive computers nationwide from August 2006 through February 2007. Authorized AERIS dealers sold EPIC dive computers nationwide from October 2006 through February 2007. Both computers sold for between \$670 and \$950.

www.oceanicworldwide.com



Wrap around

Thanks to an air cell wrap-around design, the diver is kept upright on the surface. And of course, the adjustment and attachments here, there and everywhere will help the more equipment challenged diver to fit his Atmos LX for a perfect dive. **Amazon.com** or **DiveAeris.com**



Clear view

This mask has a low profile, a small volume and narrow nose bridge. It is all in the design for a wide view field and easy clearing. **www.saekodive.com.tw**



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AERO LIGHT ↑



Mini Review: Hotbelt

Are you one of those divers that shivers at the mere thought of doing the giant stride, much aware of that moment when the rush of cold water makes it in under your wet suit? You know, that moment when you ask yourself: Why am I doing this, again? For some, that moment last through out the dive, making it very uncomfortable. If you are one of those with chilled bones, the hotbelt could be an option for you.

Tested & Tried by Millis Keegan

The hot belt consists of a wide belt, made of thin neoprene, with a pouch for a heat pack. The belt wraps around your waist, under your wet suit and stays put with Velcro.

The heat pack is filled with a liquid solution that will solidify and generate heat when activated. When you feel the chill coming on, you push a button inside the heat pack for an exothermic reaction. The water inside your suit warms up and will keep you warm



for about an hour. Now, this must be a great idea, right? It is, but don't expect this marvel to perform impossible marvels. Real cold water requires proper isolation. A warm water wet suit and the hotbelt will not do the trick. For chilly warm water dives, it can fill a function, though.

- Minus

Make sure that the belt is on right. With the weight belt over the wet suit, over the hotbelt, adjustments during the dive is pretty much impossible. The heat pack needs to boil for 15 minutes to be "recharged". To make it through two dives you will need two heat-packs.

The belt is one size fit all. Don't bother if your waistline is over 38".

+ Plus

Well, it does keep you warmer.

Backproblem? Even if you do not feel the need to stay warmer during a dive, the hotbelt can help ease back pain.

You have good use of the belt outside the water as well, and also comes in handy when surfing, snorkeling, etc. ■



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Edited by
Millis Keegan



Online shopping is here to stay

In our previous issue, we got some customers' views on online shopping. Not surprisingly, many were in favor of it. That is bad news for the majority of small business owners around the world. It is quite clear that they have to do something to adapt to the situation, because online shopping is here to stay. But what?

I called some scuba schools, to ask how they felt about the threat from online shopping. The question of the day was, "What can a one-person operation—as the case often is—do to survive this harsh reality?"

As I talked to a number of Scuba dive shop owners and managers, it was very clear that they are struggling to stay in the business,

and there is no easy solution to the situation. Among them was Tony Langenberg from DiveStop, in Miami, Florida. His voice was representative of many others.

Q: So, does Internet-based shopping effect your business at all?

A: Sure it does! And I don't see it getting any better in the future.

Q: What's the main problem? Can't you sell products online as well? Take the "if you can't beat them, join them" approach?

A: We have to follow the dealership agreement that says we are not allowed to sell their products online. There is no way we can match the online prices. We are also bound by the agreement not to sell anything at more than a certain percent under suggested retail price.

Q: Really! That's kind of rough, isn't it?

A: Yes, but the reason is that the manufacturers do not allow anyone to sell their products online, which in a way is supposed to help us. But it doesn't. I don't know where the major web-based companies buy

their products, probably in Europe where the rules are different, but the same products I sell in the store are available online.

Q: Do you have an example of how this affects you?

A: We are a service-oriented shop, and we like to help customers find what they need. I have a pool in my shop, and when customers come in looking to buy equipment, we let them try the equipment in the pool, and then they say thank you, I am going to buy this online. I just wanted to make sure I ordered the right size.

Q: So, they pretty much walk out of your shop and home to the computer and then place an order... somewhere else.

A: Yes! And many times they don't even realize that by the time they add up the shipping, and handling, they have only saved like 15 dollars on an item.

Q: And to clarify, you cannot match the online price if they ask you?

A: We are bound by the dealership agreement; we cannot match a price without

risking losing the dealership!

Q: To be more competitive, do you get any help from your training agencies like PADI or NAUI or from the manufacturers?

A: Well, PADI gives seminars on how to sell, but all the seminars in the world are not enough to give us a better market. I am a one-person operation, and the hands-on tips they provide are not made for shop owners like me.

Some manufacturers understand the problem and help us with in-store promotions. We'll see how that works out for us.

The reality is, that online shopping causes problems for customers as well as for us.

Q: What do you mean?

A: It is all good and well when buying online, until it breaks. That's when they come to me. And I tell them, yes I can help, but it is going to cost this and that. NO, they claim, they have a lifetime warranty on the product! Thing is, many times they do not, because the product was not purchased through an authorized dealer. Now I have a disappointed customer,

What do you think?

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that is angry with me! But there is not much I can do, I can't give away spare parts or my hours.

Q: So, it comes down to the warranty.

A: If you buy your equipment online you should be aware that the warranty might not apply. As a customer, you should be careful even when they promise a lifetime warranty. What happens is, that customers bring equipment they have purchased elsewhere asking for service and sometimes help with assembly. I would like to help, but when I call the manufacturer, the product is not covered by the warranty, and the customer has to pay.

Q: What do you want to say to a future customer? Why should he or she spend money in your shop?

A: Well, if this keeps up, we will not be around for much longer. It has become a lot worse over the last five years, and you will see more small dive shops

disappear, and with them, the service, the knowledge and the dive training facilities.

I do have customers that appreciate the service, and the fact that they can try before they buy, but they are far and few in between.

In conclusion

Basically, I feel that in the big picture, the existence of small businesses are important for quality, versatility and growth of diving as a sport. Any ideas as to what can be done to keep these Mom and Pop places open? Is it worth a few extra bucks? Ultimately, the answer lies in your hands. But, what is the answer?

—Millis Keegan

Warranty tips

Make sure you buy from an authorized dealer, whether you spend your money online or in a shop, the best way is to check directly with the manufacturer. Keep your receipt, and register your product. ■

The daily journal of life in and around water
UnderwaterTimes.com

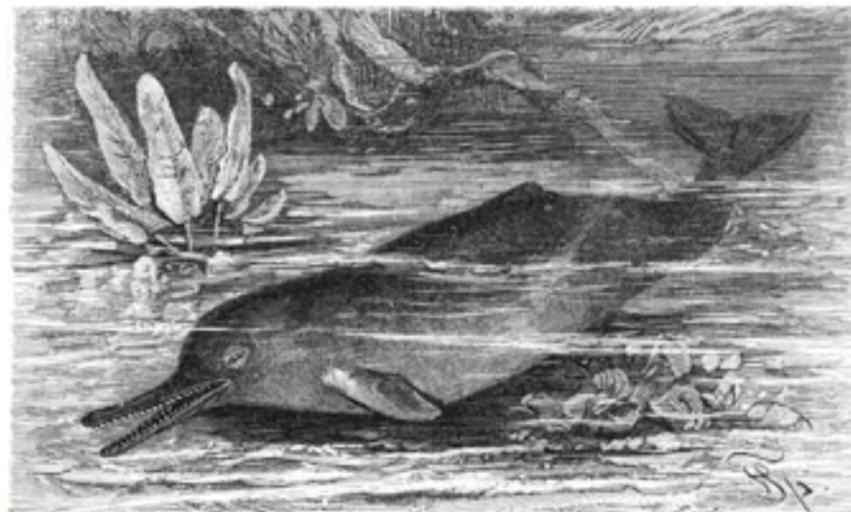
whales & dolphins



Edited by Peter & Gunild Symes

New Tracking System for Chilka Lake Dolphins

Scientists from University of Tokyo have started acoustic tracking of endangered Irrawaddy dolphins in Chilka Lake using sophisticated Underwater Array System. The system being used for the first time in the country was installed at Magarmukh, Satpara region of Chilka on January 29. ■



Chinese River Dolphin
DRAWING BY ALESSIO MARRUCCI

Technology May Save India's River Dolphins Says WWF

Japanese technology to track and monitor the behaviour of India's endangered Ganges River Dolphins using underwater acoustics will play a vital role in efforts to conserve the freshwater mammals.

WWF-India said researchers from the University of Tokyo have developed an underwater acoustic device or hydrophone that measures the individual sonar pulses or the clicking sounds emitted by the dolphins, which are as unique as fingerprints. The dolphins are blind and emit the sonar pulses in order to navigate and find their prey along the Ganges and Brahmaputra river system, which stretches across 6,000 km and spills

into the Bay of Bengal.

Difficult to study

"The problem in studying the dolphins is that they are under the water and it is very difficult to monitor or identify them,"

Sandeep Behara, India's Freshwater and Wetlands Programme told a news conference. "Now we can identify their individual clicks and get an idea of populations,

The Gangetic cetaceans are one of only four species of dolphins in the world that inhabit rivers and lakes and are much less common than their marine counterparts, numbering only around 2,000 in India, according to the conservation group



analyse their behavioural and migration

patterns and feeding habits ... this will help in conserving the animals," he said. The researchers can locate the dolphin from up to one kilometre away.

"The hydrophones are totally passive sonar instruments which do not make any sound and do not impact the dolphins" ■



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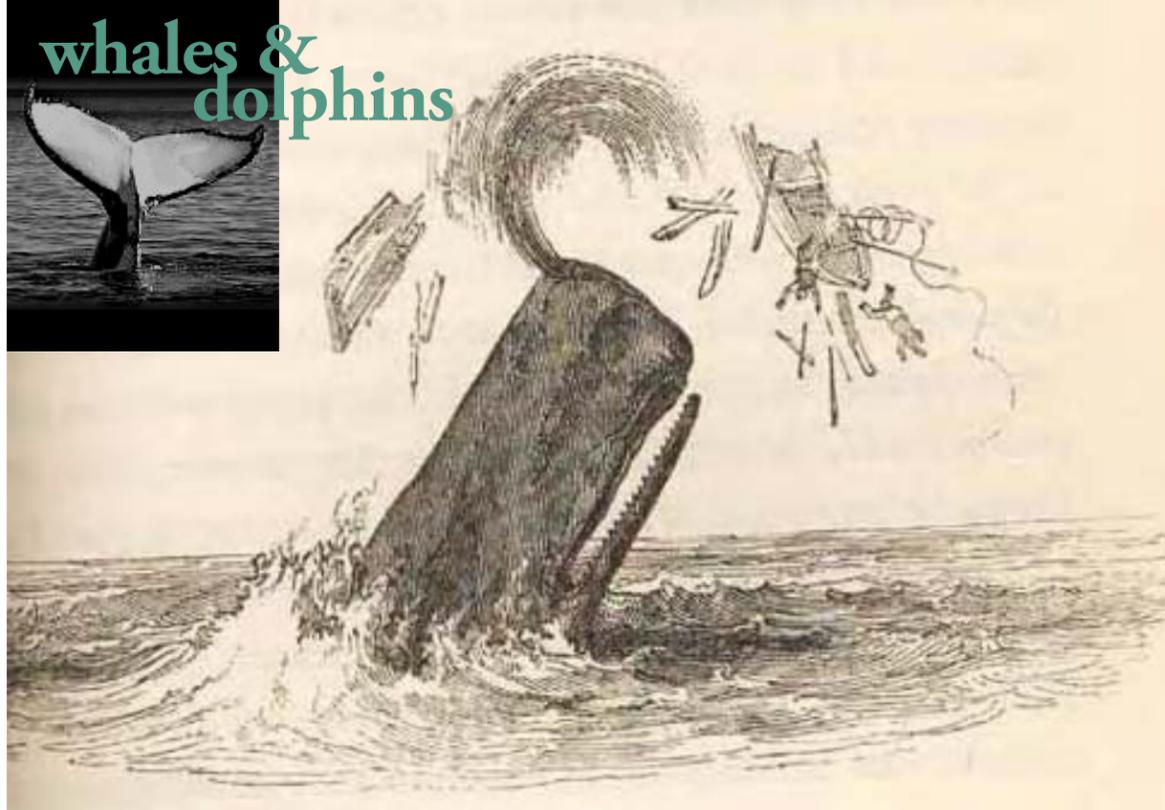
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The related Amazon River Dolphin. Animal in captivity in Duisburg zoo. Photo by Dennis Otten

US Navy Plan to Put Dolphins On Underwater Patrol

Dozens of dolphins and sea lions trained to detect and apprehend waterborne attackers could be sent to patrol a military base in Washington state. In a notice published in the Federal Register, the US Navy said it needs to bolster security at Naval Base Kitsap at Bangor, on the Puget Sound close to Seattle. The base is home to submarines, ships and laboratories and is potentially vulnerable to attack by terrorist swimmers and scuba divers. ■





Sperm Whales Have Discretely Returned to the Mediterranean

The sperm whale, once thought to have been nearly wiped from the Mediterranean by drift nets, has returned to the region.

Marine scientists tracking tiny particles from space says it appears the whales are returning in "remarkable numbers" since they were first spotted two years ago when NEMO—the Neutrino Mediterranean Observatory—started picking up strange sounds off Catania, Sicily. The sounds turned out to be the "clicks" of sperm whales talking to each other.

The International Fund for Animal Welfare said two years ago that large herds of sperm whales had become unheard of in the Mediterranean, But Italian scientists say the sperm whale, an endangered species and the world's largest toothed animal, has made a quiet return in "remarkable numbers". Scientists say there may be hundreds of sperm whales off Sicily now. ■

Ships Ordered to Slow Down in the Strait of Gibraltar to Protect the Sperm Whales

Spain is advising ships passing through the Strait of Gibraltar, one of the world's busiest maritime lanes, to slow down and look out for whales. The Spanish Government is also to change the placing of the sea lanes in the Strait of Gibraltar, so that local whales can be better protected.

The channel between Africa and Europe is a principal feeding grounds for whales and several are hit each year, some killed or injured, by ships that do not see them or fail to change course.

In the first such initiative in Europe, the Spanish navy this month began recommending vessels go no faster than 13 knots and exercise maximum precaution at times of the year when sperm whales flock to the strait to feast on squid. It's thought that about 25 sperm whales

live in the area under the threat of extinction. One of them was hit and killed by a Tangiers to Algeciras ferry in 2002, but the new guidelines will establish a protection area for the whales.

Smaller species such as pilot and fin whales are faster and can get out of the way of vessels more quickly.

Marine biologist Renaud de Stephanis doubted ferries would heed the voluntary speed advisory but expected it to raise whale awareness among crews.

"If they're not going to slow down, at least they may go a little bit to the right, a little bit to the left," said de Stephanis, which works with ferry captains and whale watching companies to try to protect the sea mammals.

It is difficult to accurately document how many whales die or are injured in collisions each year in the straits as bodies are washed into the Mediterranean by currents, de Stephanis said. ■

Pollution also to blame?

A high number of pilot whales are dying in the Straits of Gibraltar because of contaminated seas some scientists say.

In the past three months, six animals have died and their corpses have been discovered on the beaches of southern Spain. According to the Centre for the Recovery of Threatened Maritime Species in Andalusia, all the whales were adults and in good health.

A study is being carried out by the centre with the help of the University of Sienna in Italy into the cause of their deaths. Scientists will measure the levels of hydrocarbons, heavy metals and other toxins in the bodies of the whales.

Renaud de Stephanis: "Pilot whales are very sensitive to any type of contamination and this could be the cause of their deaths, but we are not sure yet."

The World Wildlife Fund/ Adena and CIRCE, a group of scientists studies whales, said this could be due to crude oil spills from ships. They called for urgent action to stop this "grave problem" getting any worse. ■





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2007 The Year of The Dolphin

In an effort to protect dolphins from mounting threats—and even possible extinction—the United Nations has officially declared 2007 the Year of the Dolphin. The United Nations Education Program is working in conjunction with the Whale and Dolphin Conservation Society and several other organizations to plan awareness events. ■





Showdown off Antarctica

Whaler catches fire as activists and Japanese whalers clash

Hundreds of whales have probably been spared after the Japanese whaling fleet's only factory ship was crippled by fire in the Antarctic.

According to the conservation group Sea Shepherd, two of their vessels have caught a Japanese whaling vessel *Kaiko Maru* bearing down on a pod of whales.

Two of their vessels, the *Robert Hunter* and *Farley Mowat*, moved in on the whaler and chased it into the ice. At one point during the confrontation, the *Kaiko Maru* turned to starboard and struck the *Robert Hunter*.

A fire broke out on the vessel's second deck, close to where the whales were processed, and was raging for days, partly fuelled by whale oil from the slaughtered mammals. One crew member was killed and most of the 148 others abandoned ship.

Environmentalists hope that the 8,000-tonne ship, the only one capable of processing harpooned whales, will have to be scrapped following what is its second serious fire in less than a decade. If so, they hope it will not be replaced, spelling an end to an annual hunt, which has caused protests for a quarter of a century.

It was not the only drama. Two crewmembers from the *Farley Mowat* were missing for eight hours being lost at sea on a dingy following a confrontation with one of the illegal Japanese whaling fleet. The crew members were found by the *Farley Mowat*; both were unharmed and slightly cold.

Whale ship attacks 'inevitable'

A former marine biologist and author, George Muller, says attacks on a Japanese whaling fleet by the Sea Shepherd Conservation Society, are long overdue. The collision of the two vessels was described as "eco-terrorism" by



Sea Shepherd's vessel the *Robert Hunter* (left) and the Japanese whaling ship the *Kaiko Maru* (in the back) collided in the freezing Antarctic waters. Each vessel has footage of the collision, which caused the boats minimal damage, but it is unclear which initiated the ramming.

Japan but Mr Muller said Japan had only itself to blame for the attack.

"The recent clash at sea was inevitable. The Government of Japan has reaped what it has been sowing. It has forced its will on the rest of the world for too long and people have had enough," said Mr Muller.

"If Japan wasn't down in the Southern Ocean hunting whales illegally in violation of numerous international treaties then there wouldn't be an issue. "Right now they have as much credibility as a burglar caught in the act by an irate homeowner." ■

Environment group labelled terrorists following collision

The Japanese whaling fleet has labelled environmental protesters as "terrorists" and "pirates" after the collision in the Southern Ocean.

The group's tactics to stop whaling also came under fire by the New Zealand Government and described by Conservation Minister Chris Carter as "stupid playground behaviour" and were putting lives at risk.

The Japanese position is that the IWC regulations permit the taking of whales for scientific research. But the Japanese have killed hundreds of whales each year since 1987 for a total of at least 8,137 animals taken under the guise of research. ■

Whales and dolphins found in Japanese pet food

Whale and dolphin meat is being sold in pet food in Japan, thus negating Tokyo's controversial claim that it needs more whale meat, according to three environmental groups.

They said analysis carried out earlier this year on samples of pet food purchased near Tokyo revealed levels of both Antarctic minke whale and dolphin meat. "The fact that Japan is using whale meat for pet foods totally invalidates Japan's attempts to legitimise and increase their catches," said Clare Perry, of the British non-governmental Environmental Investigation Agency (EIA). ■



Pirates? Flying the Skull and Crossbones. Sea Shepherds' vessels got their registrations revoked by the UK and Canada after diplomatic pressure by Japan

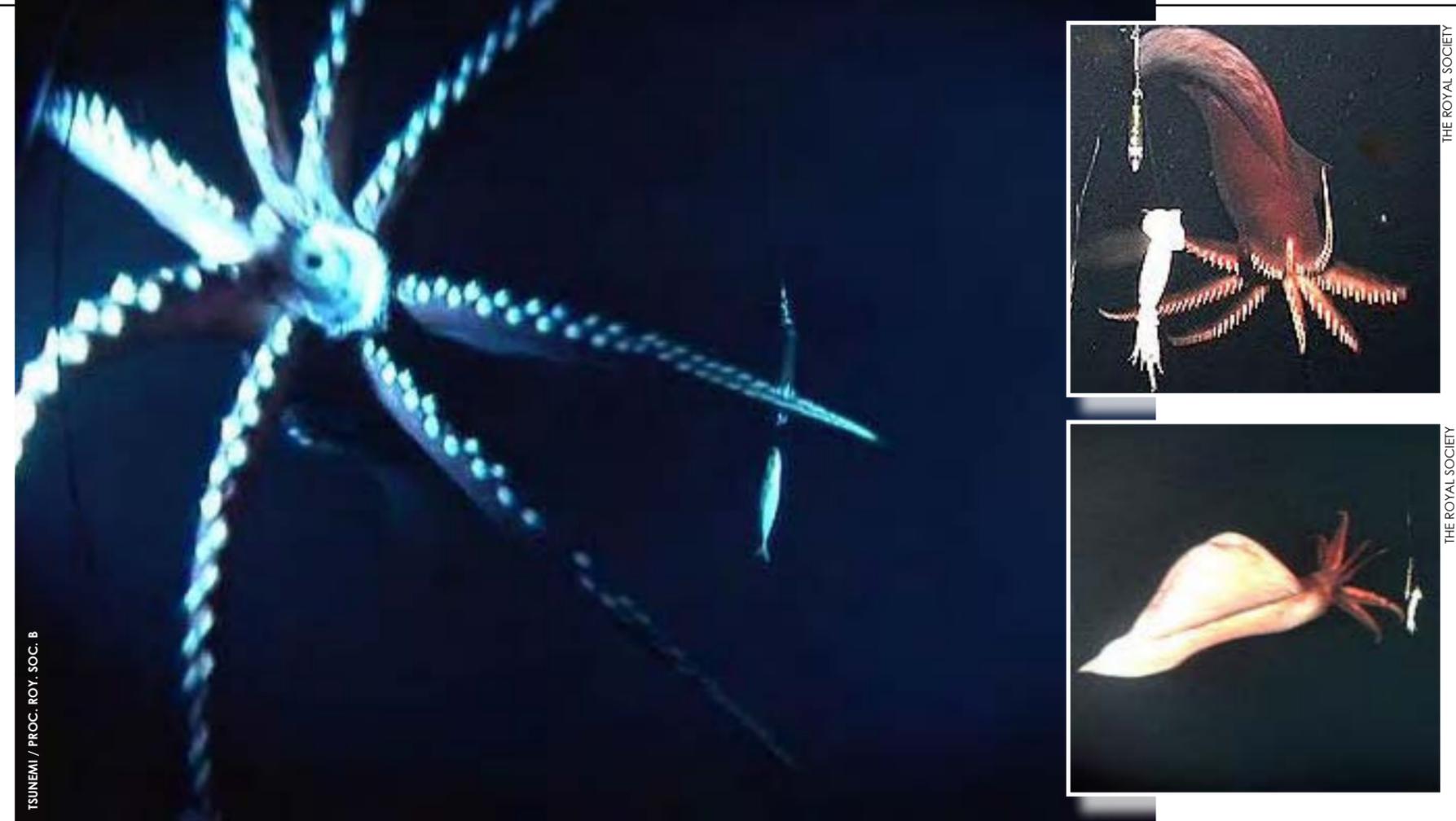


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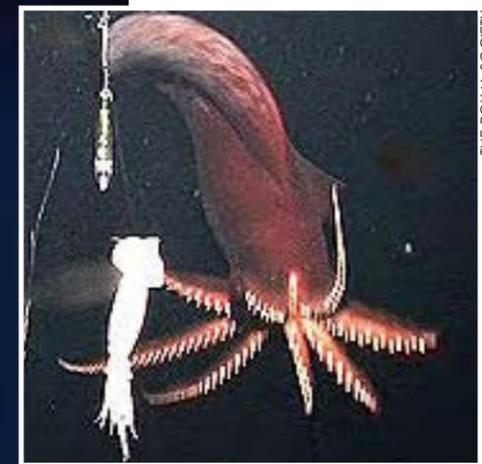


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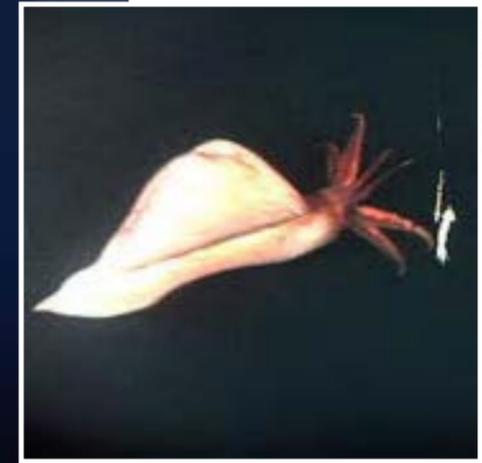
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Reeled in by New Zealand fisherman

Largest Squid Ever Caught

A Zealand fishing vessel hauled in the world's largest invertebrate, a colossal squid of science fiction proportions, while fishing for toothfish in Antarctic waters. The crew of the San Aspiring winched the roughly half-ton, 40-foot behemoth from the abyss as it chewed on a toothfish, and determined the animal to be in deteriorating condition. "The squid was almost dead when it reached the surface, and the careful work of the crew was paramount in getting this specimen aboard in good condition," said Jim Anderton of the New Zealand Ministry of Fisheries in a statement. ■

Giant Squid Attacks at Speed, Using Light

A large, deep-sea squid has been caught on video for the first time. The footage of the *Dana octopus* squid shows that far from being sluggish, passive creatures, the bioluminescent creatures are fast, aggressive hunters.

The metre-long eight-armed squid, *Taningia danae*, was caught on camera as deep as 900m in waters off the Chichijima Islands in the north Pacific. The Japanese researchers who caught the squid on camera think they may have seen it attempt to communicate with the small torches they were dangling along with the bait in front of their underwater camera.

Taningia danae is an eight-armed squid measuring up to 2.3 metres long. It has two large bioluminescent "bulbs", called photophores, at the end of two of its arms. The researchers filmed adult squid emitting both short and long flashes from their photophores when they attacked the small Japanese common squid that were used as bait.

The first live videos of the creature showed it swimming forward and backward around bait, attacking a rig line on which researchers dangled bait, flashing light at prey, potentially to blind it, and attacking the halogen light researchers used to observe it. "Blue light seemed provocative," the researchers wrote in their online report in the Feb. 13 issue of the journal *Proceedings of the Royal Society B*.

The researchers also saw the squids emit short bright light flashes from large glowing organs at the tips of their tentacles before their final assaults. Kubodera and his colleagues speculate these flashes might blind prey or help the squids measure distance to their targets in the dark depths of the sea.

The most curious flashing behaviour, however, was triggered by two pencil-shaped underwater torches that were attached to the bait. The researchers noticed that when both torches were lit, adult squid would sometimes wander around the bait without attacking it.

They would produce long glows from both of their photophores as they approached the torches, then several shorter glows as they moved around it. ■

Watch a movie of a squid making flashes



Do you know this Cephalopod? Florida squid find defies categorization, puzzles scientists



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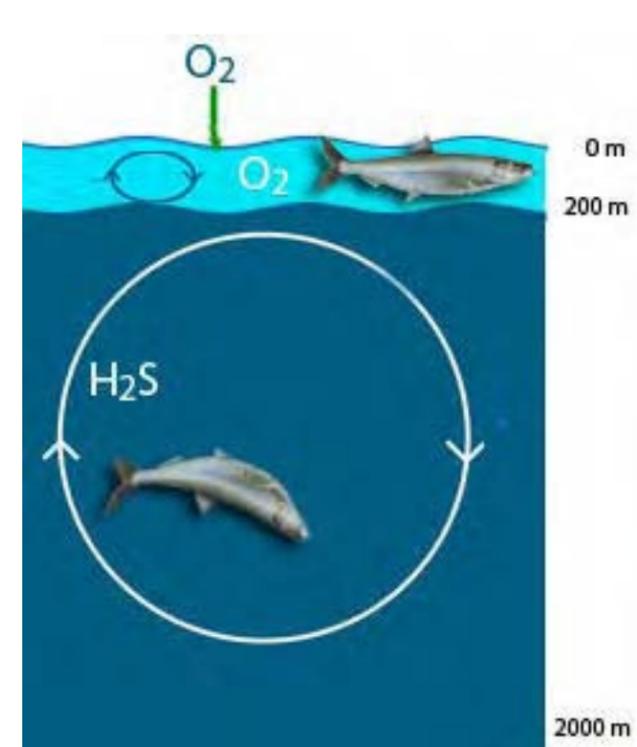
Edited by Michael Symes

HUGH MACISAAC'S LABORATORY FOR THE STUDY OF BIOLOGICAL INVASIONS

Planktivorous comb jelly (*Mnemiopsis leidyi*) ctenophore invaded the sea in eighties and caused catastrophic drop in zooplankton biomass by eating it all



The watershed that drains into the Blacksea covers most of Eastern Europe, and parts of Asia



The Black Sea is the world's largest meromictic basin where the deep waters do not mix with the upper layers of water that get oxygen from the atmosphere. As a result, over 90% of the deeper Black Sea volume is anoxic water that lacks oxygen

The Black Sea is interesting not only for tourism and diving but also from the scientific and historical point of view. Atlantis? The Flood? If you are a fan of myths and mysteries then the Black Sea has something for you, too.

Text by Michael Symes

The Black Sea is an unusual sea. Nearly one third of the land area of continental Europe drains into this sea into which seven large rivers flow, including the major rivers of the Danube, Dnieper and Don. However, its only outlet is the narrow channel of the Bosphorus, which is only about 70 metres deep and 700 metres wide. The depth of the Black Sea itself is more than 2,000 metres in places.

The inflowing rivers dilute the Black Sea, reducing its surface-layer salinity to 1.7 % (17 grams of salts per litre of seawater) which is less than half of the average salinity of the oceans at 3.5 %. This reduced salinity is the most important environmental factor influ-

encing marine biodiversity in the Black Sea. Most marine animals and plants cannot survive here. For example, there are no corals (but see below), no octopuses and squids; no seastars, and no sea urchins living in these waters. On the other hand, there are very few dangerous marine creatures in the Black Sea—no deadly jellyfish or stinging sea anemones.

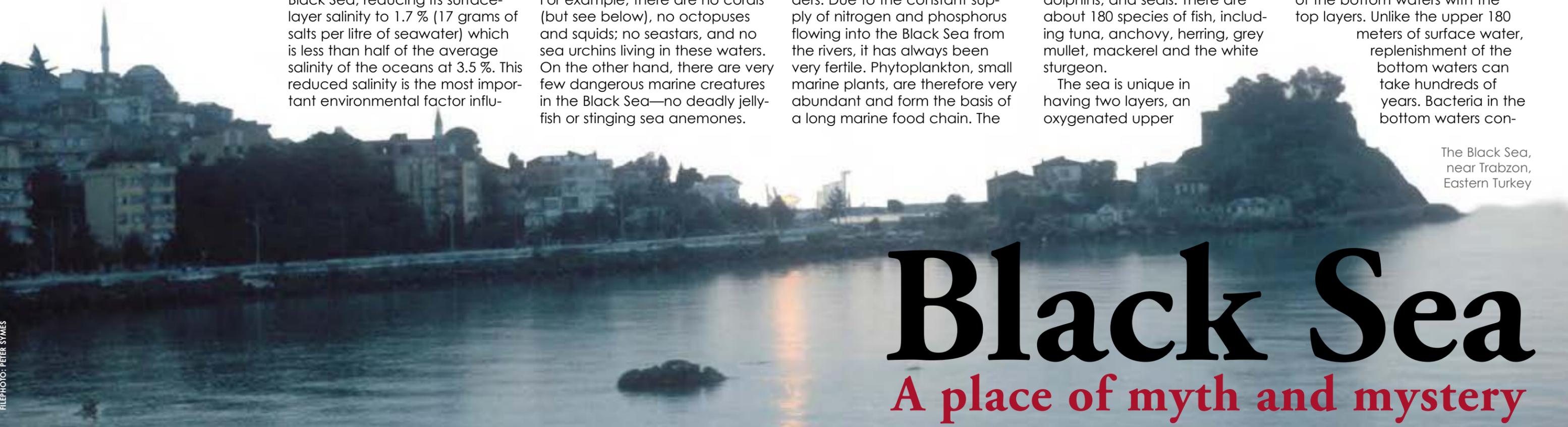
Despite the fact that the Black Sea biodiversity is reduced the marine life here is still full of wonders. Due to the constant supply of nitrogen and phosphorus flowing into the Black Sea from the rivers, it has always been very fertile. Phytoplankton, small marine plants, are therefore very abundant and form the basis of a long marine food chain. The

surface waters can therefore support a rich and diverse marine life including Bottlenose and other dolphins, and seals. There are about 180 species of fish, including tuna, anchovy, herring, grey mullet, mackerel and the white sturgeon.

