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Medicine
**Diving
with
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Coral Trade

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DIRECTORY

X-RAY MAG is published by AquaScope Media ApS
Frederiksberg, Denmark

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PUBLISHER
& EDITOR-IN-CHIEF
Peter Symes
Peter@x-ray-mag.com

SENIOR EDITOR
Michael Symes
science@x-ray-mag.com

PUBLISHER
& CREATIVE DIRECTOR
Gunild Pak Symes
Gunild@x-ray-mag.com

CO-EDITORS
Andrey Bizyukin - *Features*
Arnold Weisz - *News, Features*
Michael Arvedlund - *Ecology*
Tony White - *Photography*
Scott Bennett - *Travel*
Edwin Marcow - *Sharks*

PUBLISHER
& GENERAL MANAGER
HARALD APELT
HAP@x-ray-mag.com

CORRESPONDENTS
John Collins - Ireland
Enrico Cappeletti - Italy
Gary Myers - Tasmania
Marcelo Mammanna - Argentina
Svetlana Murashkina - Russia
Barb Roy - WA, USA
Robert Aston - CA, USA
Nonoy Tan - The Philippines

ASSOCIATE EDITORS
& REPRESENTATIVES:
Russia Editor & Rep:
Andrey Bizyukin, Moscow
Andrey@x-ray-mag.com

South East Asia Editor & Rep:
Catherine GS Lim, Singapore
Cat@x-ray-mag.com

CONTRIBUTORS THIS ISSUE
Kurt Amsler
Harald Apelt
Scott Bennett
Andrey Bizyukin, PhD
Kevin U Chan, MD
Erik Cheng
Rutger Geerling
Hans Hass
Michael Jung
Catherine GS Lim
Jouko Moisala
Svetlana Murashkina, PhD
Jens Poulsen
Wolfgang Pölzer
Cindy Ross
Gunild Symes
Peter Symes
Arnold Weisz

Malaysia Editor & Rep:
Simon Kong, Kuala Lumpur
Simon@x-ray-mag.com

ADVERTISING

International sales rep:
Arnold Weisz (Americas & Asia)
Arnold@x-ray-mag.com

International sales rep:
Harvey Page (Europe & Africa)
Harvey@x-ray-mag.com

International sales rep:
Geoff Mellard (Europe)
sales-europe@x-ray-mag.com

International sales rep:
Simon Kong (Malaysia)
Simon@x-ray-mag.com

Further information
see **contacts page:**
www.xray-mag.com

MARKETING MANAGER:
Yann Saint-Yves
marketing@xray-mag.com

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COVER PHOTO

Flying Sea Turtle, Indonesia, by Eric Cheng
(CONTINUED ON PAGE 4)

We need your help!

Sea turtles are being hunted in Wakatobi National Park

—Kurt Amsler reports, p. 24

Eric Cheng



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Explore the past *but no looting please*

Editorial

Wreck diving and marine archaeology can be fascinating and rewarding. Wrecks are often referred to "time capsules" and with good reason. Underwater, artefacts can sometimes be preserved for centuries, as is the case with especially the many magnificent finds of the perfectly preserved wooden shipwrecks in fresh or brackish waters.

The 17th century warship *Vasa* on display in a museum in Stockholm harbour is one of Sweden's biggest tourist attractions. It is a must-see for every visiting diver who happens to pass through the Swedish capital. The initial sight of the complete vessel as you go through the entrance will send shivers down your spine. It looks exactly as it would if popped out of a time machine, materialising before your very eyes. It is an almost unreal sensation.

Ancient wrecks—and sometimes even treasures—are still found on a regular basis. As we go to press, Odyssey Marine Exploration is engaged in a protracted legal

dispute with Spain over the treasure and wreck code named, "Black Swan", found by Odyssey in a non-disclosed position in international waters. Spain alleges it to be the *Nuestra Señora de las Mercedes*, which was sunk by the British fleet off the coast of Portugal in 1804. In the previous issue, we could report on the find of a completely intact medieval vessel in the Baltic, presumably Dutch, and it was only this week the *HMS Ontario*—a 22-gun British warship that was lost on Lake Ontario without a trace with as many as 130 people aboard during a gale in 1780—was reported found virtually intact in deep water. (See page 25)

From Europe to America, Africa and Asia, historically busy shipping lanes are strewn with tens of thousands of shipwrecks from all eras. Many of them have long since decayed and deteriorated into a pile of ballast stones, but even in these cases, a lot of interesting artefacts can survive surprisingly well for centuries, preserved by physical and chemical conditions of the bottom sediment.

In Denmark, where X-RAY MAG's headquarters are located, even remains of stone age canoes have been found, and on these remains, intricate painted orna-

ments were found. On land, such remains would have rotted away long time ago, and that is what makes marine archaeology so special and fascinating. In the blue realm, you can find stuff that would otherwise have disappeared.