The sea is unique in having two layers, an oxygenated upper

layer and a dead lower layer. Due to the lack of vertical currents there is little exchange of the bottom waters with the top layers. Unlike the upper 180 meters of surface water, replenishment of the bottom waters can take hundreds of years. Bacteria in the bottom waters con-

The Black Sea, near Trabzon, Eastern Turkey



Black Sea

A place of myth and mystery

FILEPHOTO: PETER SYMES

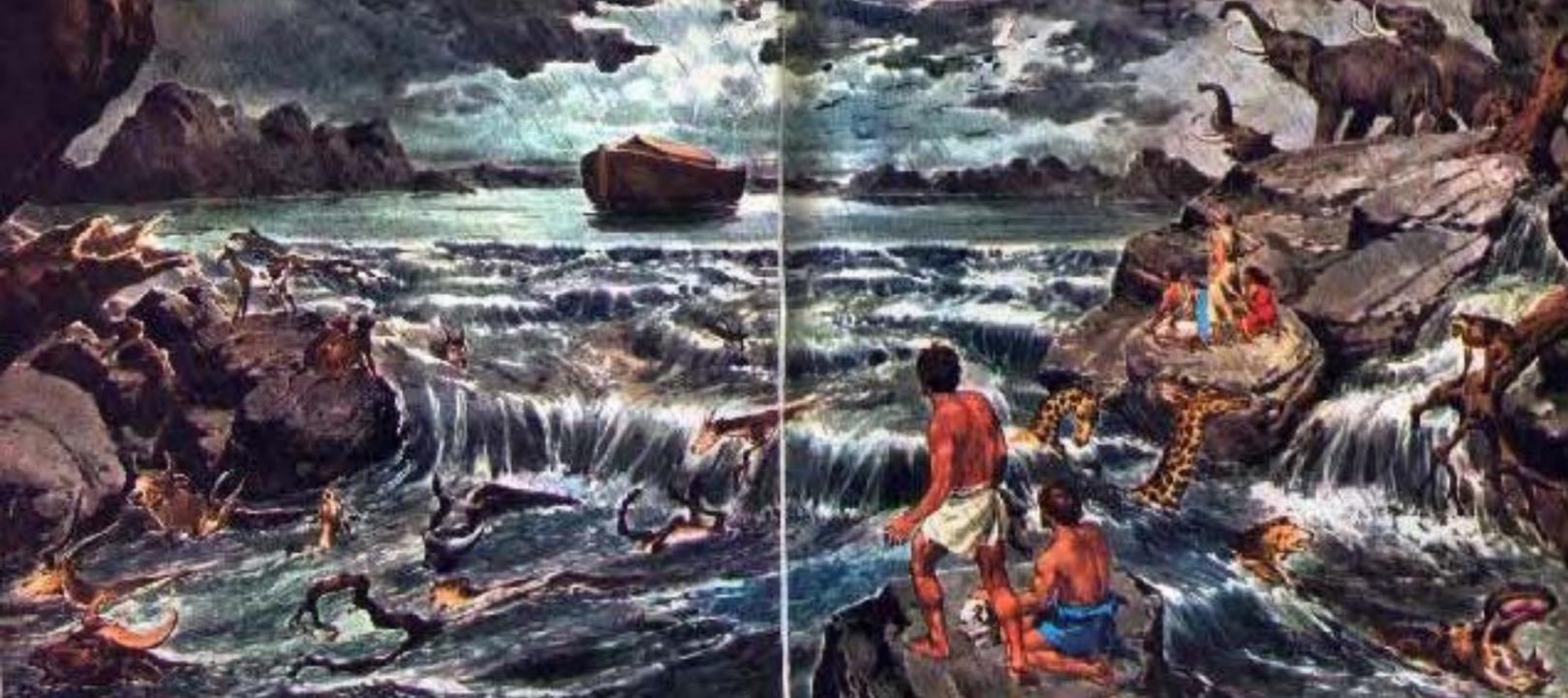


Illustration of the biblical tale of Noah's ark and the great flood

in 1999, the comb jelly, *Beroe ovata*, invaded the sea due to a rise in water temperature rise of two degrees. And this comb jelly eats only *mnemiopsis*. That is why food zooplankton started growing again, and *ovata* established itself in the Black Sea of its own accord, either by migrating naturally from the Mediterranean or possibly in ship's ballast water



sume all the oxygen and the sea is mostly dead below 180 meters.

Although the lower depths were long believed to be completely devoid of life, corals have recently been found at the bottom of the Black Sea. These corals contain micro-organisms processing methane and sulphates in total darkness. It is thought that these

Straits of the Bosphorus with Istanbul straddling the straits



corals are the oldest life form on Earth.

Another peculiarity of the Black Sea is the bi-directional current where it flows through the straits of the Bosphorus to the Mediterranean. The surface current flows westwards but there is a deep current which simultaneously flows in the opposite direction back into the Black Sea.

Origin of the Black Sea

The Black Sea was once part of a larger body of water that included the Caspian and Aral seas. About 22,000 years ago the Black Sea began its life as a fresh-water lake. However, it appears that some seven to nine thousand years ago, due perhaps to melting glaciers and polar ice-caps, sea levels rose causing the salty Mediterranean Sea

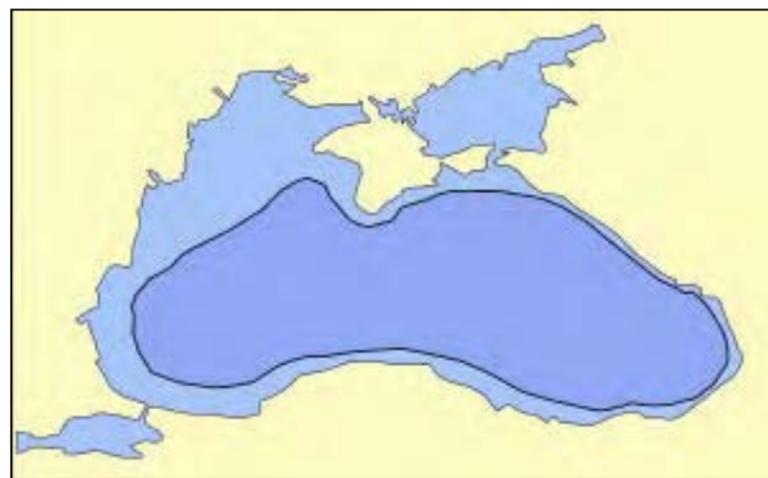
to catastrophically break through the Bosphorus. From this event the Black Sea took its present form. The dead lower layer may thus have been formed when the denser salt-water flooded in, when it would have plunged straight to the bottom.

Evidence for the flooding

Without doubt, some catastrophic event did occur some 7,500 years ago. The depth of the sea seems to have increased by some 100 metres over about a year. This caused an increase in the area of the Black Sea, with local flooding around its edges. This has

been confirmed by archaeological investigations, especially off the Turkish coast. In a series of expeditions, marine archeologists led by Robert Ballard identified what appeared to be ancient shorelines, freshwater snail shells, drowned river valleys and tool-worked timbers at roughly 100 m of water. Radiocarbon dating of the remains of freshwater molluscs indicated an age of about 7,000 years.

Why it is called the Black Sea today nobody really knows



The sea level before the flooding (dark blue). Before the flood there was no Sea of Asov, and Crimea did not exist as a peninsula



What was the nature of the flooding?

Lovers of the supernatural like to claim that this was due to the deluge, a period during which it rained for 40 days and nights, flooding the whole Earth, as described in the events of Noah's Flood in the Bible, and in the Epics of Gilgamesh and Atrahasis. The oldest version of the Flood is the Sumerian, recorded on a fragment of a tablet, discovered in ancient Nippur, which dates most probably to before 2000 BC. So these and many other historical sources do seem to indicate that

Noah supervises the building of his ark in this woodcut illustration from the Nuremberg Chronicle





Deck-mounted gun, Destroyer of the Black Sea Fleet, Dzerzhynsky, sunk in 1942.

Cargo wreck containing ceramic jars dating to the 9-11th centuries A.D. found along the trade route between Constantinople and Chersonesos on the Crimean Peninsula



there was in fact a flood of some sort or other several thousand years ago. But as to this flooding being that which occurred when the present Black Sea was formed, that is quite another question. There has thus been much written about this topic, much of it pure guesswork, but let us look at just one simple fact.

If the rate of rise of the sea level was 100 metres for some 300 days, or perhaps up to two years, many people would eventually have been displaced, and much agricultural land lost. However, this could hardly be called a catastrophic event as compared to an earthquake or volcanic eruption where people cannot escape in time, and are overwhelmed. For example, the dire events at Pompeii or Heraclitum, or even the recent tsunami event in South East Asia can really be

called catastrophic. To put it in practical terms, the sea level may perhaps have risen some 23 cm per day i.e. less than a centimetre per hour. Hardly something you would call catastrophic except perhaps in the long run.

Apart from the indisputable scientific evidence, all modern critical Bible scholars, to quote the editor of the Biblical Archeology Review, regard the tale of Noah as legendary. The flood story should therefore

New live aboard now serve the dive traveller going to the Black Sea. This is a fregat operating off the Crimean coast



primarily be seen as a moral text not a historical text. However, Fundamentalist Christians claim that Noah's flood was not a local flood in the Black Sea but was a world-wide flood that has left its mark on every continent on the planet. This is hardly likely, though, as this would

require the sudden production and following disappearance of three times more water than is contained in all the Earth's oceans.

So, it appears to have been a natural event and not the result of some supernatural intervention. But of course, this won't stop people still trying to associate Noah's flood with this event.

Diving possibilities

For those who would like to dive in the Black sea

there are many possibilities. However, you should be warned that the water is often quite turbid, giving poor visibility. Black Sea water, particularly during warm months, contains large amounts of organic detritus and clay particles brought down by the rivers. Underwater visibility rarely exceeds seven meters, although on the South Crimean Coast visibility reaches 20 meters even in Summer. This is because the Crimean peninsula has very few rivers itself, and protrudes into the central part of the Sea, away from the influence of the large rivers emptying into the Black Sea basin. The rocky sea bays of the Crimea are thus ideal for scuba diving and there are many centres along the coast, for example at Balaklava, where there is a large underwater reef. Close by there are also the underwater ruins of Kheroness, where part of the Byzantine city was swamped by rising sea levels. ■

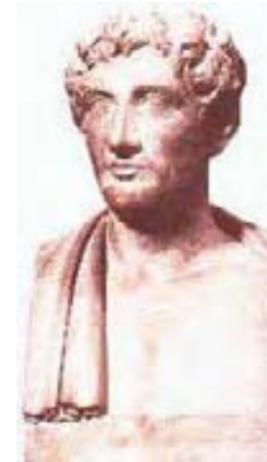
A literary digression

The Euxine

The Black Sea, also called the Euxine Sea, was originally known by the Greeks as Axeinos, meaning Unkind to Strangers i.e. Inhospitable. By apotropaic euphemism, i.e. in order to prevent evil, the substituting of an inoffensive word for one considered offensive or hurtful, this epithet of Axeinos was later changed to its opposite, Euxeinos, Kind to Strangers i.e. Hospitable. Hence, in Roman times the Black Sea was known as Pontus Euxinus.

Many poets and authors have written through the ages about the Black Sea but perhaps none so poignantly as Publius Ovidius Naso, better known as the Roman poet Ovid. He had been exiled in the year AD 8 by Emperor Augustus, to Tomis, now known as modern Constanta, on the Romanian coast of the Black Sea, far from his beloved Rome, for offending the Emperor in some, never fully explained way.

He is famed, of course, for his Art of Love and Metamorphoses. But after his exile to the Black Sea he wrote many poems about his feelings in exile, and sent many letters to his family and friends back home in Rome. These have been collected in two works '*Tristia*' (Sadnesses, Lamentations) and The Black Sea Letters. These give a lively, if somewhat overwrought, description of his life and the conditions that prevailed on the western coast of the Black Sea some 2,000 years ago. His observations still make interesting reading today.



Roman poet Ovid

He writes in *Tristia*:

Still, if today I must pray for something, return no more, I beg you to such a land so long as I'm still detained in this next-to-the world's-limit wilderness. They call it hospitable. They lie.

In short, he hated the place. But what was Ovid complaining about, apart from being exiled from all the delights of civilised and cultural Rome? Why does he consider the Black Sea inhospitable? Most tourists to Romania will know it as a warm summer resort. But as Ovid writes:

I've seen the wide sea iced solid, a frozen slippery crust holding the under-water still not just seen either: I've walked the solid sea-lanes, crunching their surface dryfoot.

He realises that his friends in warm Rome might not believe him but writes:

Yet believe it: nor shall I leave you ignorant of the reasons why rugged winter freezes the Black Sea.

He then goes on to explain that the influx of numerous rivers into the sea provides a fresh water layer riding above the underlying salt sea. This fresh water layer, which is more easily frozen, combined with a prevailing cold north wind, causes the sea to freeze. This is scientifically correct. And thus, it still is today. In summer warm and hospitable but in winter, the climate can be terribly cold and harsh, with the Black Sea freezing around its edges.

Why it is called the Black Sea today nobody really knows. In summer it can be a beautiful blue. However, it can be quite stormy in winter, and it is thought that the name was given to it by sailors and fishermen who were struck by its very dark appearance when the skies became overcast with storm clouds. ■

(The above quotations have been taken from Peter Green's excellent translation and interesting introduction to Ovid: The Poems of Exile. *Tristia* and the Black Sea letters.)

Invaders of the Black Sea

The major part of the Black sea consists of an up to 1800m deep hydrosulphuric zone devoid of Oxygen. The concentration of life forms are then found in a quite thin—about 130m—upper layer. (see the figure three pages back)

This makes the Black Sea quite sensitive to climate impact and various biologic interferences. It is specially vulnerable to invading alien biologic species due to the almost closed character of its water basin. If the Black sea basin were empty, it would take about 2,100 years to fill it with Mediterranean water via the Bosphorus.

Exchange

Influx of vital oxygen from upper water layer to so-called cold intermediate water layer, which defines the border of hydrosulphuric zone, happens mainly in winter. As temperature fluctuations are most evident in winter any climate change will causes shifts in hydrosulphuric zone positions.

A significant regional cooling, which onset in the beginning of the 90s, has caused almost total elimination of the layer of cold intermediate water and its oxygen content. Consequently the hydrosulphuric zone border has risen by 12 m in recent 14-15 years. This equates to a decrease of the oxygen-containing zone by about 10 %.

Bad or good?

However, everything is not as bad as it may seem. Oceanologists consider such evolution of the Black sea parameters to be reversible. Several cold years of oxygen influx to deep-sea water layers will be enough for upper

border of hydrosulphuric zone to get back to its "normal" level.

The blooming problem

Another more serious problem are phytoplankton blooms. Phytoplankton is the basis of marine food chain—it feeds almost all inhabitants of the Black sea ecosystem. Scientists have discovered that recent summer algae blooms in the Black sea were not caused by its usual diatomic algae—but by the algae *Coccolithophora*, which has been detected in all the world's oceans too. However, *Coccolithophora* algae are not the only reason of the

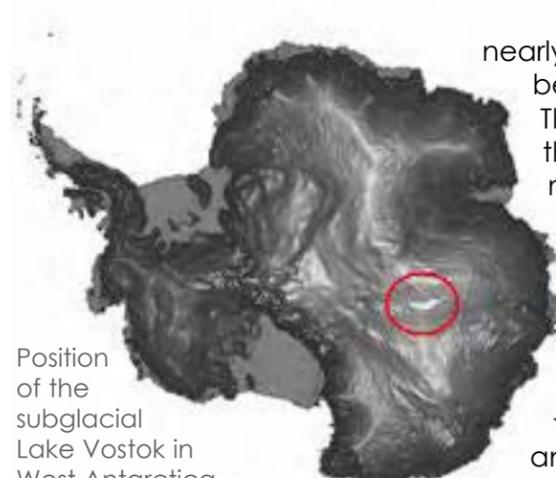


Black sea water transparency drop. Two invaders were detected there—two new biologic species: comb jellies *mnemiopsis* and *beroe ovata*.

Mnemiopsis comb jelly invaded the sea in eighties and caused catastrophic drop in zooplankton biomass by eating it all. s there was no zooplankton left to graze the algae water transparency dropped significantly. Moreover, this comb jelly exudes tons of mucus during its vital processes. Plankton-eating fish have lost their food sources, consequently their numbers dropped affecting dolphins and predatory fish in the process. Fisheries lost up to \$350 million per year in 1989-1990.

What then happened in 1999 was that the comb jelly *Beroe ovata* invaded the sea due to water temperature rise of two degrees. And this comb jelly eats only *mnemiopsis*. That is why food zooplankton started growing again, even exceeding the levels from before *mnemiopsis* appeared. ■

Study Reveals Leaks in Antarctic 'Plumbing System'



Position of the subglacial Lake Vostok in West Antarctica

Scientists using NASA satellites have discovered an extensive network of waterways beneath a fast-moving Antarctic ice stream that provide clues as to how "leaks" in the system impact sea level and the world's largest ice sheet. Antarctica holds about 90 percent of the world's ice and 70 percent of the world's reservoir of fresh water.

With data from NASA satellites, a team of scientists detected for the first time the subtle rise and fall of the surface of fast-moving ice streams as the lakes and channels

nearly a half-mile of solid ice below filled and emptied. The study was published in the Feb. 16 issue of Science magazine.

"This exciting discovery of large lakes exchanging water under the ice sheet surface has radically altered our view of what is happening at the base of the ice sheet and how ice moves in that environment," said co-author Robert Bindshadler.

"NASA's state-of-the-art satellite instruments are so sensitive, we are able to capture an unprecedented three-dimensional look at the system beneath the thick ice sheet and measure from space changes of a mere three feet in its surface elevation. That is like seeing an elevation change in the thickness of a paperback book from an airplane flying at 35,000 feet."

Flow

The surface of the ice sheet appears stable to the naked

eye, but because the base of an ice stream is warmer, water melts from the basal ice to flow, filling the system's "pipes" and lubricating flow of the overlying ice. This web of waterways acts as a vehicle for water to move and change its influence on the ice movement.

Moving back and forth through the system's "pipes" from one lake to another, the water stimulates the speed of the ice stream's flow a few feet per day, contributing to conditions that cause the ice sheet to either grow or decay. Movement in this system can influence sea level and ice melt worldwide.

In recent years, scientists have discovered more than 145 subglacial lakes, a smaller number of which composes this "plumbing system" in the Antarctic.

Their research has delivered new insight into how much and how frequently these waterways "leak" water and how many connect to the ocean. ■

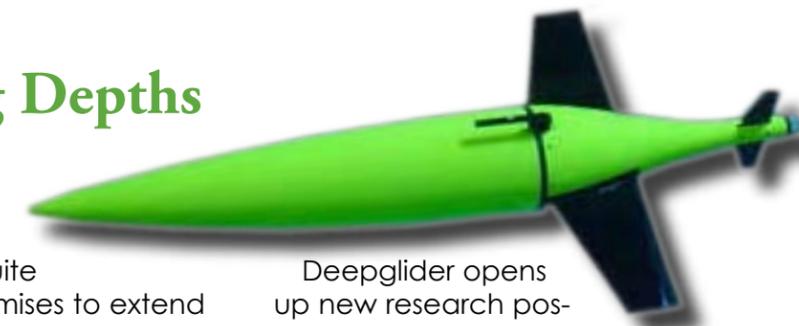


New Sub Dives to Crushing Depths

Deepglider is a 71-inch long, 138-pound device made of carbon fiber that can withstand the deep ocean's immense pressure. The energy-efficient, battery-powered glider carries sensors to measure oceanic conditions including salinity and temperature—information that is key to understanding climate change.

When the measurements are complete, Deepglider rises to the surface and transmits the data via satellite to onshore scientists.

"Reaching a depth of 2,700 meters (nearly 9,000 feet) is quite a feat and promises to extend the nature and type of missions that can be carried out by gliders," says Princeton University engineering professor Naomi Leonard. "You could even imagine a heterogeneous fleet of gliders working in tandem at different depths to explore this otherwise impenetrable undersea."



Deepglider opens up new research possibilities for oceanographers studying global climate change. The glider's first trip revealed unexpected warming of water near the ocean floor, and scientists are interested in studying whether the temperatures are related to global warming. ■

Deep Water Warming Off Russia

A new report in Geophysical Research Letters is showing that intermediate water (200-2000m) off Russia has warmed significantly over the past 50 years. The warming trend is accompanied by decreasing oxygen content. This suggests that weaker overturning (vertical exchange) is taking place. The warmer water is attributed to a decrease in (cold) shelf water production in the Sea of Okhotsk, an epicenter of global warming. Warm water and low levels of dissolved oxygen is probably bad news for deep water fisheries targeting high latitude cold water fishes.

This is only the beginning of the problem, however. This deep water warming trend and slowed overturning in the Gulf Stream is a premise in a hypotheses by some oceanographers and climate scientists suggests that global warming might slow the global conveyor belt to the point where it shuts down in the North Atlantic, bringing on a new ice age. ■





'Hole in Earth' discovered in the mid-Atlantic

A team of British scientists has set sail on a voyage to examine why a huge chunk of the earth's crust is missing, deep under the Atlantic Ocean—a phenomenon that challenges conventional ideas about how the earth works.

Dr Chris MacLeod, from Cardiff University, said the Earth's crust appeared to be missing across an area of several thousand square kilometres—midway between the Cape Verde Islands and the Caribbean, on the Mid-Atlantic Ridge. The 20-strong team aims to survey an area some 3,000 to 4,000 metres deep where the mantle—the deep interior of the earth normally covered by a crust kilometres thick—is exposed on the sea floor.

Experts describe the hole along the mid-Atlantic ridge as an "open wound" on the ocean floor that has puzzled scientists for the

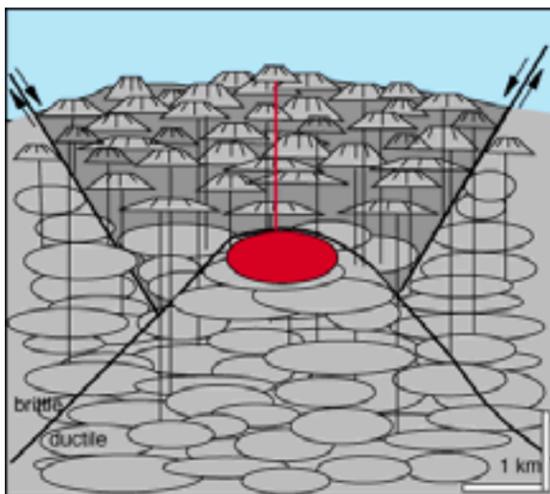
five or so years that its existence has been known because it defies existing tectonic plate theories of evolution.

Dr MacLeod said the hole in the Earth's crust was not unique, but was recognised as one of the most significant. "Usually the plates are pulled apart and to fill the gap the mantle underneath has to rise up. As it comes up it starts to melt. That forms the magma," he said. Here, the crust does not seem to be repairing itself.

"Effectively, it's a huge rupture—one side is being pulled away from the other. It's created a rupture so big, it's actually pulled the entire crust away. We also think the mantle did not melt as much as usual and that the normal amount of mantle was not produced," he said.

As a result, the mantle is exposed to seawater, creating a rock called serpentinite.

The survey voyage, costing \$1m (£510,000), will be led by marine geophysicist Professor Roger Searle, from Durham University. ■



FROM DEBORAH K. SMITH, JOHNSON R. CANN. "THE ROLE OF SEAMOUNT VOLCANISM IN CRUSTAL CONSTRUCTION AT THE MID-ATLANTIC RIDGE" JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 97, NO. B2, PAGES 1645-1658, 1992

This cross-section from Smith and Cann (1992) shows the crustal structure of the Mid-Atlantic Ridge. The crust is made of seamounts and fissure-fed flows (area above magma chamber). Normal faults bound the edges of the ridge's inner valley.

Small separate magma bodies (gray ovals) feed individual volcanoes. The solidified magma bodies make the lower oceanic crust. Their results for all of the North Atlantic suggests there are as many as 85 million seamounts on the ocean floor. Two and a half million of these are over 200m tall

It's called

Earth Day.

That's not to say

we need to treat it

like Dirt Day.



After more than thirty years, we thought it was time that the other 72% of the planet got some attention. Which is why we're asking people to Dive In To Earth Day the week of April 18 to 24. So grab some friends and install a mooring, do a reef survey, or organize an underwater cleanup. Everybody into the water. For more information, visit www.coral.org or call (415) 834-0900.





Andrey Bizyukin, M.D.



With the help of our furry friends, an immune system response to hyperbaric pressures were investigated

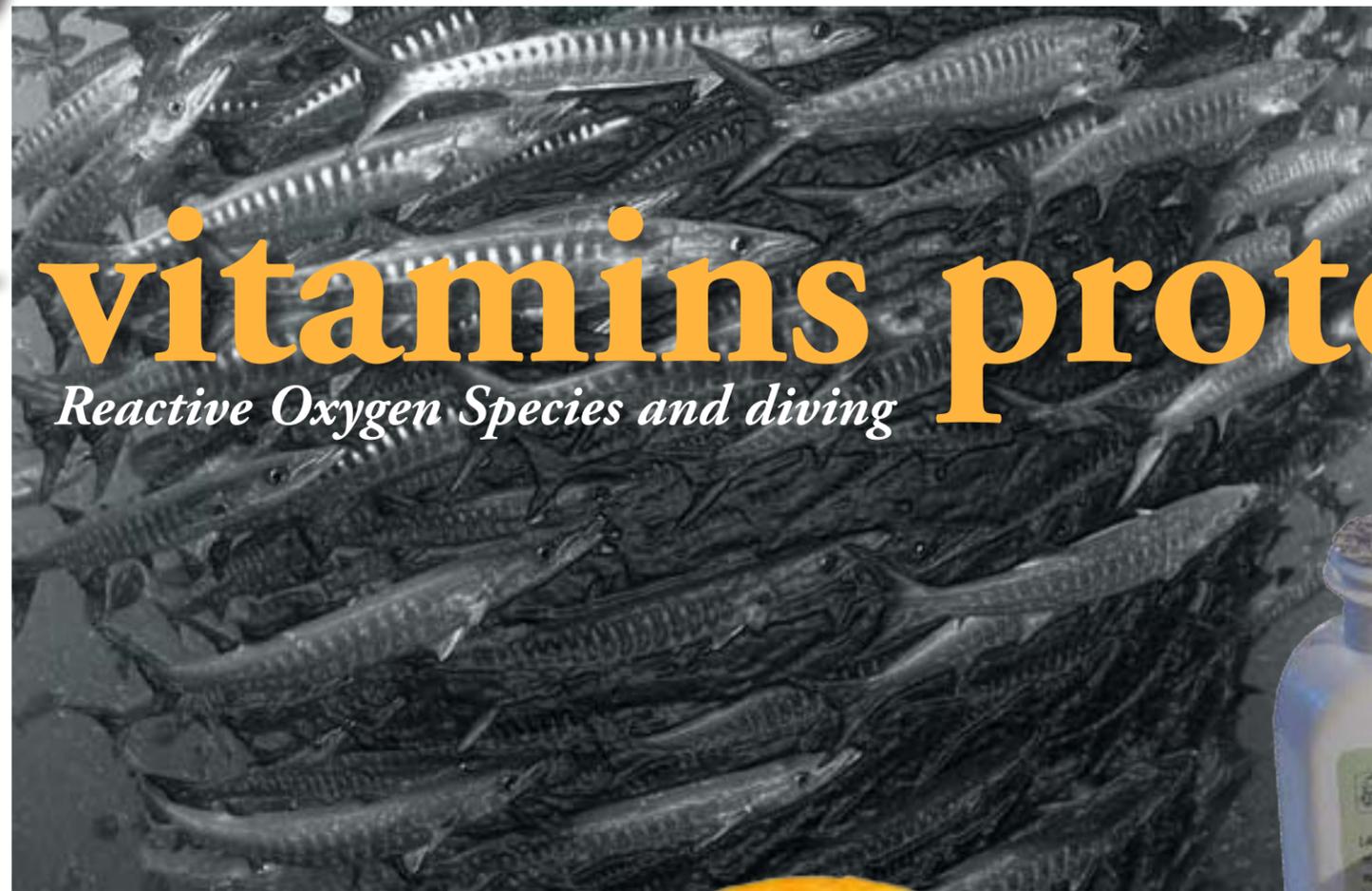
are highly reactive due to the presence of unpaired valence shell electrons. ROSs form as a natural byproduct of the normal metabolism of oxygen and have important roles in cell signaling. However, during times of environmental stress ROS levels can increase dramatically, which can result in significant damage to cell structures.

it turns out that these molecules have several roles to play in the body. Firstly, they are modulators of the immune system, in other words, molecules which can intensify or weaken the immune response. And the very same molecules can, by virtue of their strong oxidizing powers, simply "kill" pathogenic microbes and viruses, destroy alien substances (antigens), or when the concentration gets too high, also harm the cells themselves by creating ulcers or abscesses inside of a living tissue or by starting allergic reactions.

During times of environmental stress, huh? Does that include diving?
It is the cell enzymes that produces ROS during metabolism and

Why vitamins protect divers

Reactive Oxygen Species and diving



Does diving produce free radicals? Can vitamins really protect divers from some the physiological effects of diving? *X-Ray Mag's* own editor and medical doctor Andrey Bizyukin conducted a series of experiments to find out.

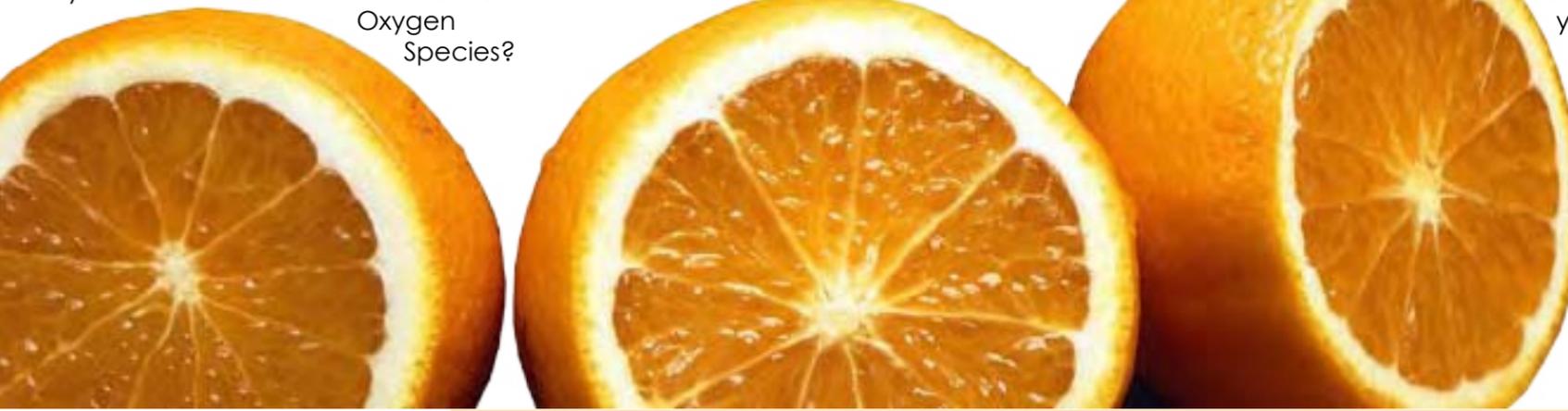
You probably heard about free radicals, and why you should eat antioxidants to stay healthy. But have you heard of Reactive Oxygen Species?

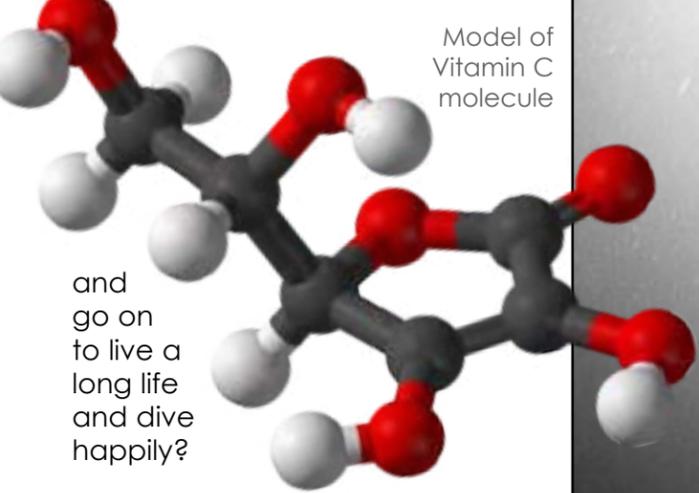
Chances are that you haven't. But to cite a well-known online dictionary: Reactive oxygen species (ROS) include oxygen ions, free radicals and peroxides both inorganic and organic. They are generally very small molecules and



Even for an experienced diving physician it is not so simple to understand all the subtleties. There is a normal quantity or production of ROS. If too little ROS is produced, the normal immune reaction does not develop, and the organism falls ill from even the most insignificant trifle. If too much ROS is produced, it first enhances the immune response, but then (if high production levels persist) it will start destroying the organism. Speak about a golden median!

Any technical diver breathes gas mixes, be it oxygen enriched (nitrox) or impoverished (hypoxic trimix). Either of these will surely influence ROS production and levels somehow. But how? And, in which direction is it going to be—for the better or worse? And if it is for the worse, what can a diver do to protect himself or herself from the negative effects of these molecules



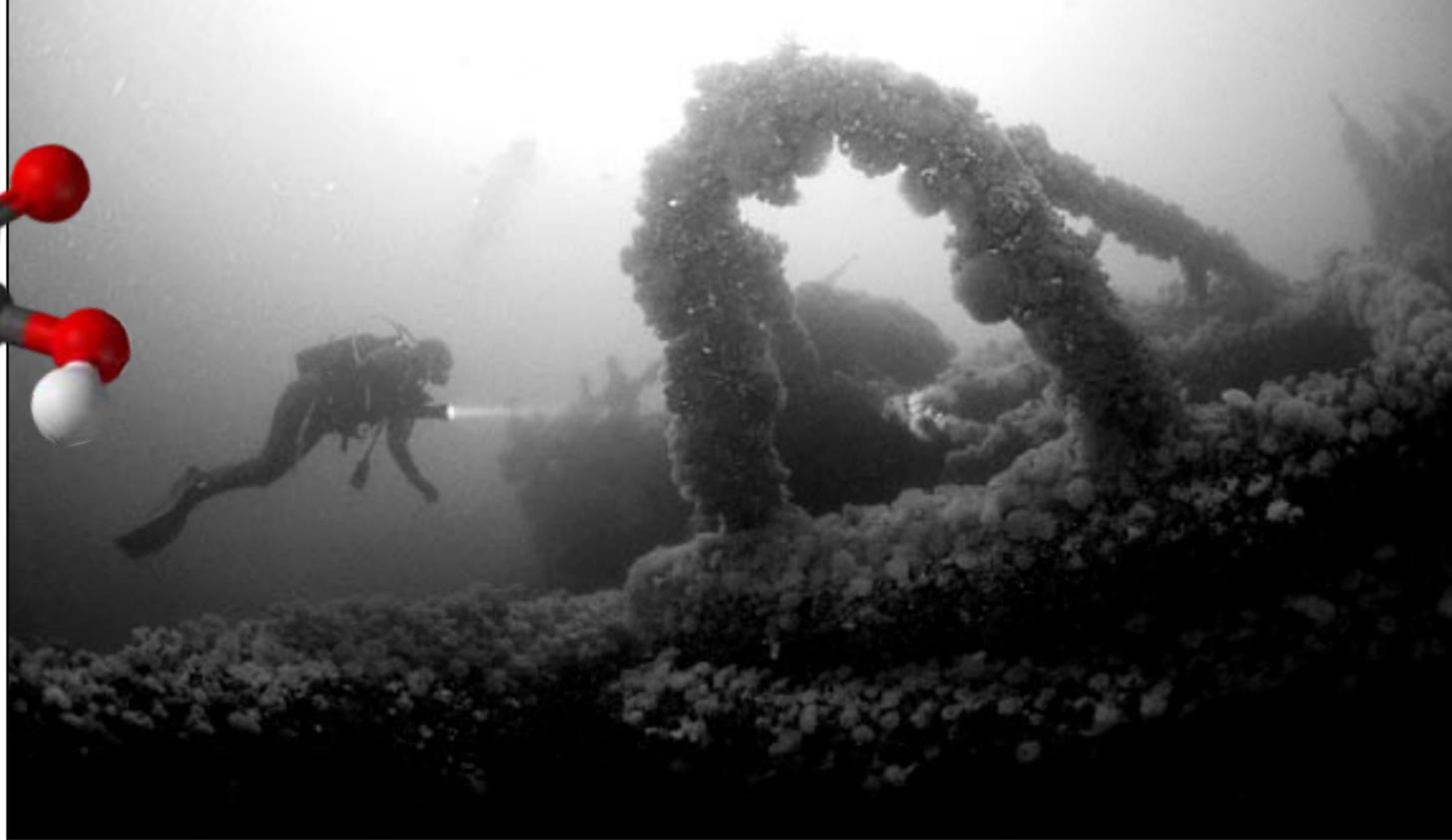


and go on to live a long life and dive happily?

Oh, rats

In our first experiments, we used immune system cells from white rats. They were placed in test-tubes with a nutritious solution to keep them alive. These test-tubes were then pressurized equivalent to a depth of 350 meters. One group of test-tubes stayed under this pressure for no more than one minute. Another group was kept under pressure for a considerable time. Both groups were brought "back to the surface" in an uniform manner. All the cells remained alive. But ROS production in them was considerably different.

In the cells that were under pressure for a short period, ROS production was found to be elevated. By contrast the other group, which was under pressure for a long time, practically lost their ability to produce ROS. In other words, these cells



essentially lost their immune protection.

Hypothesis

This made us hypothesize that short dives are beneficial for cells—they keep up their tone and strengthen immunity, whereas long dives destroy parts of the enzyme system involved in immune system response, and that the cause may be an excessively prolonged elevation of ROS production. Thus, it seems, to be a good idea if one could get ROS production under control during a dive.

Vitamin pills

This can be achieved in several ways. We opted for the easiest. Antioxidants are readily available in the form of commonplace, over-

the-counter vitamin supplements: vitamin PP (Rutin), vitamin C (Ascorbic acid), vitamin E (Alpha-tocopherol) and lipoic acids.

These substances bind to the reactive oxygen forms, preventing the damaging peroxidation in the organism. A regular intake of these anti-oxidants interferes with surplus ROS production and protects the organism. It doesn't hurt

either, that vitamin E is said to enhance sexual performance in divers (at least according to what IANTD president Tom Mount states in his "Technical diver encyclopedia").

Verification

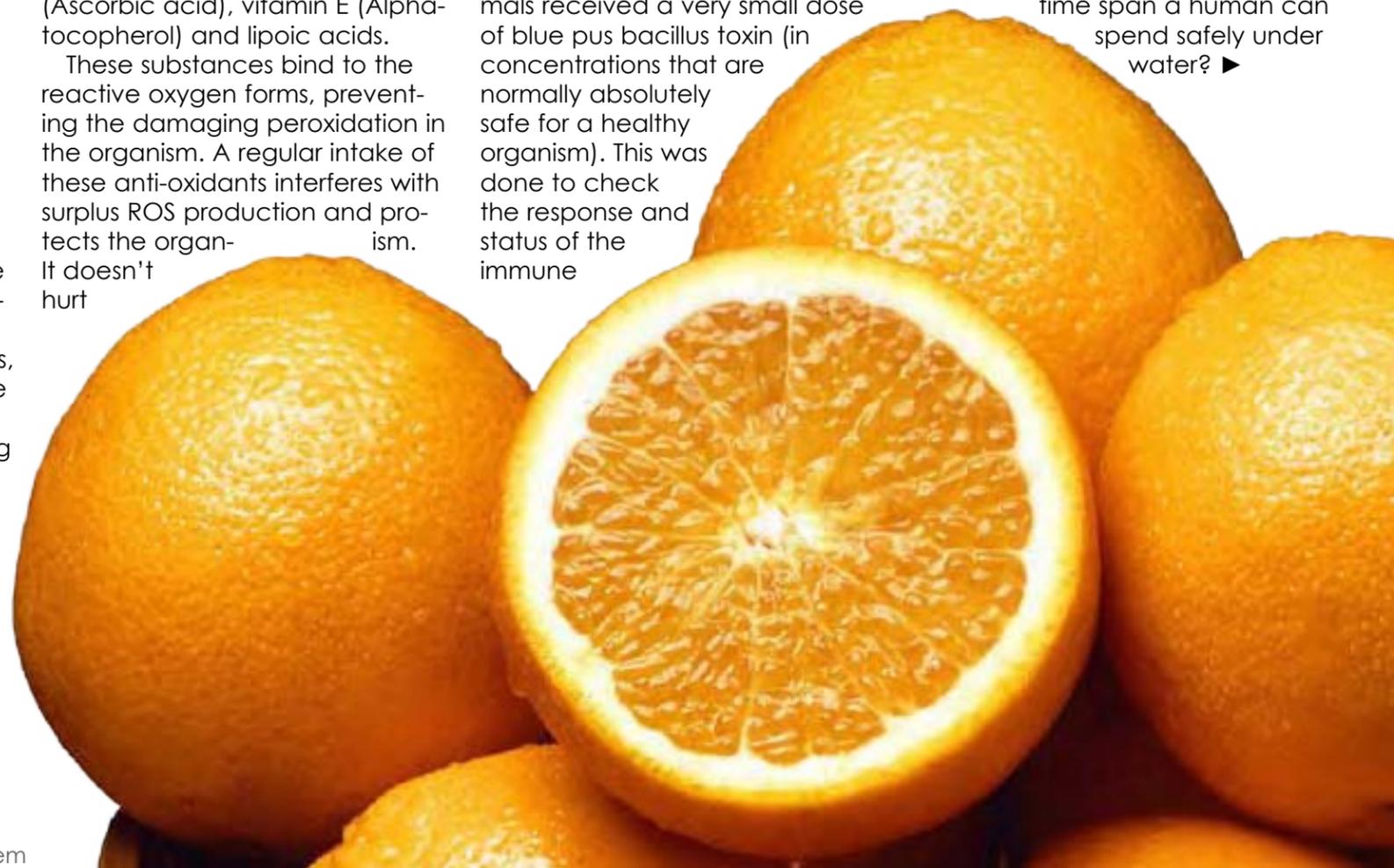
We then put our hypothesis to the test by conducting another experiment, this time with mice. In this, we compared two groups of animals: The first group were given plenty of Ascorutin (vitamin PP + vitamin C) in their drinking water for two weeks. The other group did not receive these large doses of vitamins.

Both groups of animals were then put in a decompression chamber and sent to a depth of five hundred meters and returned to the surface following identical decompression profiles. Following this experimental dive, all the animals received a very small dose of blue pus bacillus toxin (in concentrations that are normally absolutely safe for a healthy organism). This was done to check the response and status of the immune

system. The deep dive had affected the control group of mice (those who were not given vitamins) so profoundly, that the blue pus bacillus toxin killed all of them. By contrast, the mice from the experimental group who were given the vitamins all survived, except for one who got sick and died.

The conclusion seemed clear: The increased doses of vitamins protected the mice during and after the deep dives.

But does that imply that pharmacological substances that can reduce the risk of decompression illnesses may exist? How many people could possibly be saved or protected following these scientific findings? And could this knowledge possibly extend the time span a human can spend safely under water? ►



Problems staying upright? . Evidence suggest that deep dives affects the immune system

The cooperating evidence:

Can Antioxidants Protect Scuba Divers?

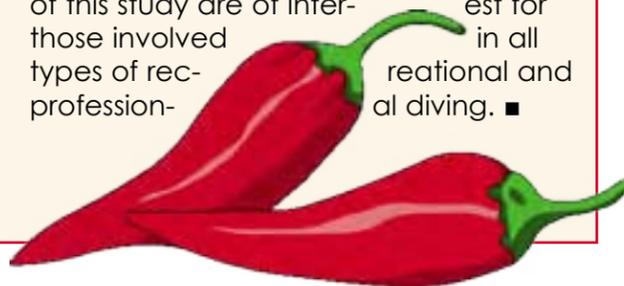
A recent study, published in The Journal of Physiology, shows that acute oral intake of antioxidants Vitamin C and E prior to a scuba dive can reduce alterations in cardiovascular function that are caused by a single air dive.

A group of professional divers were studied before and after a moderate scuba dive to a depth of 30

meters for 30 minutes, similar to those enjoyed by countless recreational divers. A single scuba air dive induced mild changes in cardiac function and a significant decrease in endothelial function (endothelia is the inside lining of blood-vessels and other tissue). The authors thought that these changes could be influenced by oral ingestion of antioxidant vitamins C and E prior to diving, and that endothelial function, in particular, might be preserved.

This intervention showed a positive effect on vascular endothelial function, whereas other cardiac functional

changes were unaffected. Although generally very safe, diving may be associated with serious consequences such as decompression sickness. These new data raise the possibility that pre-dive intake of antioxidant vitamins may prevent some of the negative effects of diving on vascular function. The results of this study are of interest for those involved in all types of recreational and professional diving. ■



► The implications were mind-boggling.

Now there was no turning back, we just had to investigate the effects in humans. During a run of 21 days, we then monitored three professional commercial divers as they went down as far as 250 meters. One of these was our diving doctor who took blood samples at regular intervals, which were sent up through a special sluice for analysis in a lab.

Conclusions

The results were stunning. Neither during the descent nor during the extended stay at maximum depth could we detect any significant deviations from normal ROS production. However, during ascent the picture changed dramatically. From the beginning of ascent, the production of reactive oxygen forms spiked and stayed high at alarming levels during much of the decompression procedure until surface was reached. And for an extended period after the experiment

the divers had immune responses well below normal. These otherwise healthy fellows had become quite susceptible to even banal infections. This period of suppressed immune system lasted at least ten days.

“Take those vitamins and keep on diving with pleasure, have a long life and live happily ever after.”

Our friends, who had to listen to all our technical babble and enthusiastic tales about “wandering under water”, made fun of us and thought we were engaged in

something too ethereal for normal people, but they couldn't help finding the jargon a bit sexy and envy our enthusiasm and dedication.

A scientific investigation like this is indeed somewhat akin to detective work. Here are our conclusions:

1. Short dives can be beneficial to an

- organism.
- 2. Longer dives can have a profound negative effect on the immune system and make deep water divers very susceptible to infections that is normally harmless for healthy people.
- 3. It has been demonstrated that diving starts long-term immune infringements calling for a scrutiny of decompression procedures. Also, the various free-of-charge decompression programs and algorithms in the cheaper computers should be reevaluated in the light of these findings.
- 4. Regarding the average diver, if he has made it this far without falling asleep over the text above, we recommend: “Take those vitamins and keep on diving with pleasure, have a long life and live happily ever after.”

Andrey Bizyukin, PhD of Medicine, senior researcher of Pulmonology Institute, ■

Sea Urchin Could Help Cure Diseases

A purple sea urchin has 70 percent of its genes in common with humans, including genes associated with such diseases as Huntington's, Parkinson's, Alzheimer's and muscular dystrophy. There are roughly 100 human disease genes in the sea urchin genome.

Researchers said they believe similarities in the genes of sea urchins could one day help them better understand how the human immune system works.

Sea urchins have no eyes or brain and could live for up to 100 years. Because sea urchins live longer than most humans, they might also provide clues in developing new antibiotic and antiviral compounds to fight various infectious diseases. ■

Researchers found that humans and sea urchins share a lot of the same biology



DAN Releases 2006 Report on Dive Accident Data

The 2006 Report on Decompression Illness, Diving Fatalities and Project Dive Exploration is ready for the scuba diving community to review. Compiled and published annually by DAN research, the report presents information on Project Dive Exploration (PDE), scuba diving injuries and dive fatalities, as well as breath-hold diving incidents based on data collected during 2004. DAN has added new material this year that describes breath-hold incidents and annual injury and fatality rates for this activity.

Rates of DCS and Death

According to the PDE data collected between 1998 and 2004, the decompression sickness (DCS) incidence rate among warm-water dives fluctuated from 0 to 5 cases per 10,000 dives. The annual fatality rate for DAN Members between 1997 and 2004 varied between 11 and 18 deaths per 100,000 members per year.

The most common procedural problem was equalization, reported in 2.7 percent of PDE dives, followed by buoyancy trouble at 0.9 percent. The face mask was the most commonly reported equipment problem (0.69 percent); the dive computer followed at 0.4 percent.

Twelve PDE divers reported post-dive headaches, and three reported fatigue. Out of 591 reported instances of equalization problems, six divers reported post-dive symptoms that were severe enough to concern them or make them skip at least one dive. One diver reported short-lasting vertigo, and there was one case of severe sinus barotrauma.

In the PDE population, there were five DCS cases reported; this totaled an annual incidence of two DCS cases per 10,000 dives. SOURCE: DAN ■

Fish Get Bends Too

Researchers in the UK have concluded that fish can get the bends. After reviewing anecdotal evidence from fishermen that fish hauled up quickly from depth suffer from decompression sickness, the researchers decided to look at fish raised in commercial fish farms as well. Sure enough, they concluded that farmed fish also get the bends. Why? It turns out that farmed fish are exposed to dangerous levels of nitrogen, a problem for their fragile bodies. Consequently, the researchers are looking at ways of “degassing” fish farm water. If that doesn't work, maybe the team will look at creating hyperbaric chambers for fish. ■

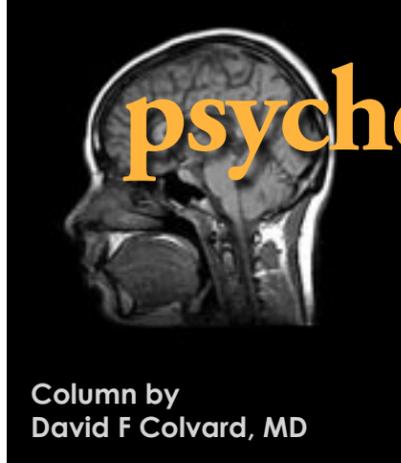


Cancer Cure?

Scientists at Southwestern Medical Centre in the US believe they have developed a new cancer treatment using the toxin from a sea squirt.

Diazona angulata, which resembles a translucent ring donut, emits the liquid to repel potential predators. It is found off the coast of the Philippines and lives in colonies anchored to rocks.

Studies using mice were successful in reducing tumour growth without some of the side effects associated with other cancer drugs. ■



Column by
David F Colvard, MD

Panic Study

In 2000, when my wife Lynn and I conducted the “world’s largest diver survey,” our main goal was to determine exactly what factor or combination of factors led to diver panic aside from just “stress.” The unquestioned gospel in all the dive literature for decades has been that diver panic is the number one cause of diver deaths, so it is a worthy research subject.

PADI vice president of international training, Drew Richardson, challenged me over even the feasibility of studying the problem, but as a private psychiatrist I told him that even severe panic disorder patients can remember the details of their first panic attack. I also had several panic disorder patients who were divers and not only had they never had a panic attack while diving, but they claimed they felt the most relaxed when they were diving. DAN founder and then president Dr. Peter Bennett gave me a big break when he allowed me to administer a beta test of the survey to the 100+ attendees of a Dive Medicine continuing education course that summer, which helped me convince Drew that the study could be done.

Over 13,000 scuba divers from around the world participated in the online survey sponsored and hosted by Rodale’s Scuba Diving magazine and actively supported by then PADI vice president of international training, Dr. Drew Richardson. Many dive clubs and other organizations around the globe helped publicize it. Paper surveys were also made available for magazine readers without access to the web. We designed the 28 questions with the invaluable input of experts like Dr. Peter Bennett, Dr. Drew Richardson, Dr. Art Bachrach, Dr. William Morgan, Dr. Thomas Griffiths, and

many of my dive buddies on Bonaire and in Raleigh. Due to incomplete surveys the final number of useable surveys was just over 12,200. In May 2002 I presented a poster and gave a brief talk to the annual international scientific meeting of the UHMS in La Jolla, California. At the request of Drew Richardson we prepared a six-page feature article for The Undersea Journal first quarter 2003 issue. Both can be found at www.DivePsych.com.

But Lynn and I failed to achieve our main goal of determining exactly what factor or combination of factors leads to diver panic. We used the useable responses to questions 6 and 26 to calculate the relative risk of panic under each of the 44 “circumstances that you have ever experienced while scuba diving” (Question 6) and “conditions that were present during your first panicked dive” (Question 26). We also asked in question 26 if they were experiencing the condition for the FIRST TIME during their first panicked dive, but apparently too many respondents got confused by the question’s wording, so we had to just analyze the con-

ditions that were present during the first panicked dive whether it was the first time they had ever experienced them or not.

When I showed Dr. Bennett Table 1 and he saw that three of the top four factors were “Other,” “Other,” and “Other,” his response was that we had proven nothing after several years of hard work. Researchers do not tend to publish negative findings, so the table has resided in my laptop until now.

For three years I conducted follow up surveys of those divers and am slowly analyzing the data and releasing the results, such as the prior articles on diver obesity. In September I will be speaking at a workshop on diver panic and stress at the South Africa UHMS annual dive medicine refresher course in Johannesburg, South Africa.

David F. Colvard, M.D., is a private psychiatrist and clinical investigator in Raleigh NC and a divemaster. He hosts the website www.DivePsych.com which provides evidence-based information for divers on psychological and stress factors in scuba divers. ■

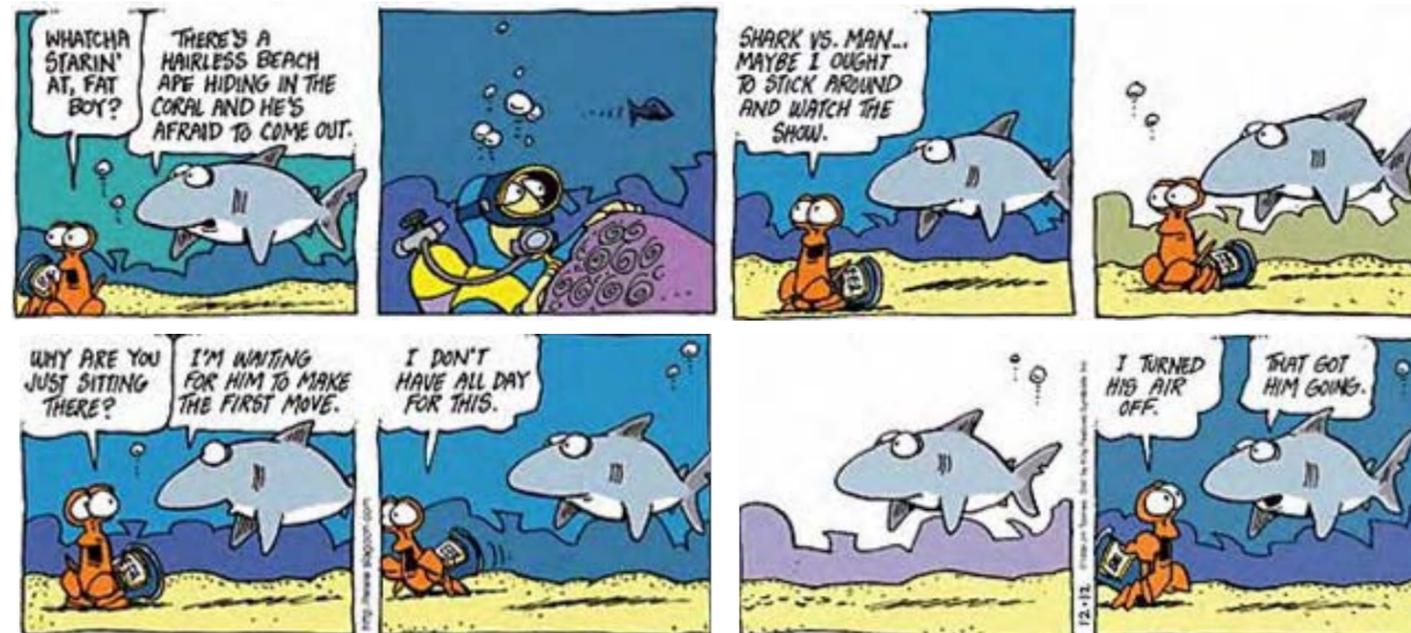


TABLE. Relative Risk of Panic During Dive in Presence of the Following:

Males N=9292		
Females N = 2939		
Hyperventilation	4.6	3.1
Other physical/psychological factor(s) not listed	3.4	2.4
Other equipment problem(s) not listed	3.4	2.0
Other dive condition(s) not listed	3.4	2.6
Chest tightness	2.6	2.0
Fear of the unknown	2.5	2.1
Cold water	2.1	1.1
Poor visibility	1.9	1.1
Inhaled water instead of air	1.8	1.5
Task overload	1.8	1.4
Fear of scrutiny or embarrassment	1.6	1.2
Loss of orientation	1.6	1.3
Fatigue or overexertion	1.6	1.1
Low on air or out of air	1.6	0.6
Deep dive	1.3	0.5
Separation from buddy or instructor	1.2	0.8
Strong current or surge	1.2	0.7
Uncontrolled ascent	1.1	0.7
Difficulty operating buoyancy compensator	1.1	1.2
Entrapment or entanglement	1.1	0.6
Poorly fitting equipment	1.0	0.6
Loss of mask	1.0	1.2
Dry suit dive	1.0	0.6
Rough sea or surf	0.9	0.7
Overhead environment (cave, wreck; ice)	0.7	0.3
Nighttime or darkness	0.6	0.4
Over-weighted or under-weighted	0.6	0.4
Long surface swim	0.5	0.3
Loss of weight belt	0.5	0.3
Mask leak	0.4	0.4
Solo dive	0.4	0.1
Medication, other than decongestant	0.4	0.3
Difficulty equalizing ears	0.4	0.4
Regulator leak or free flow	0.4	0.2
Muscle cramps	0.3	0.2
Motion sickness	0.3	0.3
Decongestant medication	0.3	0.2
Dive light failure	0.2	0.1
Loss of computer or gauge functions	0.2	0.1
Shark	0.2	0.1
Other dangerous marine life	0.2	0.1
Broken or loose fin strap	0.2	0.1
Sharing air	0.1	0.4
Tank slippage	0.1	0.1

“Sherman’s Lagoon” by Jim Toomey © 1999 Jim Toomey



Edited by
Gunild Pak Symes

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POINT & CLICK
ON BOLD LINKS



Spring Dive Fashion

Bottom Crawlers
100% cotton Tribal Shark Men's T
Bold oriental brush strokes on mocha t-shirt.
Price: US\$16.95 www.bottomcrawlers.com



Stylin' Togs for Your Tank

Have a little fun with your gear and
get 'em grinning with this polyethylene air tank
shirt inspired by Lifesavers hard candies.
Price: US\$21.97 www.divingtoysfromdivetonight.com



Stylish Jewelry from the Sea

A piece of dyed mother of pearl or shell is cut and set by hand in each of these
stainless steel pendants. Other designs by the Canadian based husband-and-wife
design team Eric Jean-Louis and Vivian Cheng come in bamboo, coconut, coral,
ox bone, steel, Mah Jong and Washi styles. Price: US\$75.00 Blendcreations.com



Swimming with the Fishes

100% organic cotton t-shirt designs
for divers by ZooZoo2. Price: GB£25.00
www.zoozoo2.com

Patagonia

beach foot-
wear fad: Cloud
Walker for WaterGirls.
Full-grain leather upper,
pigskin lining and suede
footbed. Five colors. Price:
US\$80.00 www.patagonia.com



Patagonia

Be comfortable.
Wear this Sea Grass
flip-flop sandal for men
on the beach. Rice fiber foot-
bed. Four colors. Price: US\$50.00
www.patagonia.com



Blue or Yellow
Jacket, \$29.95
Pant, \$20.99

O2 Rainwear

Lightweight, breath-
able, waterproof cover
for sea bound divers
O2rainwear.com



Sea Inspired Style The fashion label Kawayan
(Philippino for 'bamboo') was created by two sisters,
Anna Frances and Anna Mae Dioso. Both born on
Midanao in the south Philippines, they are now based
in Wein, Austria. Influenced by diversity in people and
countries, the designers have invented a new eclectic
style which suits all occasions and trends. This sea foam
beach cover-up is from their 'mamuschka beneath the
sea' collection. See www.ichiban.at/kawayan



Dive Fashion



Girls4Sport Neoprene Rashguard has the same cut as their long sleeve rashguard, but with 1 mm neoprene panels front and back for extra warmth and a front half-zip. The built-in shelf bra provides support; the extra length in the torso keeps it from riding up. It features sleeves in cool prints and colors that can be mixed and matched with coordinating bottoms and board shorts. Can be worn alone or layered under a wetsuit. Price: US\$73. www.girls4sport.com



Chammyz

Manufactured from 100% natural fibers, Chammyz are extremely soft yet durable garments, designed to provide the utmost in warmth and comfort, offering the highest level of protection against rapidly changing weather conditions. Unique design promotes maximum water absorption from the body and immediate processing through a unique moisture management system. (Left) Aussie Top in Deep Purple, US\$62.00. Body Parts, Inc. Visit Chammyz.com



Wear Scuba

T-shirts from down under for the diving dudes and divas in your life. All tees by this Australian maker are made from 100% cotton with high quality screen printed graphics. Scubagear.com.au



Women's Deep Down T, AU\$27.00
LEFT. Men's Rust in Peace T, AU\$15.00

Dive Republic

Dive Republic is a scuba themed T-Shirt design and production company aiming to bridge the gap between street fashion and the often 'in-joke' nature of diving shirts. The T-shirts retail at £20 (inclusive of p&p) and you can purchase them at: www.dive-republic.co.uk



ScubaDoRag™

Be seen above and below the sea by dive buddies, students, instructors and boat crew in a stylish way! Patented for working out, running, cycling, styling, protecting your scalp and/or hair color, snorkeling and scuba. The SecretCompartment is for stowing your ponytail to keep it from tangling in your tank valve, or for hiding small valuables or your room key. US\$35



ScubaTubeSocks are getting rave reviews for funky style and function, which lets you get into your wetsuit more easily and prevents blisters. Make your dive buddies smile with HappyFeet! Can also be worn with clogs and sandals. Made from the same yummy fabric as the ScubaDoRag™. US\$13



FashGuards 'cause who wants to talk about a rash? Shoods (or shirts with hoods) are suitable for all SuperHeroes who travel beneath the waves, and Shoodn'ts (shirts without hoods) are in very limited quantities, so order soon. Get down and funky with these innovative ways to add long sleeves and extra room (thanks to print gussets). Brighten up your everyday courageous, stylish life. Scubadorag.com



TOP TO BOTTOM:
ChromaMomSea
PurpleJoker
ScubaTubeSocks
SeaBra

FashGuards
US\$60-110





Dive Fashion

So many t-shirts,
so little closet space...