And you don't have to be a Robert Ballard, have the resources of a professional salvager like Odyssey, or have major funding to be a shipwreck detective. Many of the significant finds have been done by enthusiasts and historically interested divers who research archives and scan the seabed weekend after weekend with echo sounders or sidescan sonars. I know of many dive clubs who have found and now proudly display carefully restored artefacts from shipwrecks, which they located and explored.

The retrieval and restoration of artefacts from shipwrecks is a delicate issue, however. First of all, should it be done in the first place? Many wrecks have been shamefully pillaged by visiting recreational divers who hack, saw, unscrew and break loose parts of the wreck to have a "souvenir"—what is so interesting about a rusty porthole anyway?—to the detriment of other divers.



A real conversation piece. A box of coding wheels for the top-secret German Enigma coding machine found by a club of sports divers on a local WW2 wreck in the Danish straits. This and other artefacts were meticulously restored and displayed at a public wreck exhibition

difficult to identify in the first place, but that does not mean the seabed is a free for all buffet, where finders are keepers. It will often be the insurer who owns the remains—or, as is the case with warships, a state, which the Odyssey vs Spain case goes to prove. If in doubt, contact the maritime authorities or national museums. In many places, you can be granted a permission to recover souvenirs.

Some wrecks should not be touched at all. War graves are such instances. You may, in some instances, visit them, while in other cases, they have been declared completely off limits to divers. Always dive on wrecks with the appropriate reverence. Shipwrecks are scenes of accidents and disasters, which in the best of cases, just meant huge material losses, but may often

have also incurred loss of many lives. Many wrecks still contain the remains of unfortunate seafarers, and they should be met with the same respect as those who lie interred in a cemetery.

All that being said, the seabed enables most of us recreational divers to be our own shipwreck detectives or archaeological explorers. I would suggest that you always contact the local maritime museum, or other appropriate authority, if you find a wreck, to get guidance, and not to forget—to be recognized as the finder. If there is to be an excavation, you will often be asked to take part and have a great time learning about marine archaeology and also about the wreck itself from professionals.

There is plenty to go around, and it can be highly rewarding as you might uncover facts about our past. Just play by the rules ...please. ■

In many countries, the law is perfectly clear: Do not remove anything without specific permission from the relevant authorities and the legal owner.

Everything—also artefacts lying around on the seabed or the apparently abandoned wreck—has an owner. It is a widespread misconception among sports divers that what lies on the seabed is “owner-less” or “abandoned”. Granted it is often challenging, if not impossible, to establish who’s the owner of remains that are dif-



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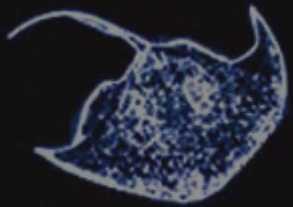
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NEWS

Brittlestar City

All images this page courtesy of the National Institute of Water and Atmospheric Research (NIWA) New Zealand

A marine metropolis with tens of millions of brittlestars and numerous new species of starfish and sponges constituting a hitherto unknown ecosystem has been found on a seamount south of New Zealand.

Usually, corals and sponges dominate seamount peaks, filtering food that arrives on the current, but instead, scientists surveying the Macquarie Ridge—a vast 1400km long underwater mountain range south of New Zealand—found dense populations of another filter feeder, the brittlestar, inhabiting the 100 km² flat top of the

seamount. Brittlestars are echinoderms, relatives to starfish, sea cucumbers, sea lilies, and sea urchins.

The dense aggregation of brittlestars, the first to ever be found atop a seamount, were thought to be the only animals able to keep their footing amid unusually strong currents racing across the flat tops of the seamounts sweeping away many of the predators that would otherwise control the population.

Current

Macquarie Ridge is one of a few places where the Antarctic Circumpolar Current is detoured in its endless clockwise churn at the globe's southernmost latitudes—playing a vital part in the global ecosystem, merging and mixing waters of the Atlantic, Indian and Pacific Oceans. The current is being funnelled by the geology of the region through a gap

in the ridge and sending it sweeping over the flat tops of the seamounts at 2 knots.

Identification

The two brittlestar species observed and photographed by the biologists aboard the Research Vessel Tangaroa of New Zealand's National Institute of Water & Atmospheric Research (NIWA) were tentatively identified by taxonomist Tim O'Hara at Museum Victoria in Melbourne, Australia, who determined that the smaller, densely packed brown-black brittlestar species, found living arm tip to arm tip on the sand and cobble substrate of the peak, numbering hundreds per square meter, were likely *Ophiacantha otagoensis* or *Ophiacantha fidelis*.

Larger orange-red species discovered down the seamount's flanks, filmed waving arms in the current to collect passing food, were likely *Ophiacantha rosea*.