Deep Down Dive Apparel

Let 'em know you dive by wearing quality apparel paired with hardcore dive designs like "Skull Flag" and "Last Great Act". Featuring over 30 designs, Deep Down is the latest in alternative dive apparel. Check out all of Deep Down's cutting edge designs at: DeepDownDive.com



Mad Mermaids

Scuba is a dive wear brand that gives a damn! So we have our say about stuff that make us mad, Shark Finning, Killing Whales, Climate Change, Water Pollution...We believe that wearing MadMermaid Scuba Dive Wear is a great way of getting the messages out there. www.madmermaids.com



UWAHU = underwater human

Original and high quality out of the water divewear for scuba divers, freedivers and aquanauts. Distributed in Europe, Australia and the USA. Secure online shop available. For more information please check our website at: www.uwahu.com or email: info@uwahu.com



Dive Junkie

is a fast growing specialty retailer of Scuba Diving casual apparel. Their range of clothing are constantly revitalize by regular additions of new designs and clothing styles. The latest collection of Polo shirts to join their wide range of T-shirts is refreshing and stylish. Made using a cotton and polyester blend, the soft and comfy honey-comb Polos are casual yet smart and are perfect for work as well as play. www.divejunkie.com.sg

Wetsuit for your wine? Now your spirit or wine bottles can be scuba-cool too, in these fashionable neoprene jackets by

French designer Thomas Renaud Combhard.com



Scuba Punk

Unleash your imagination and slip into a new skin with Scubapunk T-shirt as it expresses your passions about scuba-diving in a wholly different depth. Adorned with street graphics, revolving around scuba diving, that go beyond your conventional designs found on the market, Scubapunk adds a layer of distinctive spunkiness to the current diving apparel arena. Scubapunk.com



Rubber Radio

Totally waterproof, this fully rubber made radio makes listening possible in the bathroom or by the dive pool. Has a simple control panel, which relies upon the material elasticity as does the loudspeaker membrane. Eliumstudio.com



Dive Fashion

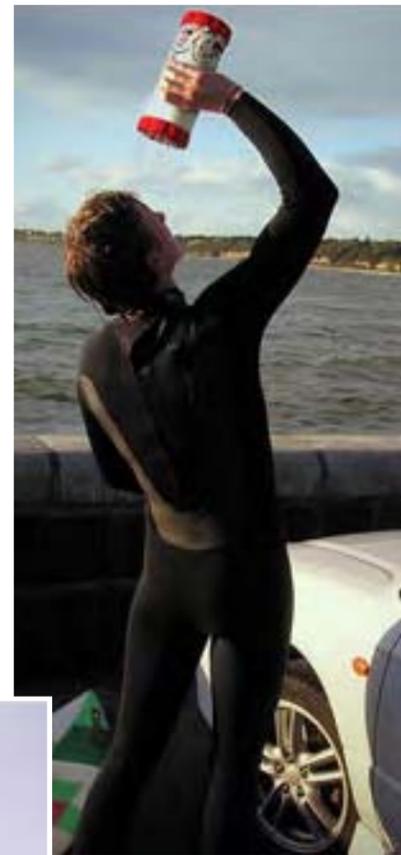
Superlative Skins



Dive Goddess

Tired of dark dreary black? Why not try something with a bit of pattern and color? The makers of these zany dive togs call their high quality skins, "visually-distinctive active-wear for serious divers who don't take themselves too seriously". They are supposed to be the answer to how to look 'hot' even while you struggle

to put on a cold, wet and pungent wetsuit on a crowded boat rocking on the waves. Finally, your buddy can spot you easily out of a slew of divers dressed in black. Left to right: Abyss, Hot Pursuit and Leaping Leopard. Price: US\$65-95. www.divegoddess.com



Terrapin Wetsuits

constructs truly custom fitted wetsuits from highest-quality neoprene or neutrally-buoyant Polartec where you choose the colors and style. Since sometimes you grow (or shrink) and your wetsuit doesn't, we provide expert alterations, including customization for Technical and Handicapped Divers. We also produce fun, colorful accessories...especially our famous Minihoods. www.terrapinwetsuits.com



Hot Shower in a Can

Get rid of all that salt with a soothing hot water rinse heated by the cigarette lighter in your car! Cleverly designed by Büro North, this handy portable surf shower goes with you anywhere. Buronorth.com



Shoulder Bags with Fins

As the makers, Reef and Reed, say, "It's not just a bag... it's a fish" This new collection, which highlights fish from the Great Barrier Reef, includes favorites such as the Shark, Orca, Clownfish, Purple Tang and Cutthroat Trout. Price: US\$35.95

www.reefandreed.com

Exceed Wetsuits

Step up to a new fashion wetsuit by EXCEED. Their suits feature the highest quality neoprene available with a new E-Plush interior, which keeps you warmer and dries quicker. All seams are glued and blind stitched to keep water out. www.exceedwetsuits.com

Ember Women's Long Wetsuit

Detail of Execute Men's Long Wetsuit by Exceed



Dive Deep T-Shirt

Get the word out with this straight forward scuba shirt by Island Image. Price: US\$19.95.

www.islandimagedesign.com





Dive Fashion



UZZI

Amphibious Gear uses innovative and high tech fabrics in their exclusive designs. Uzzi says their divewear line is more than a fashion trend or a lifestyle, "it's also a mindset".

LEFT TO RIGHT: Tahoe Nylon Clear Sail Women's Half-Zip Pullover, €52. Women's Dive Halter and Swim Shorts, €95. Wilderness Men's Cargo Shorts, €47. Tahoe Nylon Men's Classic Cargo Shorts, €47. www.uzzi-europe.com



Body Glove Girl

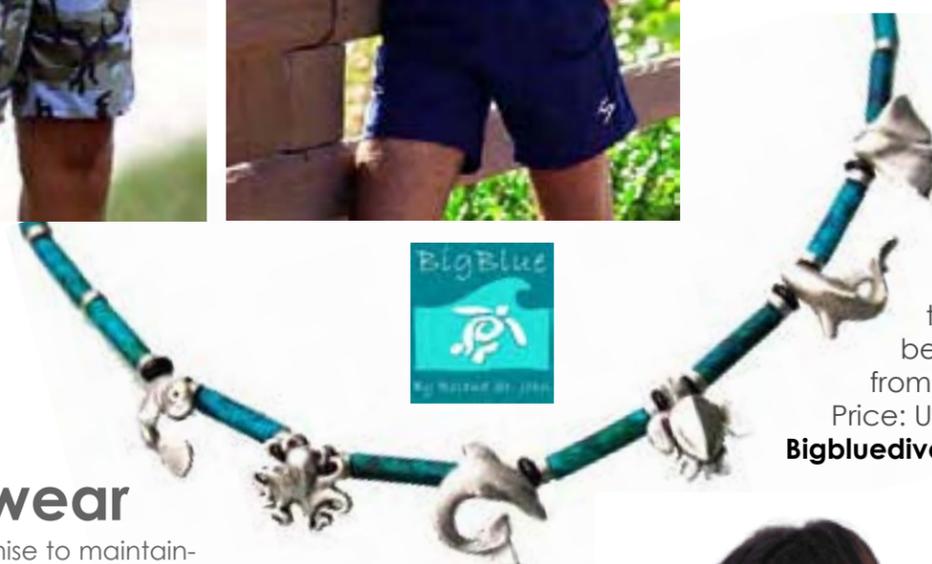
A new crop of fresh swimwear for the diving diva. Browse through their online gallery at: Bodylovegirl.com



Dolphin Swimwear

keeps its promise to maintaining the highest standards of innovation, quality and value. High leg and modest leg models available. Try this Planetary Blue Women's tank swimsuit. 80% Nylon/20% Spandex, fully lined. Uglier Papillon Rash T. 100% Polyester, UV (50+) protection.

Dolfinswimwear.com



Charming

New Sea-life Charm Necklace with sculpted silver forms of manatee, octopus, dolphin, sea turtle, shark, ray plus Caribbean-colored ceramic beads from Mykonos.

Price: US\$24.00

Bigbluedive.com

Moonfish

chic divewear from France is designed to prolong the inspiring sensations we experience in the underwater world, its sense of freedom and abundance of life.

Glamour hooded black cotton-lycra women's long sleeve shirt, €78.

Jessy Navy women's shorts, €54. Sirius men's board shorts, €60.

www.moonfish.fr



Black & White

Wolford's new Sunset Boulevard collection features a cosmopolitan look. Beach Dress, £99. Swim-bra Triangle, £75. Swimtanga £42.

www.wolfordboutiquelondon.com

Diva Style Swimsuits for Diving

Text by Cindy Ross. Photos courtesy of the manufacturers

LEFT TO RIGHT: UZZI 2pc, TYR 2pc and 1pc, Speedo Tankini & Boy Shorts, plus size 1pc Swimsuit by Delta Burke®, Wolford 2pc, Maru Dodge 1pc, Nike Shortini



Under the waves, the mermaids play—blissful and carefree... because they've never had to shop for a swimsuit.

One-piece, two-piece, bikini, tankini, shortini, swimtanga? It's sometimes too much for a girl to decide. But like shoes and handbags, one suit is not enough for the diving girl, so we will look at the benefits of each to assure that our wardrobe is adequately stocked.

The swimsuit, for divers, is usually a base layer to be worn under garments designed for protection from the elements. Water temperatures dictate coverings, ranging from lightweight dive skins to 7mm wetsuits, for thermal protection. Stinging jellies, underwater wasps, burning coral—our underwater world is not always friendly to the touch. Add the surface interval, with the sun's UV, and our skin needs more protection than a small bathing suit can handle.

Form Follows Function

Comfort is crucial when descending for an hour-long dive beneath the waves. No room here for wedgies or ill-fitting tops. Whatever swimwear you choose, you'll want to make sure that it is free of added ornamentation that can dig into your skin with the weight of the BCD and tank on it. Your skin or dive suit will also rub on the swimwear, so minimal clasps and knots are advised.

After the dive, you'll want to remove your dive garment, and modesty will prevail (...or not) depending on the type of

suit that you have. The plain black one-piece is always a great choice for assuring full coverage and no shifting. Just like the plain black evening dress, it's a must-have for every diver's swim drawer. A two-piece can look great while sunning on the deck, however be careful with choosing a teeny bikini for your dive suit. It's the peeling off of the top half of the wetsuit that usually wreaks havoc with our coverage, and where the tiny two-piece often shifts shamelessly.

A two-piece does work well at shore sites for changing, as a large beach towel or oversized shirt will eliminate the trek into the bush when transforming back to our land clothing. The one piece, while shiftless, is more limiting in the changing areas.

To pee or not to pee? At some point, we need to use the head while diving. There are two schools of thought on this. First, a two-piece would be the easiest to lower the bottoms for use in the head. However, the second idea is that a simple tug to the side, and even a one-piece can work in the washroom situation.

Fit for Form

If the thought of fluorescent lights, small changing rooms and facing your cellulite in a three way mirror sends shivers down your spine, join women all over the world

who, according to a California study, would rather clean the lavatory than try on swimsuits.

For most of us, the image of our pasty body in a swimsuit is a far cry from the supermodels on the front of Sports Illustrated. However, with a few tips, you can find a suit that will make the most of what "real bathing beauties" have to offer.

Go up one size

While trying on swimsuits, remember to go up one size, as they're made small. Don't get caught up in the number, after all, it's the fit that counts. Move around in the fitting room; bend over, sit down. The movement will assure that the suit will stay where you want it. Try on as many as possible, to find the ones that look best. And don't be afraid to ask the sales associate for help. They're usually very knowledgeable about enhancing or detracting for different body types.

Tight fit

We want a suit that fits tight, so it won't shift or rub on our wetsuit. While the flowing tankini top does conceal a bit of belly, it may also fall victim to disappearing in the wetsuit as we change after our dive. A well fit tankini gives the advantages of a two-piece and the coverage of a one-piece.

Say no to padding

Stay away from excessive padding. When diving, the padding in a swimsuit is going to absorb the salt

water like a sponge, resulting in sagging, and even with a thorough wash after, the smells are tough to get out.

Flattering your figure

Simple tips can enhance and flatter your natural looks. The right silhouette can disguise figure problems.

Small busts can be overcome by emphasizing contours. Bold prints or colors flatter, while straight lines across the chest will flatten further. For larger chests, pay attention to support, comfort and coverage. Wide straps and crossover straps can offer additional support, without adding the underwire that may be uncomfortable under pressure.

To mask the tummy, fool the eye with fabric that pulls the eye away from the stomach area. Large hips are overcome by choosing a bright color on top to pull the eyes upward. Choose styles with bust detailing, stripes or dark colors.

Fabric Freshness

How to keep the stink from your suit? Swimsuits are made from man-made fabrics that absorb and retain odors. In addition to the microorganisms that we swim through in the water, we've added our own body oils to the fabric. Mix in suntan lotions and body crèmes, and we've got the recipe for serious stinkiness.

Keeping your suits fresh isn't hard, but timing counts. Suits should be rinsed within two hours of use. This allows the sunscreens, salt water, chlorine and body

oils to be removed before they're absorbed into the fabrics. Use an approved swimsuit cleaner, avoiding Woolite or chlorine bleach detergents. No machine washing or drying—simply hand wash and lay the suit flat to dry.

For those divers who have frequent pool sessions, a simple mixture of water, liquid laundry detergent and

aquarium dechlorinator (found in pet stores—1:4 ratio with water/detergent mix in spray bottle) will help keep your suit bright and colorful.

For your liveaboard vacations, be sure to pack as many suits as you have dives per day. It's considered poor form to traipse about the cabin area in a wet suit. For laundering purposes, you'll want to change your suit between each dive. Cleanse the used suit and lay flat to dry for the next day's diving.

For diving divas, thankfully, the swimsuit serves a different purpose than bathing beauties. Remember, our reason for wearing a suit is not to "be seen", but rather "to see".

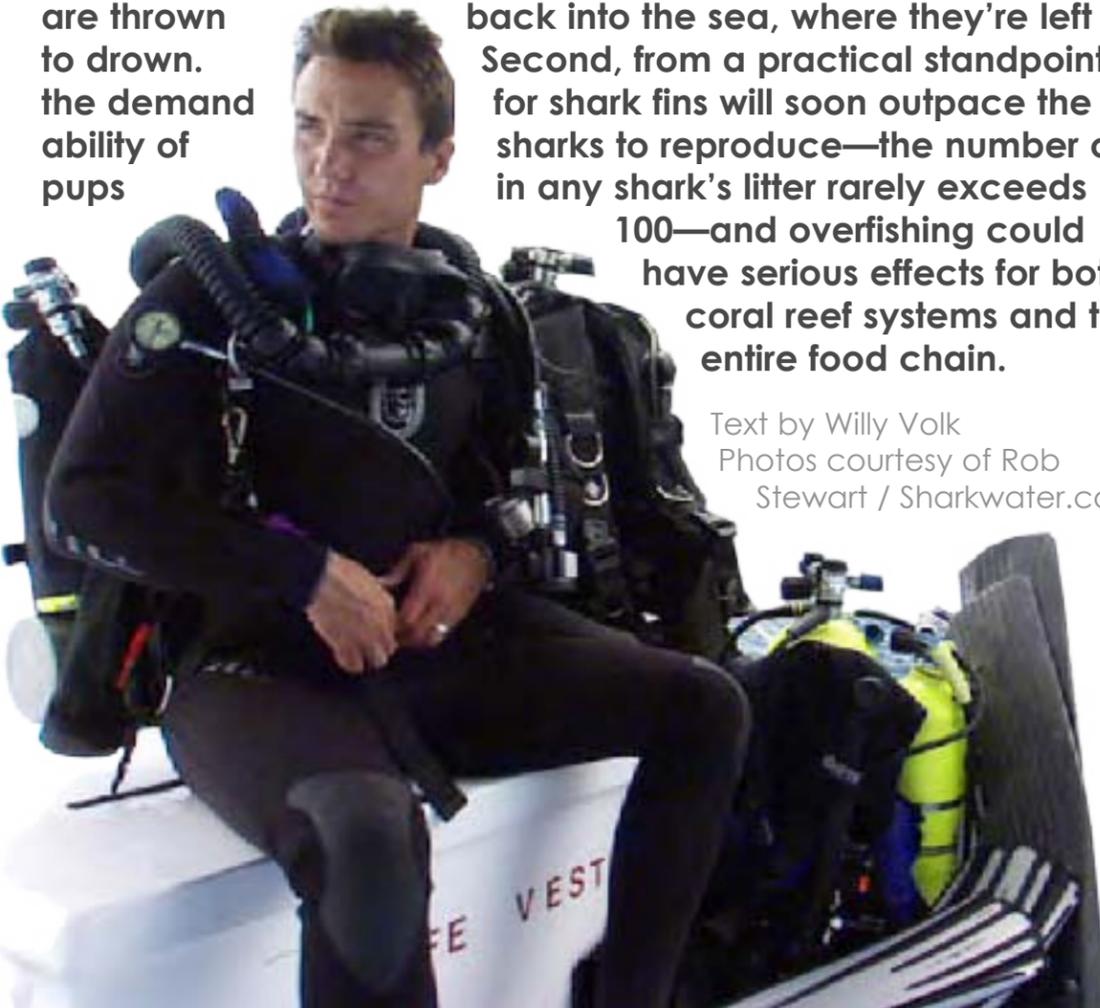
Cindy Ross is a dive instructor and writer dedicated to promoting the scuba lifestyle for women of all ages worldwide. For more information, please visit: Girdiver.com ■



profile

SHARKWATER

Depending on who you ask, humans are responsible for removing between 20 million and 100 million sharks per year from the oceans. Considered a delicacy in many parts of the world, shark fins are served at Chinese weddings and business dinners throughout Southeast Asia and the Pacific Rim. The problem with finning is two-fold. First, from a humanitarian aspect, sharks are still alive when their fins are sliced off; the animals are thrown back into the sea, where they're left to drown. Second, from a practical standpoint, for shark fins will soon outpace the sharks to reproduce—the number of pups in any shark's litter rarely exceeds 100—and overfishing could have serious effects for both coral reef systems and the entire food chain.



Text by Willy Volk
Photos courtesy of Rob Stewart / Sharkwater.com



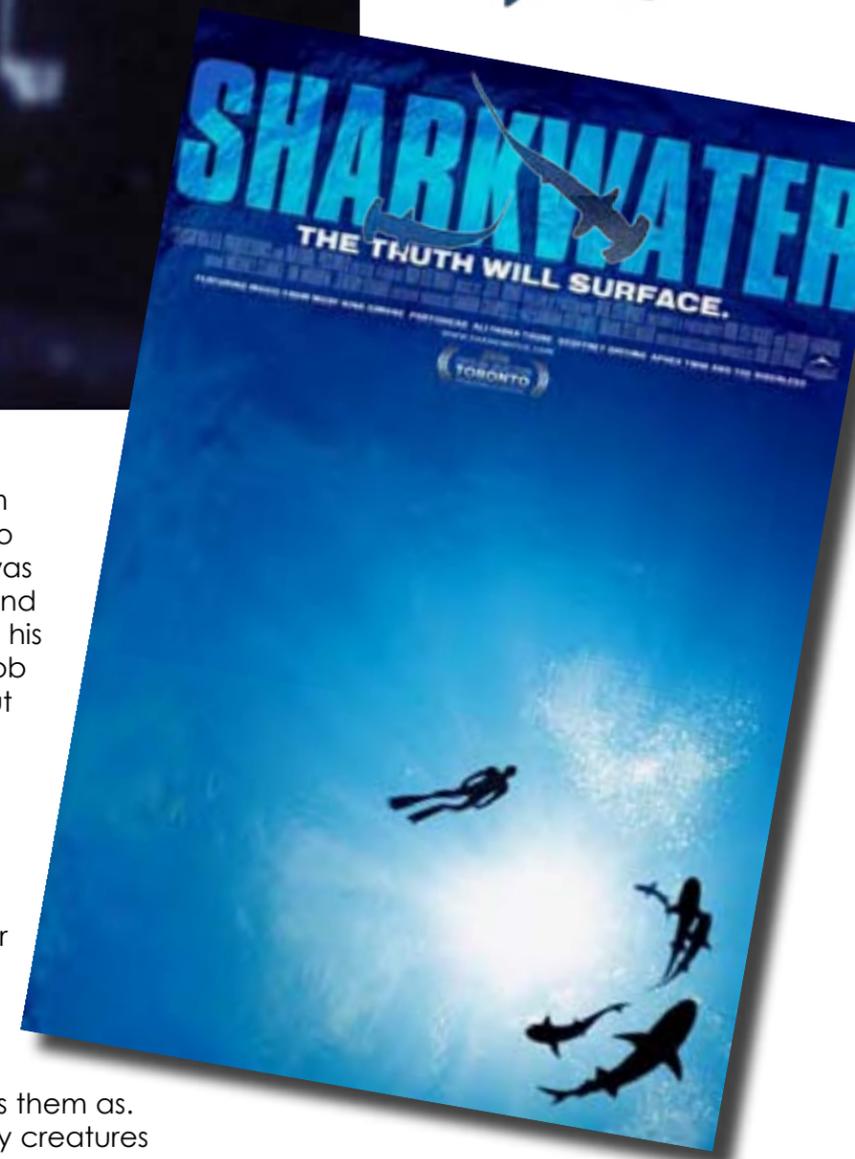
Underwater photographer Rob Stewart decided he needed to do something about the problem of finning, so he chose to make a movie about sharks, showing the world how beautiful, graceful and essential the animals are to the oceans' ecosystems. Never having shot a feature film before, Rob picked up a book on how to shoot movies and began his journey. The end result is *Sharkwater*, an 89-minute high-def extravaganza of a movie, which has already won a slew of awards, including Best Documentary (Ft. Lauderdale International Film Festival); the Jury Award (Hawaii International Film Festival); Best of the Festival (Palm Springs International Film Festival); Prix Planete (Antibes); and more.

Recently, *X-Ray Magazine* got the chance to talk to Rob about *Sharkwater*

and his experience filming it. Despite all the awards his film has won, he hasn't let it go to his head. Impressively, Rob was down-to-earth, accessible, and interesting. Passionate about his subject and full of energy, Rob spoke with us at length about *Sharkwater*.

X-Ray: What is *Sharkwater* about?

Rob: Originally, I wanted to make a beautiful underwater film about humanity's relationship with sharks. I wanted to show people that sharks are not the mindless killers that the media portrays them as. They're actually beautiful, shy creatures



Rob Stewart



who avoid humans. So, I went down to Costa Rica to film them. However, it didn't work out that way. After about four months, I realized I wasn't getting the underwater footage I had been hoping for, because we were busy outrunning pirate boats, being charged with attempted murder and uncovering an underground shark finning operation in Costa Rica. In order to protect ourselves, I turned the cameras on us. Although I wasn't getting the shark footage, all this human drama was unfolding all around me. It was a crazy experience that covered 15 countries and

four and a half years. *Sharkwater* is not like any movie out there. It's not really a documentary. It's not really a film. It's more of a "reality journey."

X-Ray: Did you head to Costa Rica with the intent of uncovering the shark finning operations, or did you just stumble upon it?

Rob: I went to Costa Rica to film sharks off Cocos Island with Sea Shepard, which had been invited by the President of Costa Rica to help monitor sharks in the area. I wanted to work with Sea Shepard's conser-

vation initiative and get underwater with the sharks. But I had no idea of the extent of the corruption in the area. The Taiwan Mafia has established a huge shark finning operation there.

X-Ray: I thought Costa Rica was known for being very eco-minded.

Rob: Costa Rica is known for being very eco-minded, but in reality, Costa Rica's sharks are just protected on paper.

There's lots of shark finning going on. It's a multi-billion dollar operation.

X-Ray: Could anyone heading to Costa Rica see the shark finning operations? Or are they well-hidden?

Rob: You couldn't just go down there and see them. The Taiwan Mafia is extremely well-hidden. The shark finning operations have their own private bay in Puntarenas and their own private docks. They're down long dirt roads, and you can't go down there.

X-Ray: If they have their own bay and docks, doesn't the government have to know about it? Are they just ignoring it?

Rob: Exactly, the Costa Rican government is turning a blind eye to finning. But now the public has learned about it, and a local non-profit, PRETOMA, is suing the government for letting

"An eye-opening film...visually stunning... this movie will change the way you see our oceans."

*— Bonnie Laufer
Tribute Magazine*

finning occur and for allowing the depletion of the country's resources. After all, the natural resources of Costa Rica are owned by its citizens.

X-Ray: You've said that sharks are "the most misunderstood animals in the world." What is the biggest misunderstanding about sharks?

Rob: Probably the biggest misunderstanding is that they're primitive eating machines. That's not the case. They're very sophisticated animals that have survived on the earth for hundreds of millions of years. Over the course of their evolution, they've evolved to become sleeker. Like electronics,

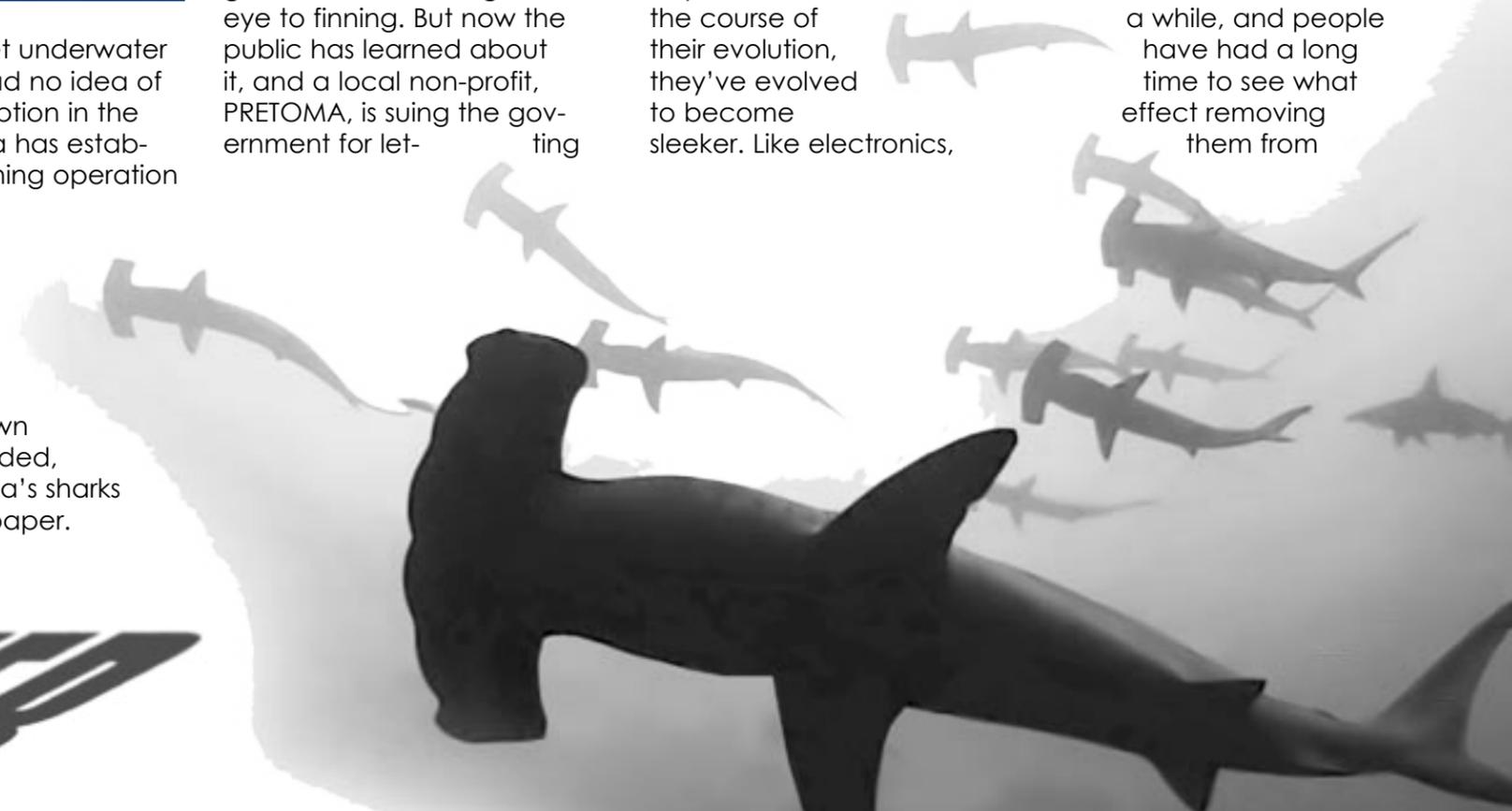
Rob Stewart

they've become smaller and more efficient. They're amazing animals. Another misunderstanding about sharks is that they want to eat humans. They don't. In fact, most shark attacks aren't attacks at all. They're "mistakes." However, newspapers sell more if they run stories about shark attacks splashed across their pages.

X-Ray: Other than divers and conservationists, it seems very few people are trying to protect sharks. Why do you think there are no "Save the Sharks" campaigns like there are "Save the Whales" campaigns?

Rob: First of all, sharks are a relatively new fishery. People only started fishing for sharks in the late-80s. On the other hand, whales have been fished for a while, and people have had a long time to see what effect removing them from

SHARKWATER



profile

Rob Stewart



chain. So, we have to look at the next best thing: the sea otter, an animal that nobody thought was very important. In the 70s, the sea otter was an endangered species. Sea otters eat sea urchins, and urchins eat kelp, which is a prime habitat for the Pacific herring. So, when we nearly wiped out sea otters, there was nothing there to eat sea urchins. The urchins ate the kelp, kelp populations dropped dramatically and the Pacific

herring lost its habitat and nearly vanished. This animal that no one thought was very important in the big picture actually created a huge imbalance. So imagine the problems associated with removing the ocean's top predator. It could create a framework for declining oxygen populations, declining fish populations, and declining plankton populations, plankton being responsible for creating 70% of the Earth's oxygen. It could be a disaster for all of humanity.

about them. I wanted to show them not to be afraid of sharks. This movie has the potential to do so much good—because if sharks survive, people survive. And the response from non-divers has been amazing! We've received thousands of emails from people who have seen the movie and said that, after seeing it, they wanted to go see sharks and swim with them. And so far, only about 10,000 people have actually seen the film, so we're hoping the response is going to be similar after it opens.

most surprising thing you learned while shooting the film?
Rob: The most surprising thing I learned while shooting the film... is how hard it is to shoot a film. It's totally different from shooting photos, because the post-production work is so difficult. We've got over 400 hours of footage in every kind of format, from high-def to 16mm. Putting it all together is so difficult. If you were just directing the film, I guess it would be easier, but when you're crafting the story on so many levels—when you're writing, directing, producing and editing the film—you have a lot to think about.

X-Ray: ...cute?

Rob: Right, whales are cute and sharks aren't, so there's been no public support for a save-the-sharks campaign.

X-Ray: I watched the trailer of your film and was amazed by the guy who said that sharks are "the scourge of the ocean and everyone should catch one." What would be the result if that happened?

Rob: Never in the history of humanity have we wiped out such a critical animal, the top predator in the food



X-Ray: It opens this month in Canada, right?

Rob: Right. On March 23rd.

X-Ray: When does it open in the US?

Rob: In the fall.

X-Ray: I can't wait. What was the

X-Ray: Yes, but that'll serve you well on your next film. You won't have to start from scratch.

Rob: Right. That's good.

had. a long time to see the ocean. Since sharks are a new danger associated with removing them from the fishery, there hasn't been that same build-up. Suddenly, we're understanding how many sharks are being removed from the oceans and what effect this is going to have. Also, whales are...



ate a framework for declining oxygen populations, declining fish populations, and declining plankton populations, plankton being responsible for creating 70% of the Earth's oxygen. It could be a disaster for all of humanity.

X-Ray: It seems divers are aware of how beautiful and important sharks are to the world's ecosystems. But what about non-divers? How do we convey this important message to people who think sharks are the "scourge of the ocean"?

Rob: That's why I made this movie. I wanted to show non-divers how beautiful and important sharks are. As long as people fear sharks, they won't want to learn





SHARKWATER

Something else that surprised me was how much money is being put into the shark finning industry. I had no idea. When you see that the corruption extends along multiple governments, you realize that there's a lot of money at stake. Another thing that surprised me is how difficult it's going to be to work against finning. It's going to be very hard.

X-Ray: Speaking of your next film, can you tell us about what you're going to be working on next?

Rob: I have several other documentary projects I'm working on. All of them are eco-minded and try to teach that "conservation is cool." I think that conservation should be taught in schools before Shakespeare or geometry. The future of our planet depends on it. Anyway, one of my projects is a feature documentary that

deals with ocean issues. Another one is the story of human evolution told through Africa. It's amazing to me that Africa is the place humans learned to stand upright and, yet, with all the civil war, it almost seems there's a de-evolution going on. Finally, I'm also working on a reality television show. Like any reality show, it'll involve lots of young, beautiful people, drinking, sleeping with each other and stabbing each other in the back. But these people will all be on a ship sailing through the South Pacific, and they'll stop off at various islands and pick up local biologists and give them the tools they need to carry out effective conservation issues on their home islands.

X-Ray: Are the young, beautiful people on the boat biologists, too?

Rob: Yes.

X-Ray: So, you need to find people who are young, beautiful AND smart?

Rob: Yeah, it'll be kind of hard to cast, but I think we can do it.

X-Ray: Good luck with that. What do you want to leave X-Ray's readers with?

Rob: I want to remind people of the issues at stake here. Our survival is in jeopardy. We need six Earths to provide us with the resources that we use every day. The earth can not sustain us. Moreover, as we use more resources, the number of large predators on our planet goes down, and that will have terrible results down the road. We need to keep in mind that conservation is critical to the success of our planet. The ocean is not a toxic waste dump. Trees are not for decoration. We need to make decisions now that will affect our future. ■



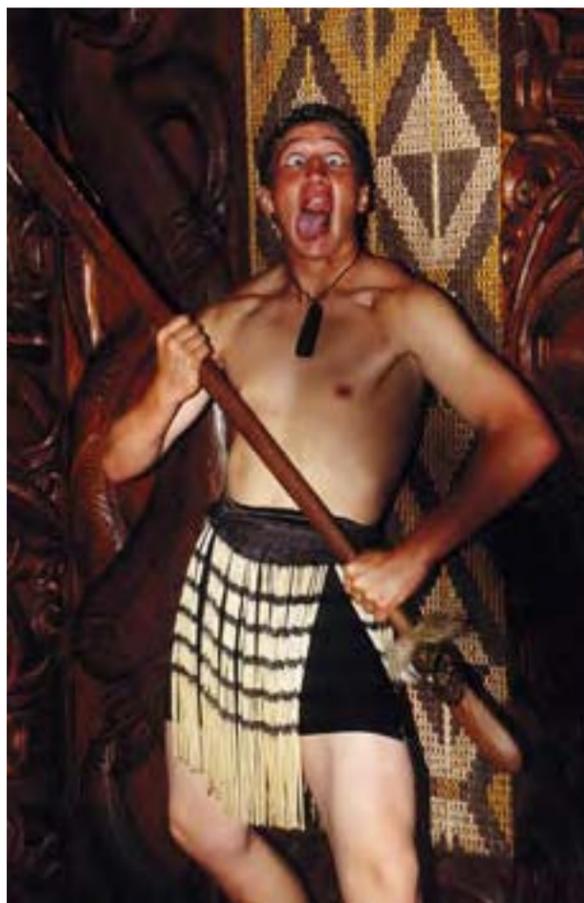
New Zealand

Diving & Kayaking in Kiwi Country

Text and photos by Barb Roy

Kaikoura albatross

The Maori warrior cautiously moved towards us. His face was painted and body adorned in traditional combatant attire. He yelled words I did not understand and pounded the ground with his spear-like weapon to challenge us. More warriors appeared out of the darkness behind him, each taking defensive positions with wide eyes and tongues out to intimidate. Like the other visitors around me, I froze with excitement, waiting for their next move.



Our guide spoke their language and understood their ways as he coached the leader we selected on what to say and do. His advice proved to be invaluable, as we soon found ourselves invited into their theater for a cultural evening experience of unforgettable measure, preformed by local youth at the Treaty of

Waitangi Sound and Light Show, located on the northern tip of the North Island.

This was just one of the many entertaining activities I found to do when visiting New Zealand, a land of limitless opportunities and unforgettable memories. I guess it was New Zealand's remoteness that initially attracted me to this extremely diverse place. Or perhaps it was the country's lush green valleys, massive evergreen forests and jagged snow peaked mountains I saw in the movie, *Lord of the Rings*, which was filmed on the South Island.

As a diver and avid paddler, I was pleased to also find an assortment of dive sites and kayaking options on both islands. Curious to learn more, I researched the Internet, and was soon on my way down under aboard an Air New Zealand's 12-hour flight from Los Angeles to Auckland, on the North Island, in March (which is the beginning of their winter).

On the world map, New Zealand can be



found east of Sidney, Australia, in the South Pacific Ocean between latitude 34'S and 47'S; 266,200 square kilometers (103,735 sq miles) covers two islands resting in a north to south direction with a vast mountain range running almost the countries full length. While North Island is considered mostly sub-tropical, South Island is temperate. In perspective, New Zealand is about the size of Japan or the state of California. Aside from the Maori people arriving more than 1000 years ago, the country's first documented discovery by a European was in 1642 when the Dutch navigator Abel Tasman came upon it while searching for the southern continent. In 1769, Captain James Cook claimed the country for Britain and proceeded to map out the area.

Diving The Poor Knights

Upon arrival, I rented a car and headed towards a country-style B & B near



Warrior dancer in Waitangi show

Cave at Poor Nights on North Island, NZ





New Zealand

Wangarei for some diving around The Poor Knights. The constant hum of Cicadas filled the air as I navigated the narrow winding country roads, past pastures with lambs and cattle. New Zealanders consider this southeastern part of the North Island subtropic, meaning many of the tropical plant and fish species flourish, without the usual muggy humid climates normally associated with islands closer to the equator. I was just glad I could wear my shorts, T-shirt and sandals.

After repacking my dive and underwater camera gear the following morning, I headed for the Tutukaka Marina for my first day at the Poor Knights, with Dive Tutukaka. The shop was teeming with excited divers picking up rental gear, buying souvenirs and getting air fills. Totally unexpected, I met up with two fellow Canadian residents, originally from New Zealand, Ian and Julia Hass, who arranged to join me.

The shop had plenty of room for everyone on their seven dive charter boats, with tasty sack lunches from a nearby restaurant (offered as an option). During the 45-minute ride out, the boat captain told us we could expect a water temperature of 21°C (70-72°F), with a visibility of 17-24 meters (60-80 feet). He also added that the water temps drop to 15°C (59°F) during the winter months. I was the only diver in a dry suit; everyone else wore a full 5-6mm wet suit.

Two large islands and several smaller pinnacles, islets and rock stacks make up

the Poor Knights, volcanic in origin, which are located about 15 miles (24 kilometers) off the northeastern coast. In 1981, this area was established as a Marine Reserve. Today, hundreds of divers from around the world enjoy the areas rich abundance of marine life found in the clear waters of this unique archipelago. The unusual name Poor Knights was actually given by Captain Cook when he sailed past the islands. Thinking they resembled a popular breakfast dish in Europe, 'Poor Knights Pudding' (known today as French Toast), and the fact the red flowering lilies in October look a bit like strawberry topping, it's easy to understand why.

Upon arrival, we tied up next to a sheer rock wall in front of the massive Rico Rico Cave, so big a whole marina would fit inside if they ever decide to build one! Leaving my hood and gloves behind, I donned my DUI shell dry suit with a 300 gram polartec undergarment and joined the others entering the water. Ian and Julia followed me in, and we descended next to fronds of kelp, swaying gently in a mild surge.

Next to the cave entrance, we followed a wall stretching from the surface to over 27 meters (90 feet). A rich blend of invertebrate life covered everything. Stingrays, over two feet across, kept swimming past, almost close enough to touch. Ian and Julia were happy to play models for me, without really knowing they were. Huge

boulders below the cave entrance resemble a canvas of art with a colorful collage of marine critters painted upon it. Scorpion fish and other camouflaged sculpins also hid in cracks and crevasses around the rocky pinnacle. A few white squid eggs

CLOCKWISE FROM TOP LEFT: *Apteryx haastii*, by John G. Keulemans, 1842-1912, Adult Kiwi and juvenile; Jewel anemone; Whale Bay of North Island, Entering Poor Knights cave; Kukutauwhao Island





New Zealand

ABOVE: Snapper. LEFT: Northern Scorpionfish; Diver at Poor Knights



were clustered together on the bottom and more colorful fish than I could keep track of.

Our second dive was at a site called 'Magic Wall' and the third dive at a location beneath an archway called 'Middle Arch.' Within 20 minutes at Magic Wall, I lost count of how many different species of moray eels we saw. One was actually next to a scorpion fish and stayed there for the longest time as if they were friends. Sponge, tunicates, crabs, nudibranchs and pink gorgonian fans flourished on a kelp-covered reef, between 12-18 meters (40-60 feet) at Middle Arch. Sandy patches separated the rocky terrain, where I found tiny slender fish, starfish and more stingrays. Like everything else, the wall beneath the archway was covered with macro life, creating awesome wide-angle, close-up or macro image opportunities.

In all, I did four dives over two days at the Poor Knights, with each dive quite different in appearance, yet still didn't see it all. Talking with the crew and other

divers, there are over ten choice dive sites in the area to choose from.

On one of our excursions, our boat joined several other boats from the mainland for a jazz jam in the big cave. The acoustics were incredible from the live music being played by the bands!

Overall, the diving was easy, service exceptional and price reasonable. While diving is available year round, the seas are the calmest during the summer months (our winter) and the visibility best during their autumn and early winter months (March-July).

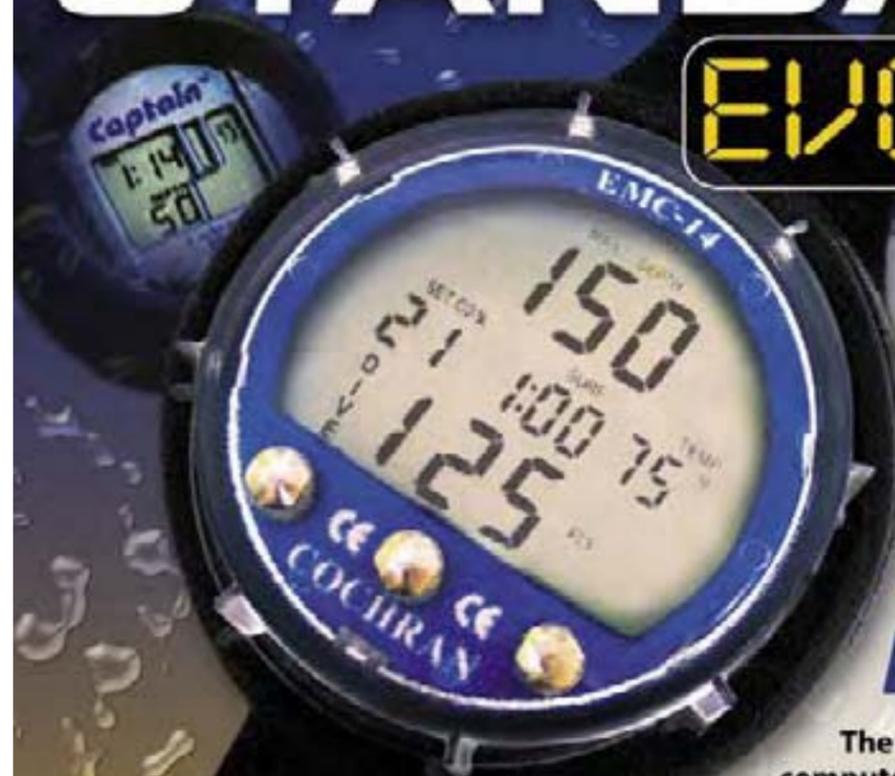
If wreck diving is your pleasure, there are two retired Navy ships scuttled for divers, north of the Tutukaka Heads. The *HMNZS Tui* is a 62-meter (203 foot) long US Navy ship was put down in 1999 in 30 meters (98 feet) of water. The 113-meter (370 foot) long *HMNZS Waikato* went down in the year 2000, in 28 meters (92 feet) of water.

Kayaking Poor Knights

Before I left the area, I arranged

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New Zealand



CLOCKWISE FROM LEFT: Divers explore a cave at Poor Nights; Dive boats moored at the cave; Divers on Dive Tutukakas' big boat; North Island kayaking gives adventurers an opportunity to take in the stunning natural beauty of New Zealand



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a day of paddling along the shoreline with Kea Spill and Shane Orchard, from Paradise Coast Kayaking (now called Pacific Coast Kayaks). We launched our boats just south of the marina, in a secluded bay. The day was fairly sunny and the water calm, just how I like it. A dry bag kept my camera safe and a spray skirt kept the bottom half of me dry, as it pulled over the lip of the boat. Kea also packed a lunch, water, sun block and snorkeling gear before we headed north.

Our journey led us through tight passageways and across water that resembled washing machine agitation. Kea and I were in a two-person kayak and Shane joined us later with his single person kayak. At times, I was sure our boat was attracted to white water. Having Kea as a chauffeur (steering from the back) was great, especially when I needed to photograph something or steady my camera. We landed at Kukutauwhao Island for a lunch and hiked through thick brush to the top of a steep hill.

Once again, the cicadas song was in the air, and I actually found one of the little critters squeaking away. Looking around at the breathtaking view, I was amazed at the grandeur of such a stunning place.

Once back in our boat, we continued north past weather beaten cliffs, sparse patches of trees and secluded beaches. After Shane joined us, we headed for Whale Bay for a snorkel dive. Shane said many of his clients enjoy coastal snorkeling during the summer months, and some even camp along the way during multi-day journeys.

Diving Paihia

Paihia was my next destination, located at the top of the North Island, for some diving at The Bay of Islands. The town was hopping with activities like wind surfing, whale watching boats, kayaks, diving and more outdoor enthusiasts. I located Paihia Dive for a day of diving on the *Rainbow Warrior*, an old Greenpeace boat with a very colorful history.

Apparently, the French Secret

Service placed charges on the vessel in July 1985, because of protests conducted by Greenpeace over nuclear testing in the Pacific by the French government. The detonation sent the *Rainbow Warrior* to the bottom of the Auckland Harbour. In 1987, the ship was re-floated and relocated to the Cavalli Islands where it rests today in Matauri Bay.

I was in photographic heaven to find so many different shades of jeweled anemones clinging to the rails and hull as I perused the *Rainbow Warrior* underwater. The wreck was sitting upright with the stern at 22 meters (70 feet), but didn't look safe to penetrate. A thick growth of kelp covered the deck while the most color and life was found on the starboard side. Clusters of sponge clung to the rail and tiny sculpins danced about the deck. I reached a maximum depth of 26 meters (85 feet) where sand surrounded the hull.

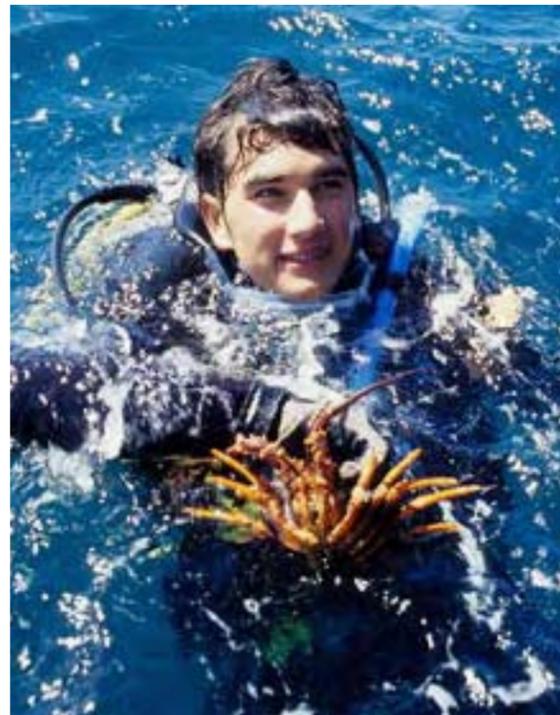
We explored Lion Point next, within the Bay of Islands group. Upon descent I could see the fin-gering reefs suggested a volcanic





ABOVE: Detail of the wreck of the *Rainbow Warrior*
RIGHT: Poor Knights Wall

BELOW: Jewel anemones on *Rainbow* wreck



Diver with giant lobster

past in its design. Sea urchins, lobster, crabs and shrimp used a ground cover of kelp to veil their presence. Steep walls supported a healthy invertebrate environment and the fish population seemed

to be bountiful. At one point, our dive-master managed to grab a lobster, so we could see it up close!

Later that night, I was treated to an evening of Maori history during a performance sponsored by Culture North, Treaty of Waitangi Sound and Light Show (as explained in the opening paragraph). The areas youth told a 1000-year-old story about Kupe the first Maori chief to discover New Zealand, splendidly perform this live drama involving audience participation. Even the theater was adorned in traditional Maori carvings.

Before leaving North Island, I made my way to the Mangingina Kauri walk in the Puketū Forest to see the giant trees, which once covered these northern lands. An easy accessible eco-friendly boardwalk has been placed there to lead the way through most of forest, creating a wonderful short or long walk.

New Zealand

Kayaking Queen Charlotte Sound

From Auckland, I caught a flight to Blenheim, at the northern tip of the South Island and picked up another rental car. Within a few hours, I was kayaking in the Queen Charlotte Sound with Marlborough Sound Adventure Company out of Picton. The setting sun gave the Tea trees lining the banks a golden hue. Paddling clear of a huge passenger/auto ferry, connecting the two islands, we headed for a blue penguin nesting area. Unfortunately, the tiny birds were still out fishing.

We made it back to town as the sun was setting. My new paddling friends joined me for a plate of green-lipped mussels and some tasty local wine, two items the area is famous for.

General information:

- Tourism New Zealand
www.tourisminfo.govt.nz
310-395-7480 or 866-639-9325 (US/Canada)
- Air New Zealand
www.airnewzealand.com,
310-648-7000, 800-262-1234 (Canada 800-663-5494)

Diving in New Zealand:

- Dive Tutukaka
www.diving.co.nz
0800-288-882
- Blenheim Dive Centre
www.blenheimdive.co.nz
or 0064 3 5780331
- Dive Kaikoura
www.scubadive.co.nz
0800 SCUBADIVE
- Rainbow Warrior Information
matauribay.co.nz/diving.html

Activities in New Zealand:

- Pacific Coast Kayaks
www.nzseakayaking.co.nz
09 4344262
- Marlborough Sounds Adventure Company
Marlboroughsounds.co.nz
03-573-6078
- Whale Watching Kaikoura
www.whalewatch.co.nz
0800-655-121
- Dolphin Encounter
www.dolphin.co.nz
0800 733 365
- Albatross Encounter
www.oceanwings.co.nz
0800-733-365

Books about New Zealand:

- Lonely Planet guide books
Tramping in New Zealand & New Zealand Guide Book
www.lonleyplanet.com
- *New Zealand Adventures In Nature* by Sally McKinney, John Muir Publications
- *Coastal Fishes of New Zealand* by M. Francis

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ABOVE: Wildlife watching boats moored at a bay on the North Island

LEFT: The Manginglina Kauri walk in the Puketi Forest, North Island

BELOW: Diver explores the *Levertov* wreck

Diving a Russian cruise liner

Kevin Bailey from Blenheim Dive Centre picked me up at my B & B the next day for a dive on the 176 meter (578 foot) Russian cruise liner, *Mikhail Lermontov*, in Marlborough Sound. Kevin explained the \$45-million ship

unsuccessfully tried to pass at night between the shallow turbid waters of Cape Jackson and the Cape Lighthouse in 1986. Barely making it to Port Gore, the ship sank with the port bridge wing just 12 meters (39 feet) below the surface, on its side. Only one crew member was lost of the 408 passengers. Not bad, considering it went down in about ten minutes!

Kevin and I entered the murky water (October has the best visibility) and descended to the wreck. I made sure to don my hood and gloves this time, since the water on South Island was 10 degrees colder! No way would we be able to see everything, so we cruised along the top and outer edge of the deck.

Fish of every size and color flourished in small

to large groups. Sea cucumbers, sponge, bryozoans, orange and white anemones and hydroids were among the *Lermontov's* residents. I was able to get some good shots of the ghostly looking bridge and mast, also covered in life. Ken went in and out several openings. Our maximum depth was 35 meters (114 feet) with the bow at 25 meters (85 feet) and the upper deck at 18 meters (58 feet).

The second dive was on a pinnacle rising out of the water next to Long Island Marine Preserve. The underwater terrain was filled with nudibranchs, fish, lobster and large sea stars. An inquisitive black sea lion buzzed us several times while we checked out numerous small valleys between the reefs. Sea stars with long rays, urchins, sea cucumbers fish and wary crabs were also observed.

After the diving we stopped at Motuara Island Reserve for an afternoon hike to see the scenic views of the Sound. I thought it to be more of a birders' paradise, counting over six different species and dozens of penguin houses positioned on both sides of the path up the hill. Once at the top, the view was breathtaking.

Kaikoura

Kaikoura, on the eastern side of



Travel Info:

- Airlines Servicing New Zealand – Air New Zealand, Quantas, Air Pacific, Air Tahiti. International Airports: Auckland, Wellington, and Christchurch
- Money matters – All major credit cards are accepted, ATMs available and travelers checks can be cashed at banks, hotels and in some stores.
- Time – 12 hours ahead of GMT
- Driving – Driving is on the left side of the road
- Drinking Water – The water is fresh and safe to drink
- Electricity – 230/240 volts (50 hertz)
- Entry Into the Country – A passport is required to enter the country and must be valid for three months after your scheduled departure date.
- Climate – North Island is subtropical and the South Island is temperate. The warmest time to visit is usually December through February, 20-30C (68-86F)
- Thermal Protection for Diving – 5 or 6mm wetsuit or a dry suit for both islands. On South Island a neoprene hood and gloves is needed. ■

South Island, was my final New Zealand destination. This bustling seaside town is located on a peninsula flanked by mountains on one side and a breathtaking coastline on the other. Kaikoura business operators cater to visiting tourist by offering a wide range of marine mammal activities. Before my scheduled day of diving, I signed up for several of these excursions.

The Whale watching trip offered by Whale Watching Kaikoura took the group to a favorite place frequented by sperm whales for hunting. Throughout the four hour tour, we learned all about these illusive giant-toothed creatures

CLOCKWISE FROM LEFT: Snorkeling field trip at Kaikoura; Albatross encounter; Pink Jewel anemone; Furs seal hunting



and observed them in the wild as they rested at the surface, while doing their deep 120-360 meter (400-1200 foot) feeding dives. We were also told that most of the whales in the area are males, who seem to tolerate the cooler water for better hunting grounds. Females are known to prefer warmer climates like Fiji and Hawaii.

On my next tour, I was able to snorkel with dusky dolphins. It took several in and out of the water tries, but our persistence soon rewarded us with a large pod of 30 animals. They were all around us at one point then minutes later were gone! All snorkeling equipment and suits were provided by the operator, Dolphin Encounter Kaikoura.

On another excursion, Albatross Encounter took me out to open ocean where we found some local fisherman feeding gulls scraps of leftover bait. These were no ordinary gulls though they were one of the five varieties of the ocean-going great albatross who frequent the Kaikoura area. Normal gulls were clearly dwarfed by these beautiful gargantuans. Their wings were so long they had to double fold them on their back for management. Up to eight varieties of the smaller albatross can also be found along with petrels, shearwater, prions and shags.

I next came across a group of kids during a school field trip, who were snorkeling with resident seals. What a treat to be able to learn about your marine neigh-

bors as the classroom is brought to the ocean! It was also fun to watch young kids get their first cold water experience and encounter groups of young playful pups at the same time. I couldn't tell who was having more fun!

Dive Kaikoura who took me out for a dive in the kelp in a cove not far from the harbor. During the ride out (all of about ten minutes) the dive master explained they use about ten regular sites in the area, all within an hours ride. Most of their customers are divers who want to do one to three dives in a day and if they fly in, all of the equipment is provided, including wetsuits.

Upon entering the water in a sheltered cove, a gentle surge pulled at me, but disappeared around eight meters (25 feet). Wide-eyed fur seals curiously watched from the distance and submerged when I did. The boulders below were draped with lavender and purple algae and speckled most of the base structures under the kelp. Glimpses of col-

orful invertebrate life appeared as the surge revealed its treasure of life. Several fur seals zoomed by to check out my buddy and I.

became more noticeable.

The bottom quickly dropped to 18 meters (50 feet) and continued down. My buddy, the seals and I just peered down the bank into the dark abyss and decided this wasn't the day to push our luck. Perhaps another day with double tanks and trimix...

Afterthoughts

Soon it was time for me to depart this wonderland in the Southern Hemisphere. I

found New Zealand to be a place requiring several two to four-week visits to gather enough experiences of what this land was all about. I still want to paddle some coastal lands, see volcanoes, traverse a few mountains, go rock climbing, try sand surfing on the dunes and explore the southern part of South Island. Rafting through ice caves, exploring fresh water crystal springs and visiting Milford Sound are also on my list for a return holiday one day...

Barb Roy is a dive writer and underwater photographer based in Canada. Visit: www.barbroyphotography.com



Before long we were both enthralled with the wreckage of an old sailboat. Realizing the seals had lost their hide-and-go-seek partners, they both began to follow us, becoming our shadows. The four of us stayed together for most of the dive and even ventured over to the deeper parts of the cove where the current



fact file

New Zealand



SOURCE: WWW.CIA.GOV



CLOCKWISE FROM ABOVE: North Island; Map of New Zealand; New Zealand Kiwifruit was once called Chinese gooseberry until growers changed it in the 70s, so it would sell well in the West



History In about A.D. 800, the Polynesian Maori reached New Zealand. Their chieftains signed a compact with Britain. In 1840, the Treaty of Waitangi, in which they ceded sovereignty to Queen Victoria while keeping territorial rights. The British started the first organized colonial settlement in that same year. Between 1843 and 1872, a series of land wars resolved with the defeat of the native peoples. In 1907, the British colony of New Zealand became an independent dominion and supported the British military in World War I and II. By the 1980s, New Zealand's full participation in a number of defense alliances ended. Recently, the government has looked into addressing longstanding Maori grievances. Government: parliamentary democracy. Capital: Wellington

Geography New Zealand is made up of several islands located in



Oceania, in the South Pacific Ocean southeast of Australia. Coastline: 15,134 km. Terrain: New Zealand is predominately mountainous with some expanses of coastal plains. Lowest point: Pacific Ocean 0 m. Highest point: Aoraki-Mount Cook 3,754 m. Natural resources: natural gas, iron ore, sand, coal, timber, hydropower, gold, limestone. Natural hazards: mild earthquakes and volcanic activity. Environmental issues: invasive species have hit native flora and fauna hard; deforestation; soil erosion; New Zealand is party to international agreements such as Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling. Agreements which New Zealand has signed but are not yet ratified include Antarctic Seals, Marine Life Conservation.

Economy Over the past 20 years, the New Zealand government has helped the nation move from an agrarian economy dependent on concessionary British market access to a more industrialized, free market economy that is able to compete globally. As a result, real incomes have been boosted while leaving behind many at the bottom of the barrel; technologi-

cal capabilities of the industrial sector have broadened and deepened; and inflationary pressures have been contained. For eight consecutive years, per capita income has risen and was more than \$25,500 in 2006 in purchasing power parity terms. In recent years, consumer and government spending have driven growth, and in 2006, exports picked up. 28% of GDP are exports. With a heretofore resilient economy, the Labor Government promises increased expenditures on health, education, and pensions which will be proportionate to output. Agriculture: wheat, barley, potatoes, pulses, fruits, vegetables; wool, beef, lamb and mutton, dairy products; fish. Industry: food processing, wood and paper products, textiles, machinery, transportation equipment, banking and insurance, tourism, mining.

Climate New Zealand climate is temperate. There are sharp contrasts within regions.

Population 4,076,140 (July 2006 est.). Cities hold about 80% of the population; Wellington is the most southern national capital in the world. Ethnic groups: European 69.8%, Maori 7.9%, Asian 5.7%, Pacific islander 4.4%, other groups 0.5%,

mixed ethnicity 7.8%, unspecified ethnicity 3.8% (2001 census). Religion: Anglican 14.9%, Roman Catholic 12.4%, Presbyterian 10.9%, Methodist 2.9%, Pentecostal 1.7%, Baptist 1.3%, other Christian religions 9.4%, other religions 3.3% (2001 census)

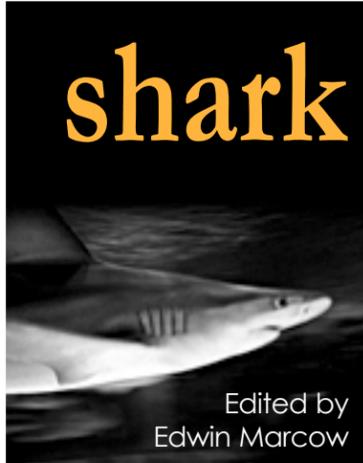
Currency New Zealand dollar (NZD). Exchange rates: 1 USD= 1.43 NZD, 1 EUR=1.89 NZD, 1 GBP= 2.8 NZD, 1 SGD=.94 NZD, 1 AUD=1.13 NZD

Language English (official), Maori (official), Sign Language (official). Anglican 14.9%, Roman Catholic 12.4%, Presbyterian 10.9%, Methodist 2.9%, Pentecostal 1.7%, Baptist 1.3%, other Christian 9.4%, other 3.3%, unspecified 17.2%, none 26% (2001 census)

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Christchurch Hyperbaric Medicine Unit Private Bag 4710, Christchurch, New Zealand (03) 364 0045, Fax: (03) 364 0187

Web sites New Zealand Tourism www.newzealand.com/travel Dive Tutukaka www.diving.co.nz Blenheim Dive Centre www.blenheimdive.co.nz Pacific Coast Kayaks www.nzseakayaking.co.nz



Edited by
Edwin Marcow



Blacktip reef shark held in an aquarium

PETER SYMES

Shark Sinks Boat

In what can only be described as a scene from *Jaws*, a shrimping boat operating off the west coast of Florida was attacked and sunk by a pack of Bull sharks.

The shrimp boat's captain, Rodger Schmall, said that for four days they came under sustained attack by the Bull sharks who repeatedly rammed his ship's hull before one very large 14-foot individual disabled the boat's tail shaft, leaving his ship, the *Christy Nichole*, disabled and adrift 100 miles off the Florida coast.

Schmall radioed in for help and some two hours later his crew were picked up, though Schmall remained on board to pump water out while another vessel towed him back to land. All went

well for the first two hours, but unfortunately for Schmall, the high seas got the better of him, and his ship the *Christy Nichole* sunk to the sea floor.

Sharks and shrimping boats regularly cross paths in the open ocean as the shrimpers cull their unwanted by-catch and throw them back into the ocean. The sharks then move in for an easy meal. For sharks to bump and investigate a fishing boat, its metal running gears, or any metal object near or within the water is common, and any investigations are short lived. To have a boat the size of the *Christy Nichole* damaged to the point of sinking is a very rare occurrence. ■

Cupid, Sweet Pea and Sam, Gil and Scooter

Cupid's on overtime at the "Swimming with Sharks" exhibit at the Newport Aquarium, and looks like he is going to be busy. Newport Aquarium has acquired a very rare male Shark Ray and hope that its resident female Shark Ray, aptly named Sweet Pea, will mate producing offspring for this nearly endangered species. "We're hoping for a love connection right here in the tank," said Jill Isaacs, the aquarium's spokeswoman.