"We were excited to see such a huge assemblage of brittlestars on the Macquarie Ridge seamount. Not only is it amazing to see a vast array of one type of organism but the implications of the find for our understanding of the relative uniqueness of seamount assemblages are potentially far-reaching," said ecologist Dr. Ashley Rowden of NIWA.

Full identifications may take many years. The eight biologists on board believe some species collected have never before been recorded in the region

while some may be new to science. Thousands of specimens of all kinds were gathered from eight seamounts in over 30 sled collections and now fill almost 1,600 vials, jars and bags, to be sent from NIWA to taxonomists in New Zealand, Australia and overseas.

Fish

An abundance of deepwater cardinal fishes (*Epigonus* species) was found sheltering below a rock ledge on the seamount. In the lee of the rock, biologists believe, the fish could both conserve energy and access food.

Several Morid cods (family *Moridae*) were found in the folds of a large bubblegum coral (nearly two meters high, and likely hundreds of years old). These fish were also believed to be finding shelter from the current and perhaps benefiting in other ways from their close association with the coral.

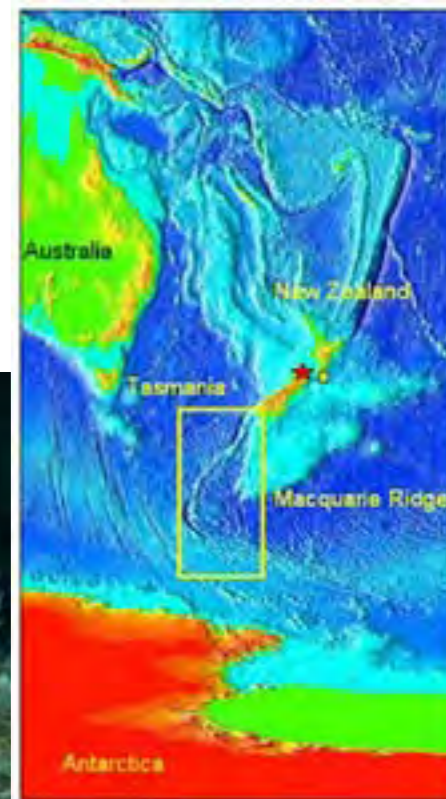
Seamounts

Oceans worldwide contain an estimated 100,000 seamounts rising at least one km above the seabed; fewer than 200 have been sampled in any detail.

Undersea mountains can be highly productive and biodiverse, sometimes host unique species and serve as feeding grounds for fishes, marine mammals and seabirds. They also may serve as important way stations for marine migrations. The scientists' work sheds light on factors underpinning seamount biodiversity, suggesting ways to improve their environmental management. ■

The Brittlestar City seamount displayed several geological faults affecting its shape and geomorphology. The odd rectangular edge of its southern peak was formed by the intersection of two perpendicular faults. Because the upper surface is relatively flat, experts believe it was once at sea level, or slightly submerged. The flat topography suggests wave erosion occurred during the last ice age 18,000 years ago, when sea level was low. Although the base of Brittlestar City seamount is 850 meters below surface, its peak is just 90 meters underwater.

"This current is estimated to be 110 to 150 times larger than all the water flowing in all the rivers of the world," says Dr Mike Williams of NIWA. "In terms of the world's oceans, New Zealand sits right beside the motorway." ■





World Record Wreck Dive

During the recent Dynamic Dive Exhibition (DDE), held at lake Maggiore in northern Italy, divers from Italy and the Netherlands have set a new depth record for wreck diving. On May 10th, using Ouroboros closed circuit rebreathers, Alessandro Scuotto, Mario Marconi and Pim van der Horst reached the remains of *Milan* resting at the lake bed at 236 meters. The *Milan* was sunk during WWII, in September 1944, by Allied aircraft while transporting both soldiers and civilians of which many perished.

The wreck was only located in November 2007 during a training session conducted by the armed forces. The vessel, which is about 50 meters long and six meters wide is broken in two parts, which lie about 20 meters apart. One part rests on the bottom at a depth of 230 meters, while the other part lays on a slope at



215 meters.

The dive had several objectives. One, was to obtain video footage of the wreck using human cameramen. It was also an exercise in collaboration between a number of the leading rebreather divers. And finally, to set a new record for wreck dives in open water. The maximum depth reached by divers in a similar environment has been 205 meters of water.

It took a support team of over 60 people to make this extraordinary dive happen. The time on the wreck was a mere four minutes, but the total runtime of the dive was almost eight hours (a little more than planned), of which around 4.5 hours were spent decom-



pressing in a dive bell. Support Divers also used rebreathers: Inspiration and Megalodon. Only near the surface was open circuits used.