A competition, "Name the Shark", to be held, will determine the new arrival's name, which will be 'Sam', 'Gil', or 'Scooter'.

On-going concern for this species' survival has meant an unfortunate listing on the World Conservation Union's Red List of Threatened Species, so no pressure on the new chap to perform! Mating is still a mystery due to the horn-like ridges on their neck, back, and dorsal fin. Scientists believe the fish copulate with the female carrying any offspring inside, unlike most fish who lay eggs for the male to swim past and fertilise. The program is scheduled to last 12 years so

One of classic scene from the first *Jaws* movie from 1975,

good luck Sweet Pea, Sam, Gil, and Scooter!

Meanwhile the Monterey Bay Aquarium has done it again. A male Great White Shark measuring in at six feet five inches and weighing in at 171 pounds was successfully housed at the centre for 137 days in the Outer Bay exhibit. Living alongside sea turtles, tunas and other sharks prior to being released back into the open ocean.

Since 2002 the aquarium has received ten Great White Sharks, five died, two were released from a holding facility and one escaped.

These ambassador sharks have helped increase attendance numbers at the aquarium by up to 30%. The aquarium has said that displaying the sharks has helped raise interest in their education, awareness and conservation programs. Increased attendance figures have also helped fund the aquarium's tag and release programs too. ■

Call to Cull Bull Sharks

In a world of climate change, destruction of the oceans ecosystems and all the animals that reside within its realm, the further depletion of natural non-renewable energy is faster than we can come up with clean alternatives.

Bull sharks are subject to a distasteful fishing tournament

You just would not think man could fall any lower or be more arrogant and obtuse. I regret we have reached that point.

The Bull shark fishing "Classic Tournament" will be held as an annual tourist attraction on Australia's Gold Coast. The aim is to lure tourists to this area and help clean out these so-called man-eaters from the canals and waterways that ring this coastline.

This shark hunt will be held annually. Ms Bristow said she would target recreational fisherman from the U.S. and Japan. "There is a big market out there," she stated. "We will be tagging the sharks. There will no doubt be some that die from the struggle". The tournament will be run from behind the Marriot Resort and follow the Nerang River.

Ms Bristow said she hoped the competition would be up and running by March 2007. "Hopefully in four weeks it will be confirmed. There are way too many Bull sharks in the water and this concept will help to monitor how bad the problem is," she said in an interview in February 2007.

This competition is even more

distasteful in light of a recent press release from IUCN. Their latest findings reflect that even the fastest, widest ranging sharks are now threatened by over fishing as yet more species are added to the IUVN Red List of Threatened Species. With an estimated 100 million sharks killed each year, either deliberately or as by-catch, and with confirmed shark attacks on man at an all time low according to George Burgess director at the International Shark Attack file at the University of Florida.

This would make the fatality ratio one human to every 10 million sharks, according to some conservationists. That is for every tragic loss of human life in the oceans due to a shark attack, 10 million sharks will die by our actions.

If only more people could follow Toomey's cartoon sticker which featured a kindly looking shark saying, "Please help protect my pal, the endangered Sawfish," the unprecedented response was so overwhelming that this helped list the Sawfish as endangered in 2003. ■



UNIVERSAL STUDIOS



MICHAEL AW

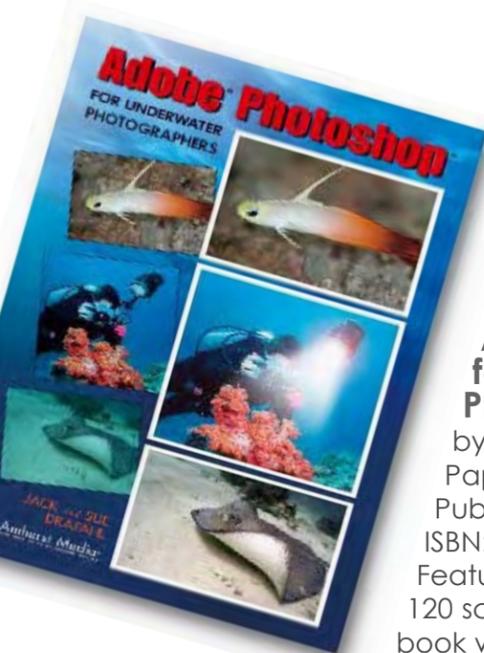




Books Film DVDs CDs

Edited by Peter Symes
& Michael Symes

**POINT & CLICK
ON BOLD LINKS**



Adobe Photoshop for Underwater Photographers

by Jack and Sue Drafael
Paperback: 224 pages
Publisher: Amhurst Media, US
ISBN: 1584281898

Featuring 100 photos and 120 screenshots, this hand-book walks users through the steps of correcting imperfect

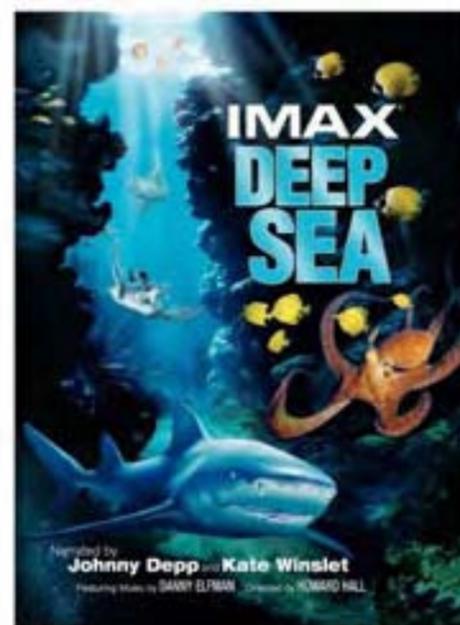
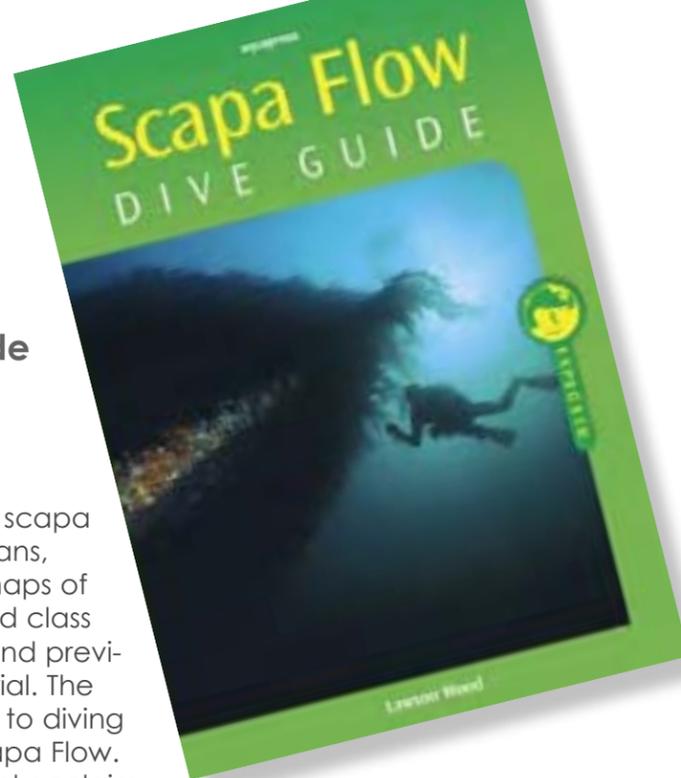
under-water images. Featuring tips on hardware, monitor calibration, and room lighting, the guide also offers step-by-step instructions on how to group underwater images for editing; approach corrections for images that require a multi-step enhancement process; and choose the right output options for printed images, video, slide shows, and Web viewing. The book isn't a Photoshop tutorial, though, so if you're completely unfamiliar with that software, you may need to obtain a primer on that first. The book is available through the Drafael's website www.jackandsuedrafael.com for \$35 (signed). Also at Amazon.com for \$26.37 or Amazon.co.uk for £16.49

Scapa Flow Dive Guide

by Lawson. Wood
Paperback: 176 pages
Publisher: AquaPress
ISBN: 1905492049

A brand new dive guide to scapa flow, featuring 3D wreck scans, highly detailed full colour maps of all locations, full colour world class photography throughout, and previously unseen archive material. The most comprehensive guide to diving the reefs and wrecks of Scapa Flow. Scapa Flow has international acclaim as one of the top five wreck diving

locations in the world and has more diveable wreckage than any other area in Europe. The shipwrecks are a mixture of battleships, cruisers and destroyers from the German high seas battle fleet scuttled towards the end of WWI and the direct actions of the British Admiralty which sank a further 43 ships during both world conflicts to block the entrances to Scapa Flow. Available from Amazon.co.uk for £15.99



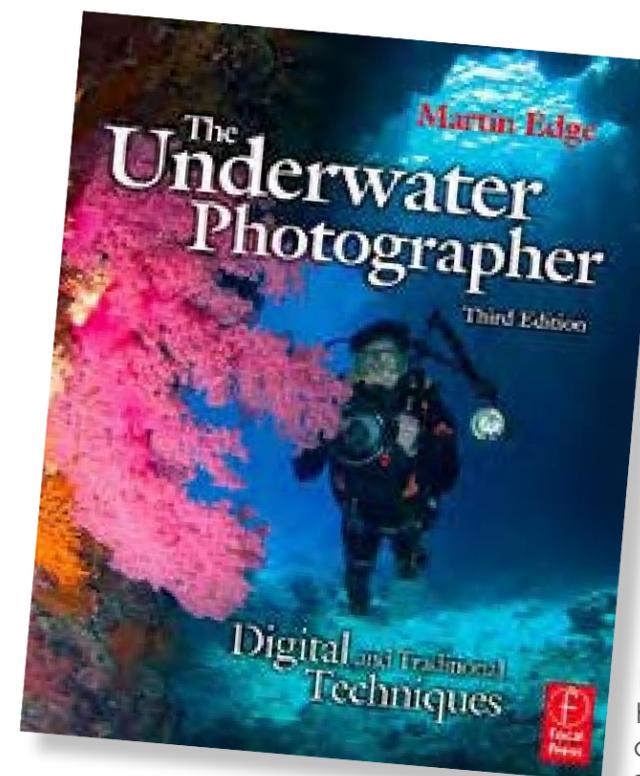
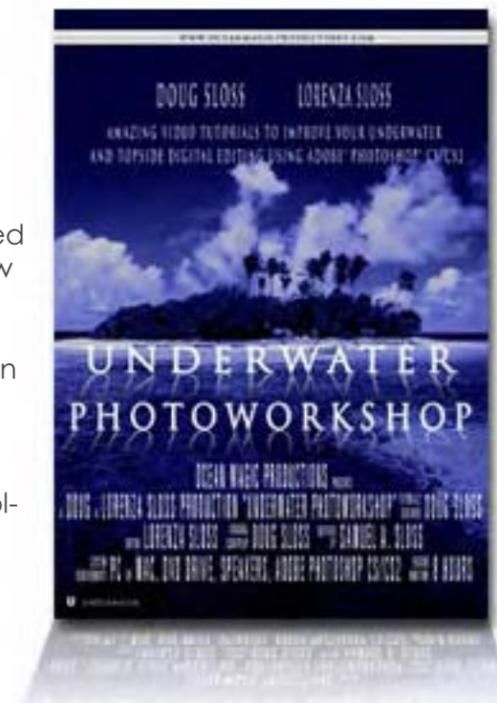
Deep Sea

New IMAX film

Octopuses and squids, 14-foot sharks and 10-inch shrimp swim across the screen in this new IMAX film. The movie gives viewers an intimate look at the life of exotic, colourful and dangerous creatures of the deep. Deep Sea, narrated by Kate Winslet and Johnny Depp, brings viewers to the bottom of the world's oceans to observe the lives and habits of many aquatic species. The movie shows how the species interact with and depend on each other. Many scenes, for instance, show small fish "cleaning" the skin of bigger fish with their mouths, and one scene shows reef fish nibbling algae off a sea turtle's shell. Amazon.com \$20.99

Underwater Photoworkshop

Adobe Photoshop CS/CS2
Over seven hours of detailed video tutorials that will allow you to master the art of digital editing with Adobe Photoshop CS/CS2. You can throw away all your heavy manuals because this is all you will need. Play this disc anywhere you want and follow along correcting your own images at the same time. More information at: www.uwphotoshop.com



The Underwater Photographer Digital and Traditional Techniques

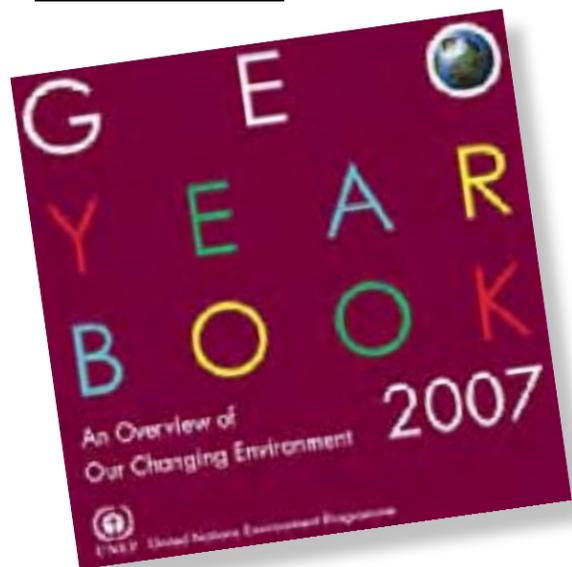
by Martin Edge
Paperback: 408 pages
Publisher: Focal Press
ISBN: 0240519884
Martin Edge has produced the third edition of his classic book. While he provides the basics for beginning photographers, he delves deeply into the digital revolution, helping even the skilled underwater shooter better use his LCD

screen, read histograms, or, if one wants to shoot manually, use exposure modes and solve metering, focusing and TTL issues. Edge accompanies hundreds of his own issues with description of his technique and mechanics. A great teaching tool. Amazon.com \$26.37 or Amazon.co.uk at £23.74

JUST FOR KIDS!

Deep-Sea Books

—recommendations for children



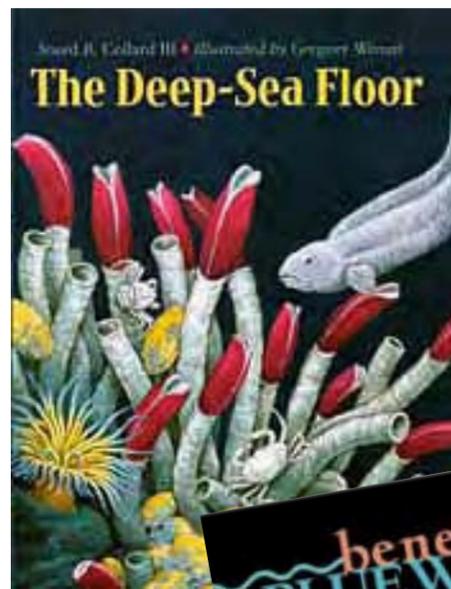
GEO (Global Environmental Outlook) Year Book 2007

New United Nations Report
Paperback: 88 pages
ISBN: 978-92-807-2786-9

The new GEO Year Book notes that climate change may aggravate the fishery situation by increasing the acidity of oceans and seas and bleaching coral reefs, important nurseries for fish, and one management technique for countering the collapse includes a dramatic expansion of marine protected areas.

Written to inform the debate being held by Environment Ministers attending UNEP's 24th Governing Council/Global Ministerial Environment Forum in Nairobi, Kenya, it stresses that the pace at which new marine reserves are being listed means the goal will be achieved three decades after the collapse of today's commercial fisheries.

The Year Book outlines a range of options to steer globalization onto a more intelligent, environmentally, economically responsible and sustainable course if more widely deployed, and acknowledges the importance of responsible business and the power of consumerism to direct globalization. Price: USD 20.00. Can be ordered from Earthprint.com



The Deep-Sea Floor

by Sneed B., III Collard
Paperback: 32 pages
Publisher: Charlesbridge Publishing
ISBN: 1570914036A

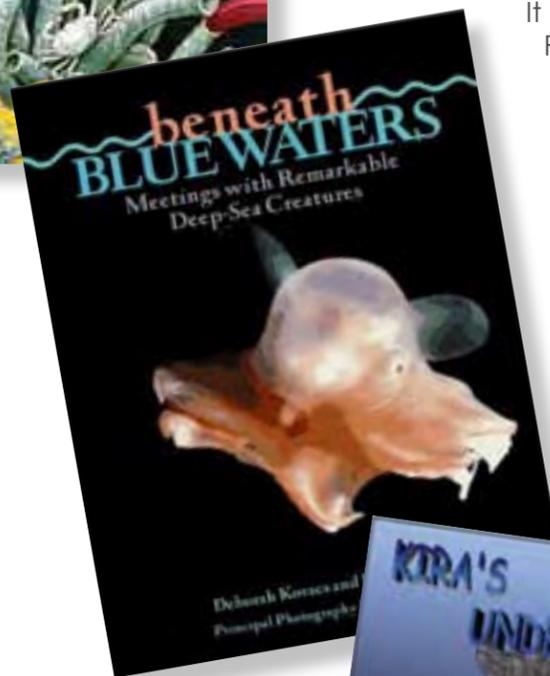
Text that is accessible for even young children. The illustrations by Wenzel help children visualise the environment.
Amazon.com \$7.95, **Amazon.co.uk** £3.60

Diving To A Deep-Sea Volcano

by Kenneth Mallory.
Hardcover: 60 pages
Publisher: Houghton Mifflin Company
ISBN: 0618332057

It has great photographs and follows Richard Lutz, a deep-sea biologist, as he explores hydrothermal vents.

Amazon.com \$13.26 or **Amazon.co.uk** £7.79



Beneath Blue Waters

by Deborah et al Kovacs
Hardcover: 64 pages
Publisher: Viking Children's Books
ISBN: 0670856533

It has excellent photographs several of organisms not yet named.

Amazon.com or **Amazon.co.uk** £2.57

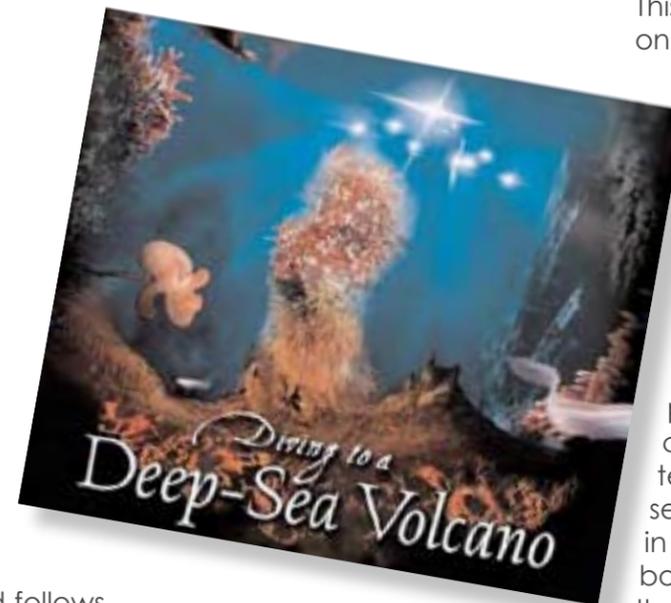


Kira's Undersea Garden

By Verena Tunncliffe
Paperback: 28 pages
Publisher: Trafford Publishing
ISBN: 1412014999

This is about a spider crab that lives at hydrothermal.

Available at **Amazon.co.uk** at £9.49



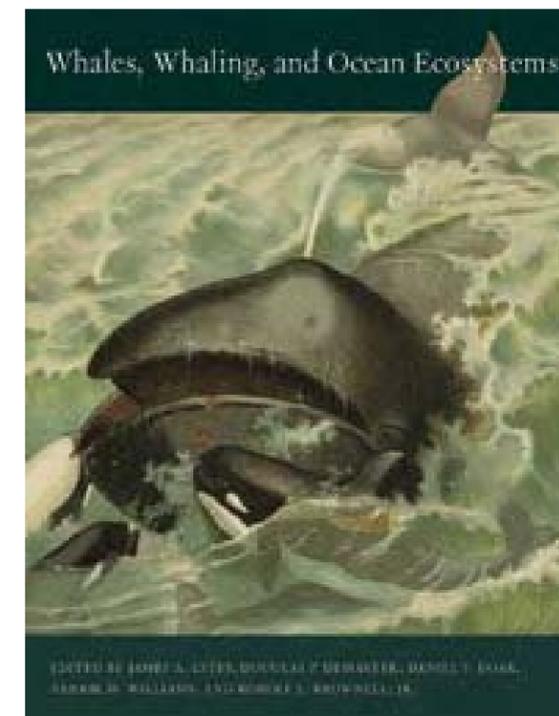
Whales, Whaling, and Ocean Ecosystems

By James A Estes, Editor, and others
Hardcover: 418 pages
Publisher: University of California Press
ISBN: 0520248848

This new book resulted from a workshop on whaling and whale ecology organized by Estes and his co-editors and held in Santa Cruz in 2003. It explores an aspect of whale ecology that until now has received surprisingly little attention. Focusing on the role of whales in ocean ecosystems, the book looks at the effects of industrial whaling in terms of its ecological impact on the world's oceans.

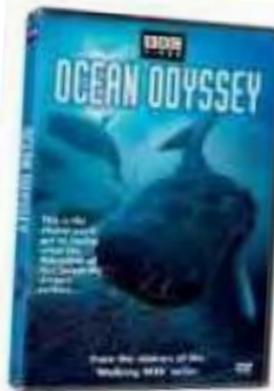
Whales are the largest animals on the planet, and they are such impressive creatures that our interest in them has tended to focus on the whales themselves rather than on the roles they play in the marine environment. But their large body sizes and high metabolic rates make them important players in ocean food webs, and they are found throughout the world's oceans.

This question has important implications for the conservation and management of the great whales. Management strategies must be considered not only in terms of their effects on the sustainability of whale populations, but also in terms of how they



will affect the broader ocean ecosystems in which whales are key players. Many of the questions raised at the workshop remain unresolved, but the book provides a wealth of information for anyone interested in these issues. Estes can be contacted at (831) 459-2820 or jestes@ucsc.edu. **Amazon.com** or **Amazon.co.uk** £34.15

Books, Film, DVDs, CDs



Ocean Odyssey

—The life of an 80-year-old 45-ton bull sperm whale

Format: PAL

Region: This DVD may not be viewable outside Europe

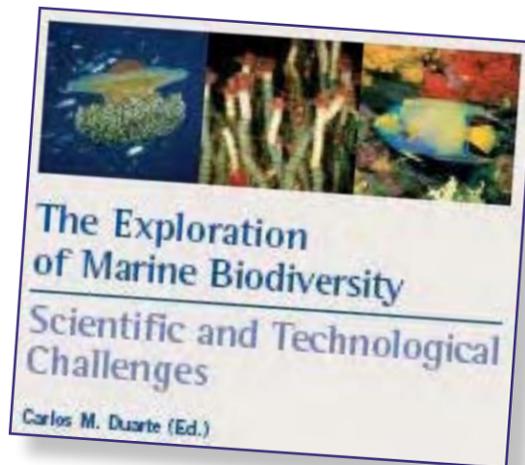
Run Time: 116 minutes

From the BBC makers of the Walking With... series comes an enthralling exploration of Earth's final frontier seen through the eyes of its greatest inhabitant and the world's largest predator, the sperm whale. Following a young male from infancy to old age, the marinescape comes viv-

idly to life: the impossibly deep canyons, the underwater volcanoes, and the spectacular mountain ranges. This DVD, which is divided into two episodes, takes the audience from the time the whale is born until it reaches the end of its adulthood. Along the way, the audience is able to see the other creatures that make up the world beneath the waves; learn about what a struggle it is for the bull sperm whale to survive; and explore the ocean's floor as the whale travels on a never ending quest for food. **Amazon.com** \$16.99 or **Amazon.co.uk** £10.48

Census of Marine Life in Print

CREefs researcher Philippe Bouchet of the French National Museum of Natural History authored a chapter in The Exploration of Marine Biodiversity, published by Fundación BBVA (www.fbbva.es). Philippe reviews the global magnitude of marine biodiversity, including the current accelerated rate of species discovery. ChEss researchers Eva Ramirez-Llodra and David Billett also authored a chapter in this book about deep-sea ecosystems, which featured the innovative work being done by the Census' projects ChEss, COMARGE, MAR-ECO, CeDAMar and OBIS. Scientific Steering Committee member Victor Gallardo also was the author of a chapter on marine biodiversity, which is in The Biodiversity of Chile, released by the Chilean publisher Conama. For further information go to **www.conama.cl**



Say no to shark-fin soup

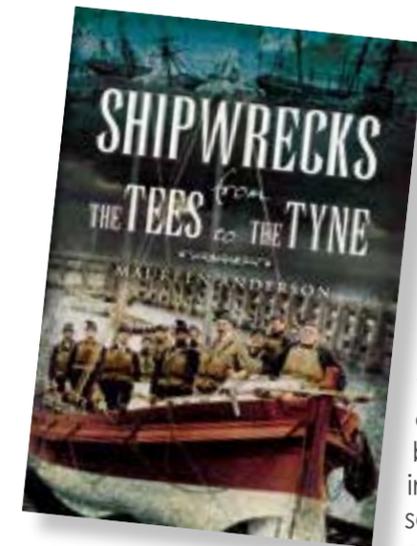
South Africa's Great White Shark

by Tom Peschak

ISBN: 1770073825

Tom Peschak, marine biologist, author and award-winning underwater photographer, hopes his photography will help protect sharks. His most recent book is South Africa's Great White Shark, co-authored with Michael Scholl. He is now working on another shark book with local marine biologist Alison Kock and Scotland's Jenna Cains. This one entails photographing all 50 species of shark off the coast of Africa. The book will be aimed at a wide audience, at researchers, shark enthusiasts, surfers, and the tourism industry. There has been a lot of really good science done on sharks by South African scientists, but very little of it is behavioural work, because obviously it is very difficult to observe sharks.

These won't be scientific papers, but will be in a very accessible style, that will be of as much interest to scientists as to surfers. This is 96 page paperback is available from **Amazon.co.uk** at £7.25



Shipwrecks from the Tees to the Tyne

Paperback: 144 pages

Publisher: Wharncliffe Books

ISBN: 1845630203

A local writer, Hartlepool woman Maureen

Anderson, has delved into the past to explore the shipwrecks on the North East coast of England. Her new book recalls many harrowing stories of lives that were saved and lost in areas such as Hartlepool, Seaton Carew

and Blackhall. There were thousands of shipwrecks in this area, but many of them weren't recorded. The book covers some of the better known wrecks and some not so well known. **Amazon.com** \$25.05 or **Amazon.co.uk** £12.99

New downloadable game

Diver: Deep Water Adventures - Trial-Version

Free high-speed download! Go to **www.4players.de** and then just click on Diver: Deep Water Adventures installation executable and follow onscreen instructions. The game is a bright mixture of 3-dimensional strategy and first person adventure drive. But first you'll need to pass a training course to obtain the professional diver certificate. A great experience is waiting for you along with the captivating assignments, which won't let you be distracted even for a single minute. Did you dream of photographing the mysterious Loch Ness monster? Or to fight a gigantic white shark in a deadly battle and become the winner? The underwater world is full of danger. It's very easy to lose your life. Minimal recommended system requirements: Operational system Windows 98/ME/2000/XP, CPU PIII 800 MHz Pentium IV 1600MHz, RAM 128MB 256MB, DVD-ROM drive 8X speed 8X speed



Deep

—Fishlabs' latest 3D Mobile Game, the beta version of Deep

In Deep, players immerse into a world of a remote water planet with exotic submarine life forms. In service of the Colonial Navy the player makes his or her way under-

water with various tasks like exploitation of resources and production of new goods but also military missions. While exploring the vivid and fascinating underwater world in a high-tech submarine the player will meet other parties with different interests on the water planet. The ongoing conflicts between the Colonial Navy, rebels, pirates and a mysterious marine species will pull the gamer between the lines. Deep is based on Fishlabs' mobile games engine ABYSS 2.0 and is scheduled for Q2 this year supporting a broad range of 3D Java handsets. For more information visit **www.fishlabs.net**.

FREE DOWNLOAD



technical
matters

Column by
Cedric Verdier

Most of the articles one can find about rebreathers deal with potential problems and limits of these wonderful pieces of kit. They give extensive information about oxygen sensors, scrubber duration, electronics and any of the risks associated with this kind of equipment. Becoming proficient with the emergency procedures is a very important component of training and experience. But an aspect that is sometimes a little bit overlooked is how to properly dive with a rebreather.

Text and photos by Cedric Verdier
Additional b/w photos by Peter Symes

Rebreather

Comfort and Efficiency





They swim as gracefully as a grasshopper with a portable fridge strapped on its back and a vacuum cleaner around its head.

forget the most important skills any diver with any kind of equipment should master. Words like simplicity and ease have disappeared from their vocabulary.

Being Streamlined With a Rebreather

Very often, one can see a lot of rebreather divers who don't move in a very efficient way. They swim in a strange position, closer to the seahorse than to the manta ray. They spend a lot of energy fighting against the increased density of water, adding drag and turbulence to the necessary energy one has to spend for their propulsion.

In one of his articles, Jarrod Jablonski states: "Resistance increases as the square of velocity. The energy required to overcome this resistance increases approximately as the cube of the initial energy required. What this means is that if one doubles the surface area of something, this results in a resistance that is four times the original resistance; in turn, this requires an increase in energy nearly sixteen times as great to offset the increase in resistance."

It simply means that a rebreather diver (and all divers in general) should work to reduce their surface area. An article published in DIVE Magazine a few years ago shown that lots of drag were simply created by hoses and danglies not as close as they should be to the diver's body. The gas consumption of a CCR diver is directly proportional to their level of exertion. Using more O₂ to move underwater means hav-

ing a shorter dive time and a higher CO₂ production. Both factors are counterproductive for a rebreather diver who wants to get all the benefits of using such a complex piece of equipment.

Configuration and danglies

Most of the time, rebreathers look very bulky and messy.

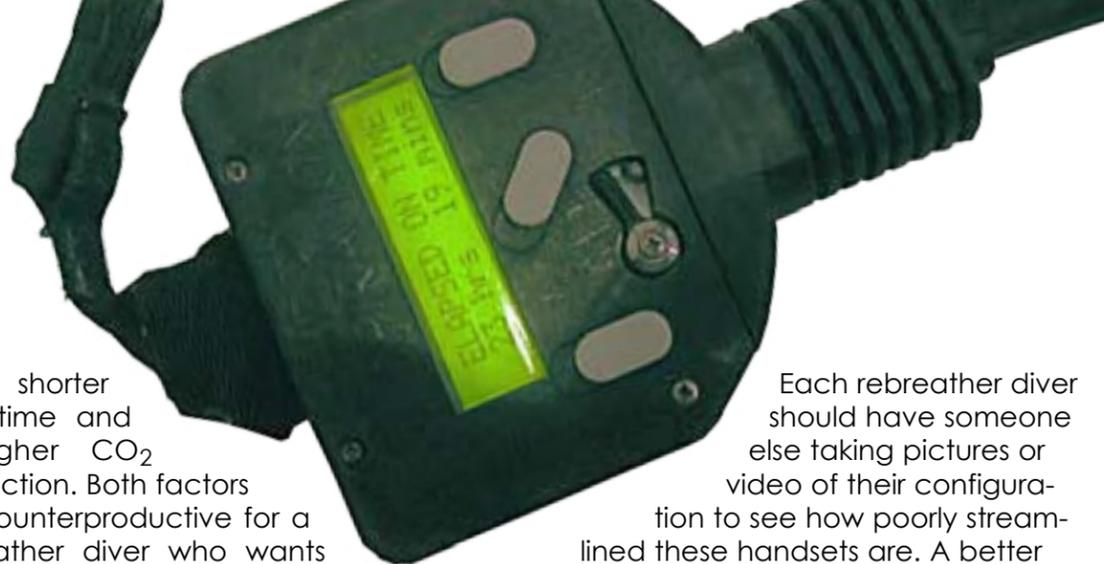


The technical rebreather diver has lots of hose and cable on their chest and their arms. Additional sling tanks and poor configuration don't help to avoid the now

popular astronaut-like image of the rebreather diver. It's maybe satisfying to show that we can manage to dive with heavy and obviously very complicated equipment, but it's definitely not streamlined and efficient.

Handsets: most of the CCRs have one or two handsets that are attached to the diver's forearm. A highly inelegant cable is connected to the electronics, most of the time on top of the canister or the housing on the back of the rebreather.

A rebreather diver (and all divers in general) should work to reduce their surface area



Each rebreather diver should have someone else taking pictures or video of their configuration to see how poorly streamlined these handsets are. A better routing and maybe a chock cord loop at the appropriate location should help to keep the cables close to the body in any position (not only in a vertical position in front of a mirror!).

SPG and LP hoses: in a similar way, a rebreather is full of hoses pointing downward or bulging out when the diver swims horizontally. Shortening the hoses is of prime importance if you want to have a better configuration. And of course, unnecessary hoses and components are like pimples on a fashion-model's face: they should be immediately removed!



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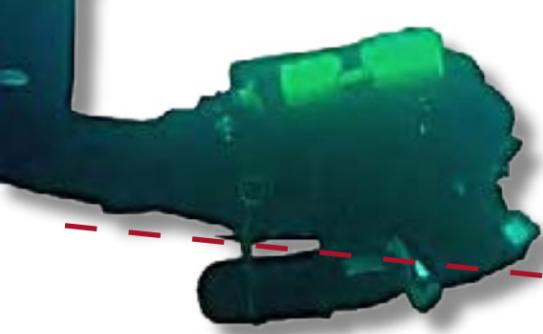
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Counterlung placement: OTS (Over-The-Shoulder) counter-lungs often look very cumbersome compared to the back-mounted counterlungs where the chest area is clear. Nevertheless, even OTS CLs rebreathers can be configured properly to diminish the cumbersomeness somehow. CLs can be adjusted very close to the body, almost under the armpits, without compromising the Work of Breathing and the diver's comfort. Quite the opposite; when the diver has nothing on their chest, they can move more easily, closer to the obstacles or the bottom, with less drag and effort.

Balance and trim

Being able to achieve a horizontal position at all time (slightly head down, feet up) is not one the cave/wreck diver's dream. It should be the main goal for everyone, but it's definitely not the case for a vast majority of the rebreather divers. A balanced rig would avoid the so common "butt-heavy" position. The ideal horizontal position mainly helps when you don't want to silt up a place. Many divers think they are horizontal underwater; it's, most



The sling tank is clearly too low!!!

The first step is to work on the rebreather configuration:

Cylinder and regs: Some rebreathers have the option to de-invert the tanks in order to shift some weight on top of the unit.

Trim weight: The rebreathers with a case don't have a lot of flexibility for their configuration. A trim weight can then be added on top of the unit to offset the unbalance.

Wing and backplate: A short wing with more lift on the bottom than on the top is clearly a useful tool for a better trim. Counterlungs: the position of the CLs is obviously important but their size is also another factor to consider. A smaller volume and less gas (optimal loop volume) help to reduce the uplift component of the vertical vector.

Then the second step is to see how the rest of the dive gear will interact with the rebreather.

Dry or wet suit: a dry suit generally gives a better trim as it provides the diver with some additional buoyancy on the legs. It's most of the time not the case with a wetsuit (specially at depth with the suit compression). Other equipments like pockets or heavy fins (ie JetFins) have also to be considered.



Scubapro's Jetfin is a classic favoured by many, but it is weighty

Additional equipment: Most of the time, a rebreather diver will carry other pieces of gear like sling tanks and canister lights. The buoyancy characteristics of the tanks (full or empty) and the lights have to be thoroughly checked as they can easily ruin a good trim so difficult to achieve! Ask a friend who has a camera to spend some time with you underwater. Then,

back to land, have some fun discovering what you actually look like. Spot all the danglies. Check what could be more streamlined. Go back diving and repeat the process till you become frozen. To speed up this process, a friend of mine even uses a big mirror in his pool. You directly see what could be adjusted and immediately try! Like a dancer in a ball-room.

Mastering Buoyancy Control with a Rebreather

So, let's assume that the trim is now a problem of the past. The next step is **Buoyancy**.

Buoyancy control is an essential element of diving proficiency; it is also one of the hardest skills to master, especially with a rebreather. You have to control the gas in the wing, the dry suit, the breathing loop. You have to take into account the suit compression at depth, the buoyancy characteristics of the tanks when empty

of the time, not true. They are maybe horizontal when they swim but slowly (or quickly!) come back to a more vertical position as soon as they stop swimming. With a balanced rig you can stop close to the bottom and stay horizontal even while doing a specific and difficult task (tying some knots on a guideline, adjusting some settings on a camera/dive computer, helping another diver, etc). A balanced rebreather is sometimes quite difficult to achieve because most of the units have the heavy components on the bottom (valves, regs, etc) and the buoyant components on the top (counterlungs, wings, etc).

*Spot all the danglies.
Check what could be
more streamlined.*



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at the end of the dive, the effect of oxygen automatic injection when you're in the shallows, the gas you loose from the loop when you clear your mask or equalize your ears. So many elements! Few diving skills are so essential, and yet so underemphasized by the rebreather diving community. Buoyancy control can be divided in three different phases:

Buoyancy control at constant depth:

O₂ injection. It might be done manually or with the help of a solenoid valve or a KISS valve. In all cases, oxygen level is kept pretty much constant in the breathing loop and that directly affects buoyancy.



Kiss valve

Optimal Loop Volume. A rebreather diver should have enough gas to comfortably breathe from their loop. If more than a deep breath is possible, it means that there's too much gas in the breathing loop. And too much gas means more O₂ injection to maintain a constant pO₂,

more gas expansion/compression when the depth changes, more buoyancy on the upper part of the body. So many things we should avoid at all cost.

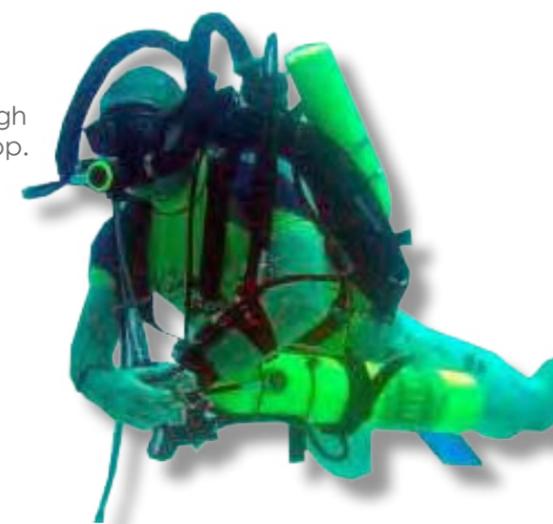
Dry suit inflation. When the pO₂ is spot on and the diver has enough gas to fill their lungs, comfort is another important factor. That's where the dry suit comes into the equation. Some divers need a dry suit because of the water temperature or because of the duration of their rebreather dive, while others simply like the dry suit for its ability to give a better trim. Dry suit inflation is most of the time just enough to avoid suit squeeze at depth, without compromising the diver's buoyancy control, but some divers prefer to use their dry suit as their main buoyancy tool (to a certain extent). It's obviously a matter of practise, experience and personal preference.

Wing/BCD inflation. The wing can certainly be used to control one's buoyancy (it was designed for that!) but only when all the previous elements have been fulfilled. The more tools are used for buoyancy control, the more tools

A rebreather diver should just have enough gas to comfortably breathe from their loop. If more than a deep breath is possible, it means that there's too much gas in the breathing loop.

have to be managed during the ascent. Most of the time, when you realized you start to ascent too fast, it's already too late! Practicing some skills should help you to fine tune your buoyancy. For all of them, do not use your hands to keep your balance or to maintain your depth. Relax and try to make as few movements as possible.

- 1) Float for a few minutes in a slightly head down position while remaining within 30cm off the bottom or of the starting depth if you're practising in midwater (use a point of reference like a shot-line)
- 2) Switch from CCR to open circuit back and forth without changing depth
- 3) Manually fly your rebreather without changing depth
- 4) Remain horizontal and stationary, hovering over a fixed point while focusing on another task (like scrolling down the menu of your computer or your handset)



Buoyancy control during descent:

Controlling the buoyancy at a constant depth and during the descent are very similar, as long as the descent rate is slow. You have to find the right balance between:

- Positive buoyancy
 - Manual/ADV Diluent injection
 - O₂ injection (KISS valve/solenoid/manual injection)
 - Wing inflation
 - Dry suit Inflation
 - Negative buoyancy:
 - Lead weights
 - Gas compression
 - Suit compression
 - Gas lost during air space equalization and mask clearing
- The idea is to go down slowly in order



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to control all these components. A few other skills might help you to achieve this goal.

- 1) Perform a descent in a horizontal position. Many divers have a problem to control their descent rate in this position, as they cannot use their fins to slow down.
- 2) In a horizontal position, slowly descend and stop within 50cm from the bottom or from any predetermined depth. ADV/manual injection can be used, along with dry suit and wing inflation.

Buoyancy control during ascent:

When it comes to buoyancy control during the ascent, rebreather divers have often more problems than their OC colleagues. So many air spaces expand during the ascent that a lot of rebreather accidents are caused by uncontrolled ascent. Starting the ascent with only a small amount of gas in the loop/dry suit/wing definitely helps this kind of ballistic event. Here are some other skills:

Perform an ascent in a horizontal position. The proper positioning of the rebreather OPV (Over-Pressure Valve) is quite important. The alternative is to exhale off the loop to keep the loop volume constant, despite the O₂ injection (manual or automatic) during the ascent. In this position, venting the wing should be done with the dump valve on the bottom of the wing, instead of the corrugated hose that

The author Cedric Verdier prepares for a dive with a CCR rebreather

requires the diver to be more vertical.

Some skills that might be helpful to practise:

- 1) Slow ascent with manual O₂ injection only
- 2) Same ascent but eyes closed (shallow depth)
- 3) Slow ascent and simulated stops on Semi-Closed Rebreather mode.
- 4) Slow ascent on Open Circuit (buoyancy control of an expending breathing loop)
- 5) Slow ascent with all the bail-out tanks nearly empty. Simulated stops with tank exchange with a team mate could also be a useful skill to practice.
- 6) Slow ascent and stop at any predetermined depth, using only manual O₂ injection to maintain your pO₂.

Don't cheat If your rebreather has an ADV, don't shut it off and don't turn the diluent tank valve off. You have to learn how much gas you have to vent without completely emptying the loop.



Mastering Propulsion Techniques

Now you're not only horizontal underwater, perfectly balanced at all time, but you're also motionless exactly at the depth you want to stay. Just add various efficient kicking techniques, and you'll be able to move in any direction with the least amount of energy (a.k.a. oxygen consumption). You'll be comfortable and efficient (less stress and drag). There are a variety of propulsion techniques available to divers. The experienced diver alternates between different types of kicks to reduce muscle cramping and to meet the demands of various diving environments.

Alternate kicks

First, by alternating between kicking styles they allow themselves to rest certain muscles by using others. Second, by varying a kicking style, an experienced diver can adjust their propulsion technique to the demands of a particular environment; by switching from a frog kick to a modified flutter, the diver can minimize silting in a low and silty area where the full movement of a frog kick is restricted by some walls or rocks. Those of you who regularly dive in silty or overhead environments might be concerned about reductions in visibility. A loss of visibility can substantially impact both individual and team safety. To avoid the likelihood of reduced visibility, trim has the utmost impact. With a proper, feet-up swimming profile and reasonable buoyancy control a good diver can safely travel in wrecks and cave passages that are particularly susceptible to diver movement. As exhaust



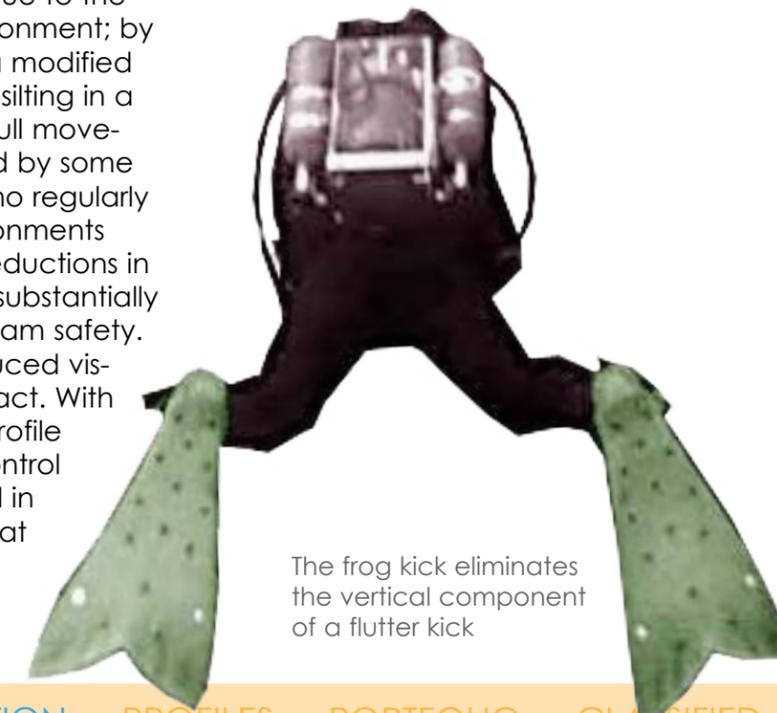
bubbles and percolation are normally not a concern with rebreather divers, the main culprits of reduced visibility are errant fin kicks, erratic hand movements and poor trim.

Modified Flutter kick

Instead of the strong flutter kick used by recreational divers (great deal of power but also significant downward turbulence), the modified flutter kick is based on bent knees and kicks from the knee, directing the water upward. In extremely silted areas, the modified flutter kick can also be done only with their ankles.

Frog Kick

Commonly used by cave and technical divers, the frog kick eliminates the vertical component of a flutter kick. As the modified flutter kick is not really powerful, it cannot be used in high flow conditions or for very long periods of time. Therefore, as the frog kick directs the water up and back rather than down, some divers use it most of the time.



The frog kick eliminates the vertical component of a flutter kick

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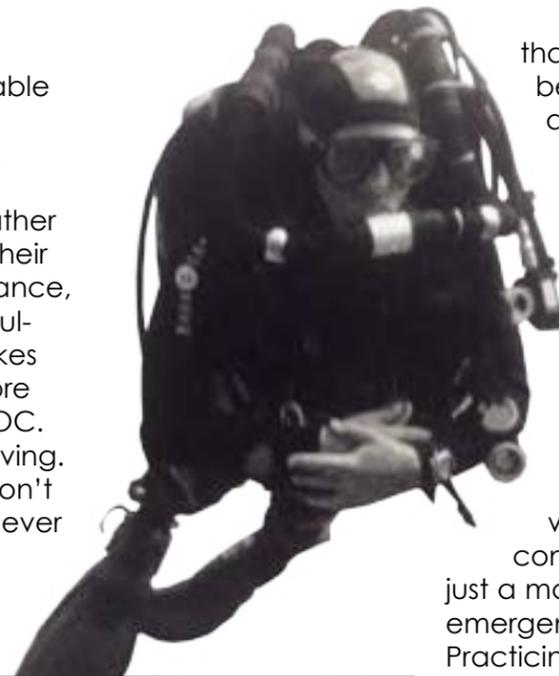
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will more easily be comfortable with their rig.

Why?

Because most of the rebreather divers don't really work on their comfort, their trim, their balance, their streamliness, their propulsion or their buoyancy. It takes more time and it's often more difficult to achieve than in OC. But it's like many things in diving. It's worth the extra work. I don't know any rebreather who never had the feeling that their unit was cumbersome and



that their trim didn't need to be improved. Being comfortable is a way to better enjoy the dive, but it's also a critical component of safety! By practicing all the skills (and more) described in this article, one should achieve the Trinity of the comfortable rebreather diver: Trim, Buoyancy and Propulsion (or TBP). These three essential elements are more difficult to master with a rebreather than with a conventional scuba unit. But it's just a matter of practise. Practising emergency skills can save your life. Practising your TBP will only save your dive. Many people think they are efficient and look great underwater. A short video session quickly changes their opinion and their self-esteem.

Rebreather diving is all about time spent underwater... ■

Some skills to fine-tune your propulsion techniques:

- Alternate between frog kick and modified flutter kick.
- Swim within 50cm from the bottom in a silty area.
- While hovering horizontally, turn your body 360 degrees in each direction using only your legs (no hand movement).
- While floating horizontally, back up slowly while using only your legs (no hand movement).

So, it's all about comfort!

When rebreather divers discuss with open circuit divers, they always talk about the benefits of diving their favourite unit. Some speak about silence, lack of bubbles, low gas consumption, warmth of the inhaled gas, etc. However, one of the main benefits of open circuit SCUBA is obviously its simplicity, especially when it comes to buoyancy control and trim. Compared to a rebreather diver, an experienced OC diver

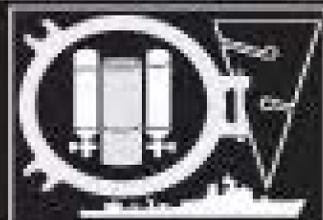
Finally, a GOOD reason for scuba tanks to be heavy

In April 2004, Charles Everett Coma of Olympia, Washington, robbed a bank. Wearing a wetsuit under his clothes, Coma's getaway plan involved rushing to the local pier, diving into Puget Sound and swimming away. However, Coma must've forgotten how cumbersome scuba tanks were, because police tackled him before he was able to enter the water.



After recovering \$6000 and a rifle from the scene, last month, a federal court sentenced Coma to 16 years in prison. Wow. That's one loooooong surface interval.

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Edited by
Daniel Beecham
& Jason Heller

Photo & Videography



Why Shoot Video?

In the past we've focused on teaching you about underwater still photography, including (amongst other topics) equipment, locations and techniques. In the next few issues, we're going to be diversifying a little, with a series of articles about underwater video.

As with any topic, there are various degrees of understanding to underwater video. For now, we're going to be concentrating on helping you get to grips with the basics, and we'll be breaking it down into small digestible topics, which will include:

- Equipment (camera's and housings, planning a trip or shoot)
- Lighting and Colour (underwater lights, white balancing, using filters)

- Technique (diving for underwater video, camera movements)
- Post processing (capturing, editing, colour correction, sharing)

In this first article, we're going to look at some general video theory, including:

- Why shoot video?
- Formats
- Frame rates
- Progressive or interlaced?
- Aspect ratios

Why Shoot Video?

People have different reasons for first taking a video camera underwater. Some divers turn to video in an effort to generally rejuvenate their interests in diving. Once you have a camera in your hands, the quietest of dive sites can become a haven, you can spend an entire dive waiting to capture a certain fish species, or rare behaviour.

For others, it can be out of necessity. Many resort or live-aboard dive guides shoot holiday videos for guests to supplement income. Commercial divers regularly use video camera cameras for inspection work, to show a client a progress or damage to an underwater construction.

There's also the obvious application of professional filming work for documentaries and feature films. A select few individuals specialize in high definition and large format film work, creating 'blue-chip' documentaries for broadcast and theatre release. The majority of divers however simply shoot for fun, and to share their underwater experiences. Thanks to technological advances, it's now easier than ever to successfully shoot, edit and share your videos.

Cameras are simultaneously getting cheaper and better, and the technology surrounding underwater housings and lighting systems is also helping us to achieve consistently better results. Many computers now come with video editing software such as iMovie, which allow you to easily put together basic movies. You can also buy consumer version's of professional soft-

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An HDV camera housing

ware packages such as Final Cut Pro, these provide an end to end software solution, allowing you to capture footage from your video tape, edit and output to a variety of different formats.

Sharing your videos is now also easier than ever. With the advent of websites such as youtube, you can share your videos with friends and family, or create podcasts for people to subscribe to and regularly download. After taking all this into account, there really seems that there's never been a better time to get into underwater video.

Formats

There's a number different video formats available these days. We only really need to look at a couple, DV and HDV. Other formats



An underwater white-balance chart



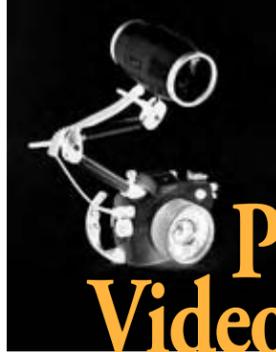


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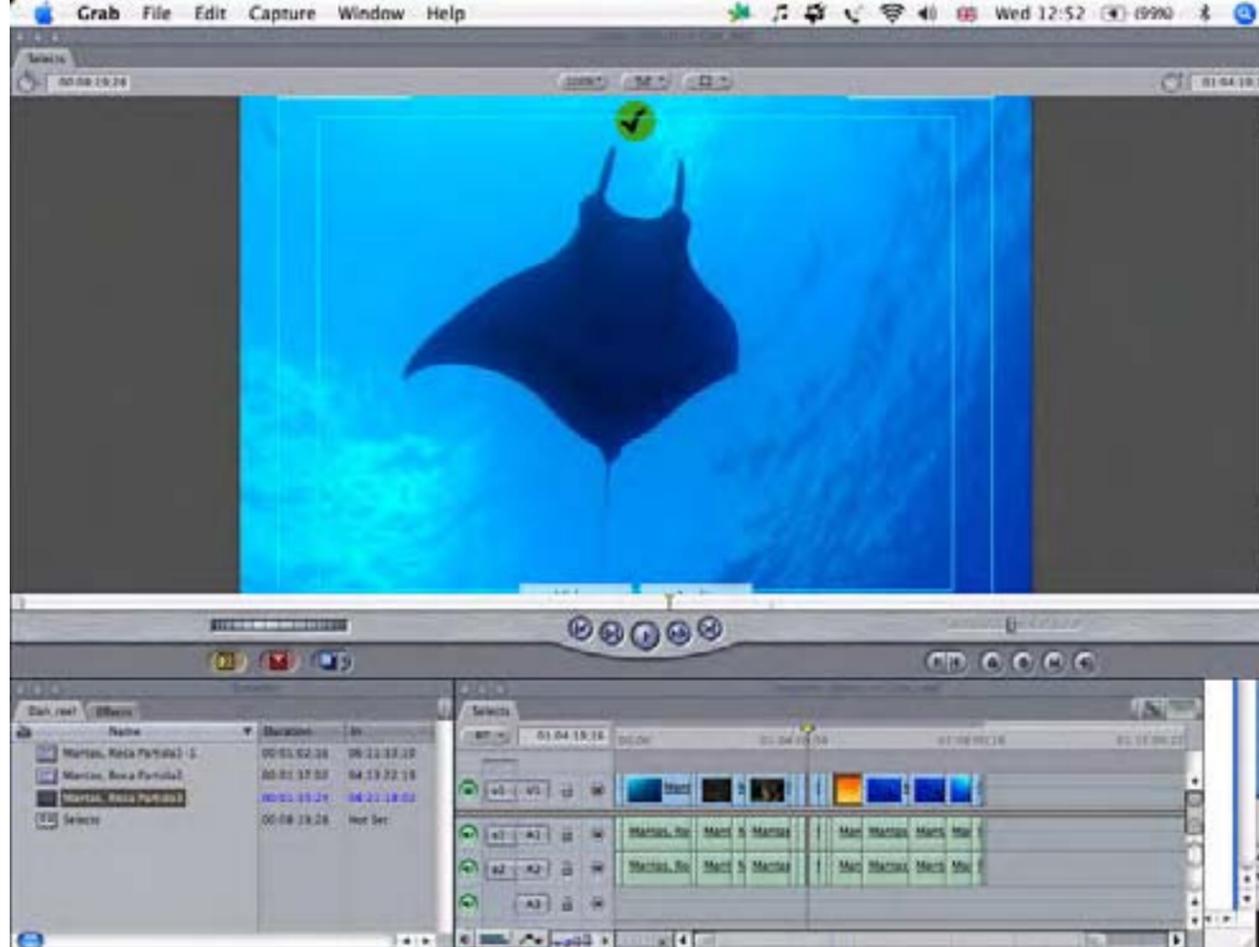
A camera housing with an underwater lighting system

generally remain solely the territory of professional cinematographers, and are not suitable for recreational divers for a number of reasons, including the costs involved, as well as the logistical issues relating to transportation of large numbers of support equipment that professional systems demand.

Software packages such as Final Cut Pro (FCP) allow you to edit your movie, and output to a variety of different formats.

DV has been a popular format for a long time now, and is still very popular today. The cameras are still available to buy, as are the housings and other support equipment, but the advent of a newer, better format has taken DV's place as the most common video format in use.

Roughly three years ago, Sony released their first HDV camera. Since this time, the HDV format—which was created by a consortium of manufacturers including Sony, Canon, Sharp and JVC—has gained tremendous popularity. Many production companies and networks have adopted the format for a variety of uses. Often times, to save costs, a production may consist of a mixture of true



High Def material alongside HDV material, the picture quality is that good. Even though its been adopted by major industry players, don't think that HDV is for professionals only. Many different manufacturers produce HDV cameras, and there are models available for as little as \$1000, which produce stunning results. More and more cameras become available, some of which even have switchable frame rates, or can be switched between progressive or interlaced modes. Both DV and HDV use the same storage medium—mini-DV videocassette tapes.

FPS, Frames per Second

The number of images that a video camera records in a second is known as the 'frame rate'. In order to trick the eye into seeing movement rather than a series of still images, a minimum number of frames per second must be seen. Old mechanical cameras used to shoot frame rates as slow as six or eight fps, but modern, professional level cameras can shoot as much as 120fps, which can be used to

show fast action in slow motion.

Different geographical regions use different frame rates, for example Europe, Asia and Australasia use 25fps, which is known as PAL. USA, Canada and Japan, etc., use NTSC or 29.97fps. Generally, you'll only ever shoot the frame rate that is used in your country of residence.

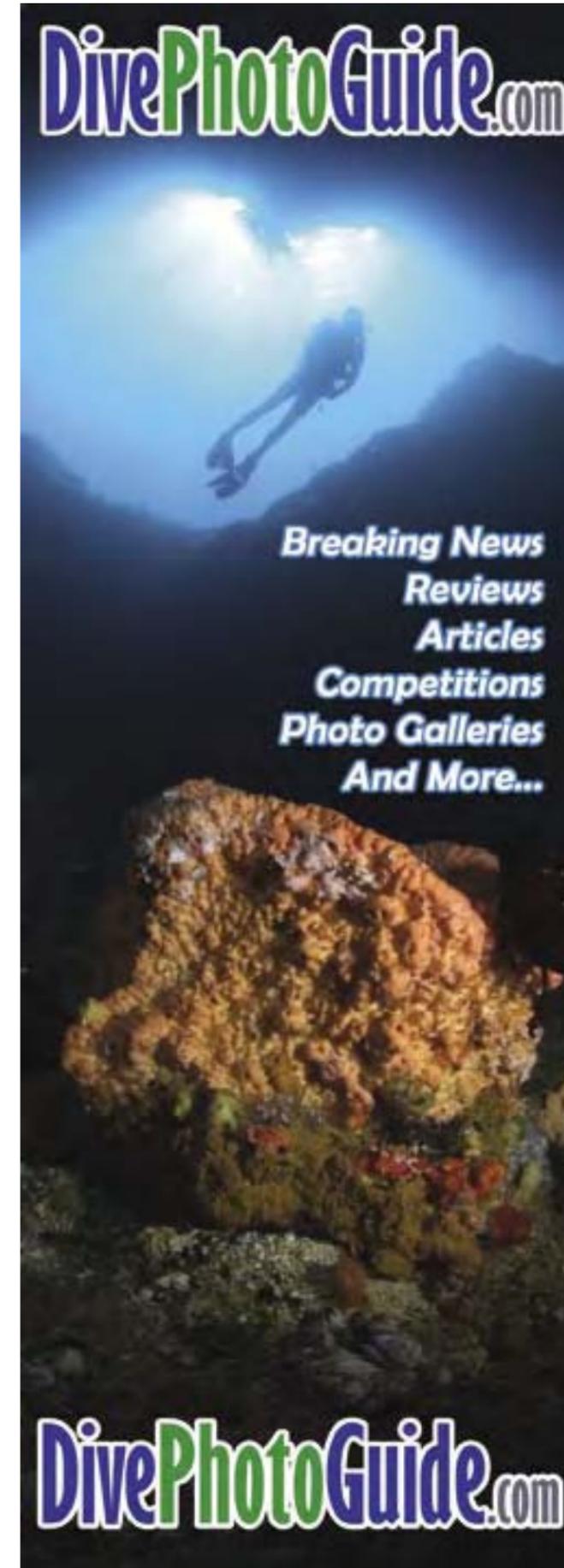
Progressive or Interlaced?

Video cameras can record in either interlaced or progressive formats. Interlacing was created as a means to provide visual quality inside the limitations of narrow bandwidth for broadcast. When material is interlaced, every frame is divided into odd and even horizontal lines, and the two are scanned separately.

Progressive, as it sounds, progressively scans each individual frame, in the same way that a film camera does. Many professional level video cameras can be set to record either progressive or interlaced. Oftentimes, people choose to shoot progressive



There are numerous different video formats, here you can see a comparison between a few.



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When material is interlaced, every frame is divided into odd and even horizontal lines, and the two are scanned separately. If progressive, each individual frame is scanned individually, like a film camera.



16 x 9
4 x 3

16 x 9 and 4 x 3 are both popular aspect ratios. Here, you can see how the two differ, and how your frame can be used in different ways to compose your subject

are 16 x 9 and 4 x 3. Traditional television screens are 4 x 3, but new high definition and 'widescreen' displays are 16 x 9. This is the same aspect as traditional 35mm film, and so has a more cinematic look and feel. 16 x 9, as a general rule is a more popular aspect ratio these days, one reason being that the human eye view's a widescreen image more comfortably than a traditional 4 x 3 one. On a personal note, I find working in the 16 x 9 aspect ratio much more enjoyable.

the screen would be 4 x 3, if you shoot 16 x 9 then you'd either need to 'letterbox' your final movie, or adjust it in some other way when you edit it.

Hopefully now some of the jargon behind video cameras is a little clearer. In the next issue we'll be looking closely at what cameras are available on the market today, what their advantages and disadvantages are. We'll also look at some different types of housings, and what other equipment considerations you should undertake before you decide to get wet! ■

as it gives a more filmic, cinematic look, as well as ensuring the maximum compatibility with old film stock. The ability to switch cameras inbetween interlaced and progressive formats is now filtering down into smaller, consumer level cameras.

Video format abbreviations often include an 'i' or 'p' to indicate interlaced or progressive recording: 50i, 60i, 24p etc.

For some applications, including underwater and wildlife video work, interlaced formats can be more popular. Fast moving subjects, like the subjects we often

encounter underwater are preserved better when using an interlaced format, but ultimately what you shoot is down to personal preference.

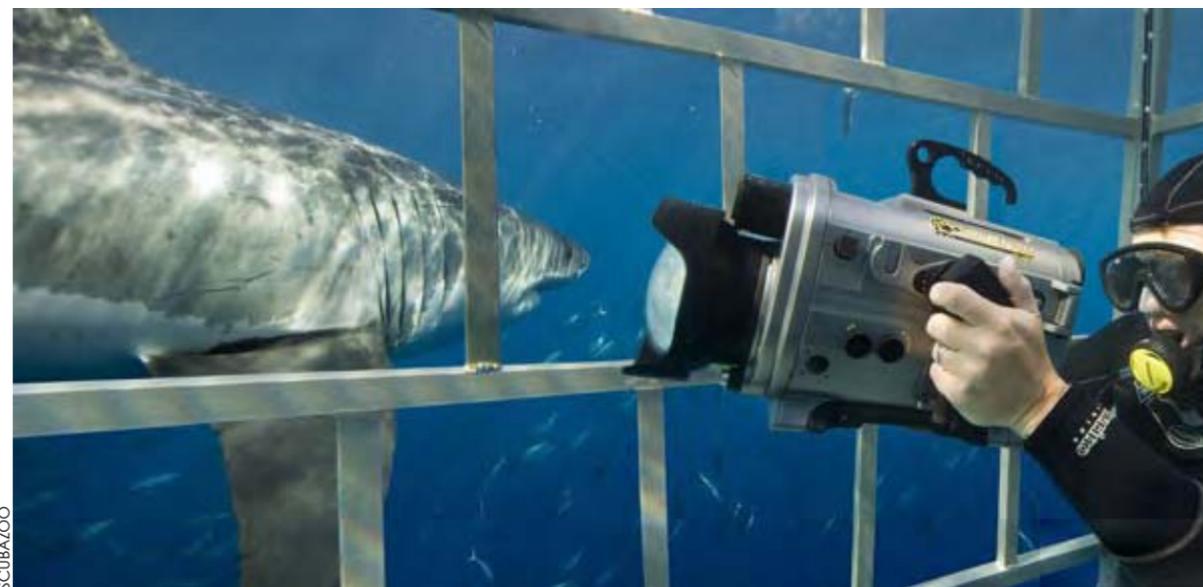
It's important to look into the various frame rates and formats before you make decisions on purchasing equipment, make sure that the camera you're looking at shoot's the right format for the kind of work you plan to do.

Aspect Ratio's

The term aspect ratio is used to describe the width and height of your video picture. The most common aspect ratios

It's worth bearing in mind the final use of whatever footage you're shooting. If you want to view it on your home TV system, then you'll may be best going for 16 x 9, but if you exclusively want to view it on a personal device, such as an iPod,

Scubazoo at work (see article in previous issue) with a digital video



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Next in the series of Underwater-Competition.com underwater photo and video competitions, and on the heels of the popular Our World Underwater and DEEP Indonesia competitions, popular underwater imagery websites Wetpixel and DivePhotoGuide have teamed up with the 2007 SCUBA Show to develop a competition for amateurs and hobbyists entitled "UNDER THE BLUE". Winners will be announced online and exhibited at the 2007 SCUBA Show in Long Beach, California, June 2nd - 3rd. **Deadline May 12, 2007.**

Photographers will compete in four still image categories, including a category for images that focus on California's unique and beautiful underwater environment, and one video category. Winners will share in more than \$20,000 in prizes, including premium dive travel, and underwater photo and video equipment! Travel prizes include trips to some of the top photo destinations in the world including Fiji, Indonesia, Papua New Guinea, South Africa and Australia. 15% of entry proceeds will be donated to marine conservation efforts.

2007 CATEGORIES

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www.UnderwaterCompetition.com



Sealux ultrawide for Sony HC1

The new fisheye port for Sealux' HD1 Housing for Sony's HC1 boast a 145° shooting angle and permits for a 6x zoom. It weighs in at 1500 gram, is rated at 90m and comes with a 2-year warranty. www.sealux.de



Canon Releases the EOS-1d Mark III Digital SLR

EOS-1D Mark III is the world's fastest digital SLR camera. At 10 frames per second, the 10.1 megapixel EOS-1D Mark III digital SLR can fire huge motor-driven bursts of 110 Large JPEGs or 30 RAW files. The all-new 10.1 megapixel, APS-H size CMOS sensor which is designed and manufactured by Canon, is the most light-sensitive and innovative sensor that Canon has developed to date. A new microlens array and a more efficient pixel structure for ultra-low noise, resulting in exceptional image quality and an amazing ISO range of 100 to 3200 with extensions to ISO 50 and a highly usable ISO 6400.



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Light & Motion has announced the Bluefin HC7, an underwater housing for the compact Sony HDR-HC7 HDV camcorder. The Bluefin HC7 will allow manipulation of the camcorder's touch screen menu to provide access to one-touch manual white balance, independent aperture and

shutter speed control (a great feature of the HC7 camcorder), Tele Macro mode, and Smooth Slow Motion. Also standard on the Bluefin HC7 is Light & Motion's signature Smart Grip Handles, an underwater microphone, flip-down color correction filter, and an all glass zoom through lens. Pricing has not yet been

announced, but will likely be \$3,099 USD. VIA WETPIXEL.COM

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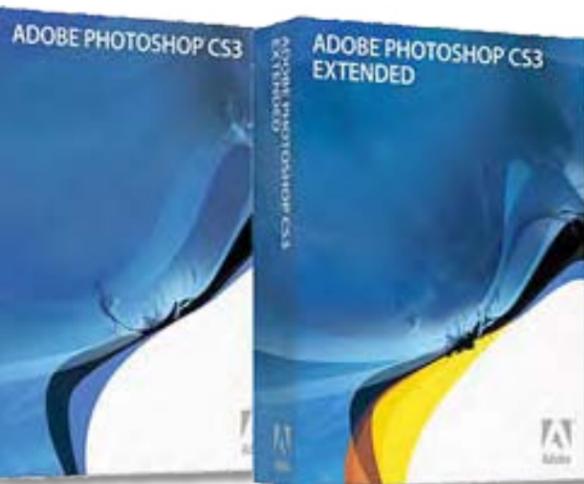
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Photoshop CS3 is out

Adobe announced Adobe Photoshop CS3 and Photoshop CS3 Extended, two editions of the professional industry standard for digital imaging. Photoshop CS3 software is a major upgrade, offering new innovations in editing power and productivity for designers and photographers.

www.adobe.com



Call for entries

ADEX Photographer of the Year Competition 2007



How to Enter and Regulations

1. The ADEX PHOTOGRAPHER OF THE YEAR COMPETITION is owned by Suntec Integrated Media and managed by the Ocean Geographic team. The contest is open to all participants worldwide.

Definition of Categories:

Seascapes (WA):

Any image taken with a wide-angle lens showing reefs scenery with or without animals as main subject. Model permitted.

Macro (MA):

Any image taken with a macro lens showing part of or entire a subject that is smaller than 20cm (8").

Animal Behaviour (AB)

Any image showing natural behaviour of marine animals.

The categories for the ADEX Photographer of the Year Competition are Seascapes, Macro and Animal Behaviour. The final round of the competition will be judged "live" at ADEX 2007, where the judges, made up of distinguished underwater photographers, will give their scores and critiques. There will also be a Q&A session for participants to learn the finer points of successful underwater photography. For the top honour of "ADEX Photographer of The Year" the audience will cast their votes on the finalists selected from the three categories. Winners of any of the three categories stand a chance to win a SEACAM Nikon DSLR housing!

15. Entry fees:

One category is AUD \$10
Two categories is AUD \$15
Three categories is AUD \$18

- Participants must first register to compete with the competition application form (download) and submitted to APOYC@-underwaterartists.com; deadline for registration is 18 April 2007 - 1600 hrs GMT +.
- We will acknowledge your application via email within 24 hours, and we will advise you of your Competitor ID / entry number. We will also forward instructions on how to submit your images.
- Submission by email only; Images must reach us by email: 20 April 2007 - 1600 hrs GMT +7. We recommend you send registrations as soon as possible.
- Images must have been taken in the wild, underwater, with a digital camera. Aquarium photos will not be judged. Over-under shots are permitted, but digital composites or montage are not.
- Images may not have been winners in any competitions.
- The categories for submission are Seascapes, Macro and Animal Behaviour. You may present up to three images in each category.

- The final round will be judged 'live' during ADEX 2007 - 28 and 29th April 2007; sessions time to be announce on site. Two sessions with live audience and live video broadcast over show floor.
- Participants will be invited to attend the judging sessions.
- Subject to space availability, all entries will be presented on the show floor but only the finalists will be presented for the final 'live' round judging during ADEX 2007. Though the juries will present their scores, critiques and summary of their competition.
- Competitors agree to reproduction of their pictures for the ADEX PHOTOGRAPHER OF THE YEAR COMPETITION archives.
- Competitors agree to the use of their works by the ADEX for the

promotion of future competitions. Winning images may be shown to the public at future event. At each use of the works the name of the author will be mentioned but no payment for use of the copyright or no retribution of any kind will be possible. No commercial use of the image will be made by the organizers of the competition. Individuals wishing to purchase any of the works will be put in contact with the photographers.

- The Ocean Geographic Organizing Committee will consider that, according to law, all works presented are free and clear of copyright and that the images are the exclusive property of the authors. By their participation in the competition, the authors undertake to guarantee the organizers against any claims that might be made against them. Ocean Geographic may in no way whatsoever be held responsible in cases of dispute or litigation.
- The decisions of the jury are final. Participation in this contest entails acceptance of the above regulations.





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www.barnaclebusters.org
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Promoting safe diving and having fun
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www.sportsdykning.dk
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Woman's class ring returned after 20 years

Twenty years ago, Clare Lopez, diving on Mauritius' La Cathédrale, accidentally lost her class ring. Admitting, "Wearing jewelry to go scuba diving was just dumb altogether," the ring simply slipped off her finger and plummeted to the depths. Resigned to the fact that she lost her keepsake, Lopez went on with life.

Fast-forward 20 years. Last month, German diver Wilfried Thiesen spotted something glittering in the sand off La Cathédrale. Approaching it, he noticed it was a ring and pocketed it. Later, on the surface, he noted

the name of the college on the ring (Notre Dame of Ohio) and contacted the school, asking if they knew anyone who had lost a ring in Mauritius. Somehow, word got around, and shortly thereafter, Thiesen sent Clare her ring. Evidently, the ring was just as shiny as the day she lost it.

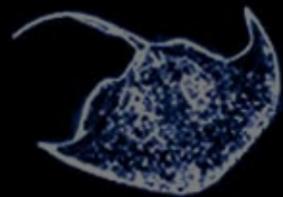
Amusingly, when asked if she had ever found anything while diving, Clare responded, "I brought back shells." Not quite the same, is it?

SOURCE: WWW.WASHINGTONPOST.COM ■

Wet & Weird



News edited by
Willy Volk



X-ray mag

Business Directory

Publishers

Best Publishing Co, Flagstaff, AZ, USA

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www.fourthelement.com

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www.nocturnallights.com

Reefling Clothing

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www.reefling.com

Silent Diving Systems, USA

Closed circuit rebreather distribution
www.silentdiving.com

Non-Profit Organisations

International Association of Handicapped Divers (IAHD Foundation)
www.iahd.org

Coral Reef Alliance —Working together to keep coral reefs dive

www.coralreef.org

The Manta Network

Help Save the Mantas
www.save-the-mantas.org

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DiveGuru, Deerfield, FL, USA

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Swedish divelink index
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www.linesandshadows.com

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www.scubaduba.com

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www.scubaspots.com

Scuba.start4all.com —Diving directory in cooperation with Diving World
www.scuba.start4all.com

ScubaDiveSites.com, Australia

Listing Dive Sites Worldwide
www.scubadivesites.com

UK Diving

—UK Scuba Diving Resource & Network
www.ukdivers.com

Underwater Australasia —Australia & Asia Pacific's most popular dive portal

www.underwater.com.au

UnderwaterTimes

—A daily journal of life in and around water
www.underwatertimes.com

University of Michigan, OSEH

Dive links by Larry "Harris" Taylor, PhD
www-personal.umich.edu

WetPixel, USA

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www.wetpixel.com

World-Newspapers.com

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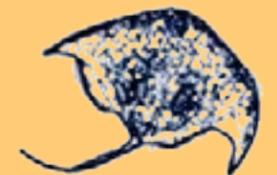
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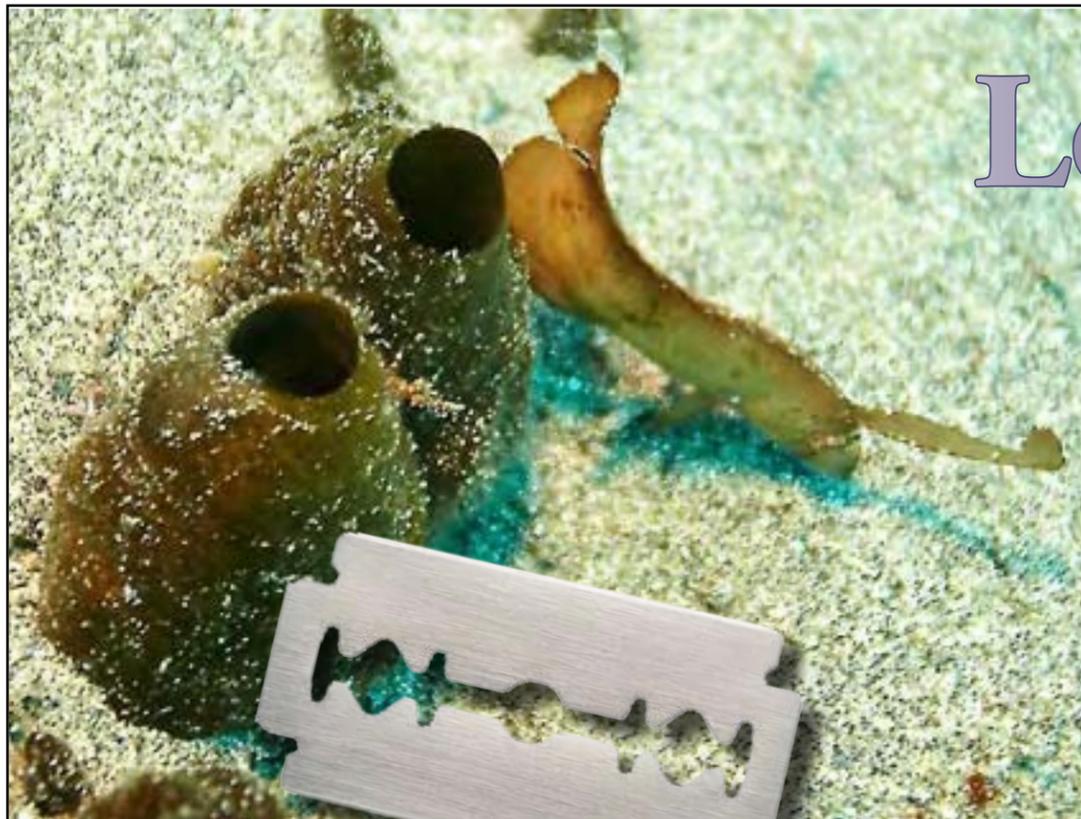
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Wet & Weird



News edited by
Gunild Symes



MICHAEL ARVEDLUND

Razorfish LOOKING SHARP

From John E. Randall¹, and Andrew S. Cornish (2000)

Labrid fishes of the genus *Xyrichtys Cuvier*, popularly known as razorfishes, are aptly named, not only because razorfish is the direct English translation of the Greek derivation of the generic name, but because it appropriately refers to the highly compressed body, and in particular to the sharp ridge at the front of the head.

These fishes live over open stretches of sand substratum and are well known for their ability to quickly dive head-first into the sand with the approach of danger.

If a scuba diver swims toward a razorfish, it may retreat, perceiving that the diver does not move with the speed of a large predatory fish such as a species of *Caranx*. If the diver persists in pursuit, the razorfish may move to another location where the sand is without

obstruction and provides easy entry. It will hover over the site with its head oriented slightly downward.

At this moment, any sharp movement or continued approach by the diver will result in an amazingly rapid dive by the fish into the sand.

If one digs into the sand at this site, one usually fails to encounter the fish. If the digging is swift, one may touch the fish, only to find it moving away faster than one can dig by hand. ■

Jeroen Verhoeff

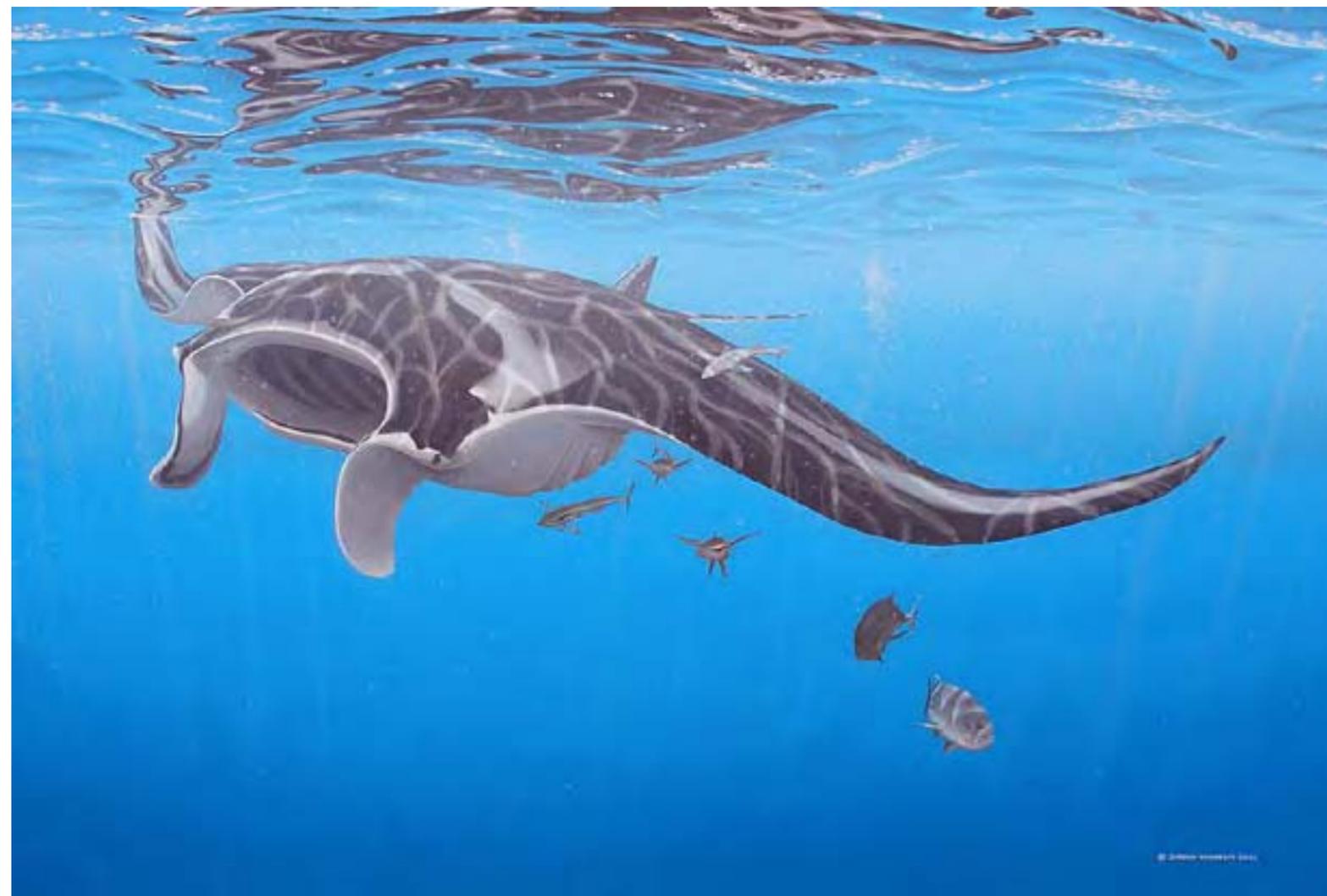
P O R T F O L I O



JEROEN VERHOEFF

Atlantic Mackerel search of food under the surface of the North Sea. It is a common fish, but still very beautiful. At market, consumers buy mackerel as a blue fish, but alive in the sea, they are a vivid iridescent green. *Scomber scombrus* by Jeroen Verhoeff. 160 X 82 cm. Acrylic on panel. 2006 commission: sold. Available as a signed, numbered limited edition giclée print of 100 with certificate of authenticity. Unframed 80 x 41cm, €200 / US\$270





A manta ray swims slowly under the surface of the Indian Ocean. Her mouth wide open, she feeds on plankton, accompanied by Striped Remoras and Giant Trevallies who catch a ride while hiding under her belly. *Manta birostris*, *Echeneis naucrates* and *Caranx ignobilis*, by Jeroen Verhoeff. 120 X 80 cm. Acrylic on panel, 2006 commission: sold. LEFT: Common dolphins and Cory's shearwater, *Delphinus delphis* and *Calonectris diomedea* by Jeroen Verhoeff. 55 x 80 cm. Acrylic on panel, 2006. Original sold

Wildlife artist, Jeroen Verhoeff of the Netherlands, loves the underwater world. It is his favourite playground. While Verhoeff is not yet a certified diver, he does snorkel quite a lot and explores many rivers, streams, ditches, mangroves, reefs and areas of open ocean around the world as often as he can.

"The underwater world is simply more special to me than the land," he said. "The light, the murkiness, the silence, the way a snorkeler is almost equal to the surrounding animals, the feel of flying, the excitement of being in another element, the feel of gliding through weeds like an eel, the excitement of being tossed about like a leaf in the surf on a reef... I could go on forever," he said. "Water moves me."

From these enthusiastic treks into the underwater realm, comes Verhoeff's inspiration to create the

Text by Gunild Symes
All images courtesy of Jeroen Verhoeff



Not well known due to its small and northerly distribution, Atlantic white-sided dolphins are some of the most beautiful dolphins in the world according to the artist who tried to capture them hunting in the North Sea in this image. By isolating and herding a school of Herring against the surface of the sea into a so-called "bait ball" the dolphin are able to snatch fishes out of it.
Lagenorhynchus acutus by Jeroen Verhoeff. 160 X 82 cm. Acrylic on panel. 1999 commission: sold.



Harbour Seal and Plaice, by Jeroen Verhoeff
36 x 60 cm. Acrylics on panel, 2003. Original sold



*Great Cormorants, *Phalacrocorax carbo sinensis**, by Jeroen Verhoeff. 90 X 60 cm. Acrylic on panel, 2003. Original sold

dynamic, vivid and awesome images he paints of underwater scenes and the behaviour of various species of marine life.

Verhoeff is a man of many hats. He is a writer, illustrator, designer, travel guide and cartoonist. His love for nature started at an early age when he began to sketch and paint.

Since then, Verhoeff has developed his talents into a career. Verhoeff is a realist and enjoys rendering images as realistically and originally as possible.

Throughout his career in painting, Verhoeff has tested various creative processes to get the results that he desired in his paintings.

While painting from photographs was a common method in naturalist art, Verhoeff grew bored quickly with it and tried instead to work from field experiences and memories aided by reference images. He found this method too imperfect. So, he finally developed a third method, which was the most time-consuming

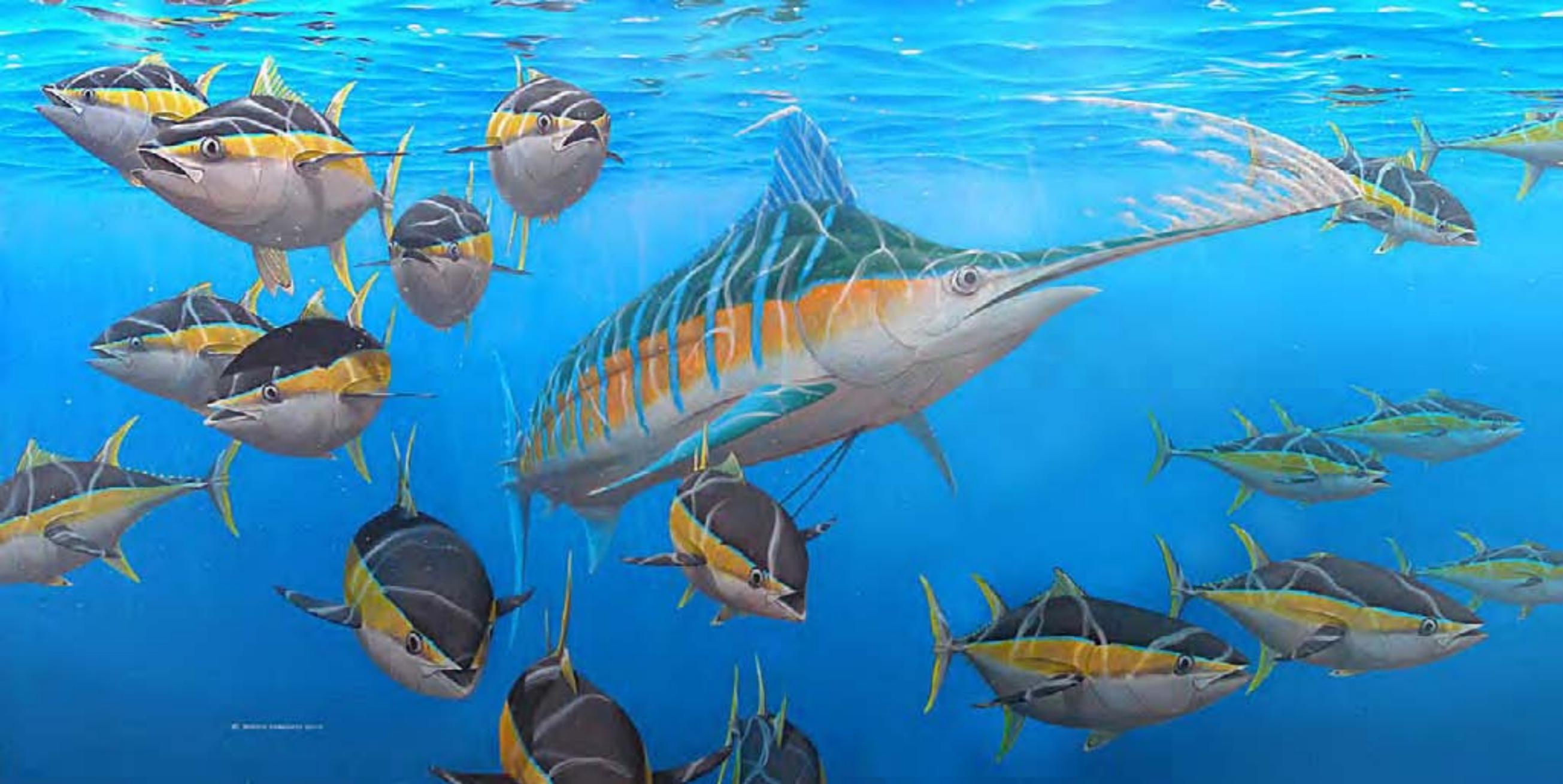
Verhoeff

one of all. He worked from research and field studies to develop a model and a model table to finally render a finished painting.

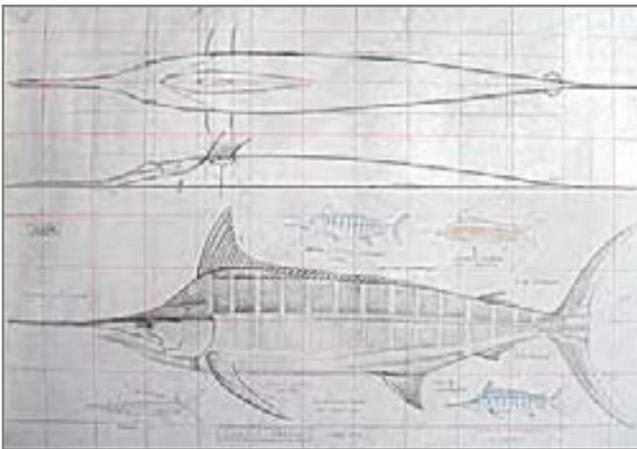
The method

Here is how it works. To design scenes of wild animals and their behaviour as they really are in nature, Verhoeff goes beyond what the general public gets to see. He does research in the field. With photography, film and video footage, wildlife literature and museum specimens, Verhoeff studies a specific animal until he feels that he understands it well enough to sketch several views of it—from the front, side, back, above and below.

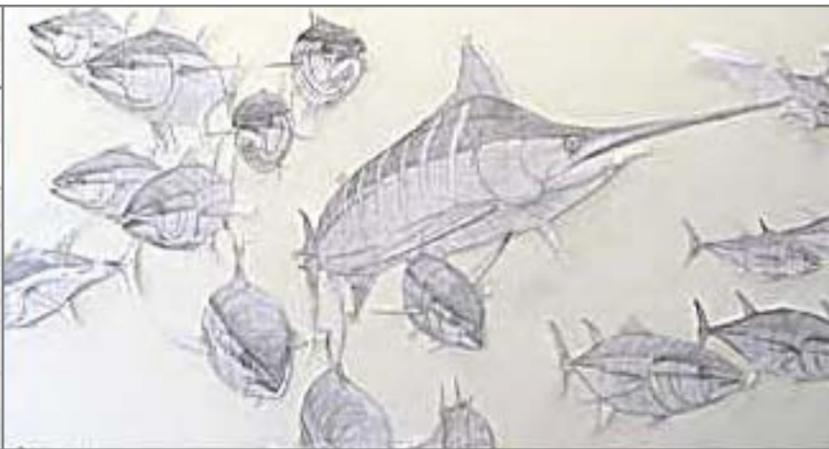
These sketches become a plan for a three-dimensional scaled or life-sized model in clay, wood, metal, foam or plastic depending on how much flexibility the model needs to possess. Flexible models are more easily manipulated to find every pos-



Blue Marlin and Yellow Fin Tuna by Jeroen Verhoeff. 160 x 82cm. Acrylic on panel, 2005. Original for sale. Also available as a giclée print in a limited edition of only 60 copies. Signed and numbered, with certificate of authenticity. Unframed 80 x 41cm, US\$300



Blueprint for model



Sketch



Underpainting



Painting in progress

portfolio

Jeroen Verhoeff

IN OUR NEXT ISSUE

Egypt
Saudi Arabia
Pascal Bernabé



CLOCKWISE FROM LEFT:
Common Tern, *Sterna hinduro*, by Jeroen Verhoff.
45 x 164 cm. Acrylic on panel, 2003. Original sold;
Verhoeff snorkeling the mangroves; measuring a
model; adjusting a model tableau

sible pose of the animal under study. Once the details of the model are in place, it is painted to life and put into a miniature set called a model table or tableau. This allows control of lighting, or how the light falls on the object, as well as control of the composition and surroundings of the animal.

Through this process, Verhoeff gets acquainted with the anatomy of the animal and the various poses it is capable of making. He can also play with the composition and the light and the action to get a high

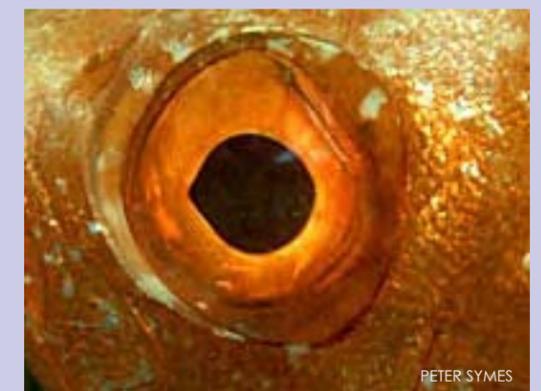
level of realism in the final image. A final sketch of the total scene is made with finer detail than prior sketches. The next step is the actual painting of the image on board.

Verhoeff employs the technique of painting many layers of paint, one over another, to create a sense of depth and atmosphere in his artwork. He paints with acrylics on wooden panels to create original works depicting scenes in nature and the behaviors of wildlife in a highly realistic manner.

Being out there

Verhoeff says that the most important part of the creative process is being out there in the natural world. He loves the aquatic world and the life that he finds there. Crocodiles and sharks don't stop him; rather, they encourage him to jump in and get wet. Verhoeff says all he needs is at least a half a meter of visibility, and he's in.

For more information or to order prints, please visit: www.jeroenverhoeff.com ■



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