During the dive, the deep divers were accompanied by a ROV (Remote Operated Vehicle) from VVF (the Italian fire department), which lighted the wreck and took its own video footage. ■



NATIONAL GEOGRAPHIC NEWS PHOTO GALLERY

Giant stingray captured in Thailand, then gives birth

When biologist Zeb Hogan received word of a capture of a giant freshwater stingray, we wonder if it had crossed his mind that the news could have been an April Fool's joke.

After all, he had spent an entire week at the Mekong River in Cambodia trying to locate the species, without success. Add to that the fact that the capture had been made on March 31st, just one day shy of April 1st.

Nevertheless, Hogan made his way to the Bang Pakong River in Chachoengsao, Thailand, and was duly rewarded (twice over!) for his efforts. Not only did he come face-to-face with a 4.3m (14 ft) giant freshwater stingray, she

had given birth soon after her capture. The baby, which was only as big as a dinner plate, clung to its mother's back. It had taken an angler 90 minutes to capture the pregnant stingray. Nine men were needed to hold down the stingray at the riverbank.

"It's been a goal of mine for a long time to see if these stories of huge stingrays are really true," said Hogan.

The species, found in some rivers in Southeast Asia and northern Australia, is also called the freshwater whip ray. The 2007 IUCN Red List of Threatened Species lists it as vulnerable, due to overfishing in the Mekong River.

Yet very little is known about this elu-

sive creature. There is even uncertainty as to whether it is actually a freshwater species, or whether it can swim out into the ocean.

Its diet consists of clams and crabs, located using its jelly-filled pores that can detect their electrical pulses. It spends part of its time buried in the mud, breathing through modified gill slits called spiracles.

At the base of its tail is the barb (or stinger), which can grow as long as 37.5 centimetres (15 inches), making it the longest barb of any stingray species. The tip is sharp enough to pass through skin, and even bone.

Size-wise, there have been unverified stories of giant freshwater stingrays as heavy as 450 kilograms and six metres long. They are reportedly very strong, there being accounts of hooked individuals dragging boats for miles and even pulling them underwater.

"We need to absolutely rid our minds of stingrays as dangerous creatures and become more curious about them and protect them," said Hogan.

The captured giant freshwater stingray was eventually released back into the river, with its baby clinging to her back.

Hogan's interest in the stingray stems from the fact that he leads the Megafishes Project, the first global attempt to document and protect the Earth's freshwater giants. Before this giant freshwater stingray was caught, the largest freshwater fish ever caught was a Mekong giant catfish in 2005, weighing in at 293 kilograms. ■



Evolution 'runs backwards' in Lake Washington

Evolution is supposed to inch forward over eons, but sometimes, at least in the case of a little fish called the Threespine stickleback, the process can go relative warp speed in reverse, according to a study led by researchers at Fred Hutchinson Cancer Research Center.

Forty years ago, most of the sticklebacks in Lake Washington, the largest of three major lakes in the Seattle area, had no body armour plating. Today, most of them do. What happened?

Five decades ago, Lake Washington was quite literally a cesspool, murky with an overgrowth of blue-green

algae, which thrived on the 20 million gallons of phosphorus-rich sewage pumped into its waters each day. Thanks to a US\$140 million cleanup effort in the mid-'60s—at the time, considered the most costly pollution-control effort in the US. Today, the lake and its waterfront are a pristine playground for boaters and billionaires.

We propose that the most likely cause of this reverse evolution in the sticklebacks is from the higher levels of trout predation after the sudden increase in water transparency

It's precisely that cleanup effort that sparked the reverse evolution, Katie Peichel and colleagues surmise. Back when the lake was polluted, the transparency of its water was low, affording a range of vision only about 30 inches deep. The tainted, mucky water provided the sticklebacks with an opaque blanket of security against predators such as cut-throat trout, and so the fish needed little bony armour to keep them from being eaten by the trout.

In 1968, after the cleanup was complete, the lake's transparency reached a depth of 10 feet. Today, the water's clarity approaches 25 feet. Lacking the cover of darkness they once enjoyed, over the past 40 years, about half of Lake Washington stickle-

backs have evolved to become fully armoured, with bony plates protecting their bodies from head to tail. For example, in the late '60s, only six percent of sticklebacks in Lake Washington were completely plated. Today, 49 percent are fully plated and 35 percent are partially plated, with about half of their bodies shielded in bony armour. This rapid, dramatic adaptation is actually an example of evolution in reverse, because the normal evolutionary tendency for freshwater sticklebacks runs toward less armor plating, not more.

"We propose that the most likely cause of this reverse evolution in the sticklebacks is from the higher levels of trout predation after the sudden increase in water transparency," said Peichel.

The ability of the fish to quickly adapt to environmental changes such as increased predation by the cut-throat trout is



JUN KITANO

The fish in the top photo is low-plated, which corresponds with the time when Lake Washington was heavily polluted. The fish in the bottom photo is fully plated, an adaptation thought to arise from the cleanup of the lake 40 years ago

due, Peichel believes, to their rich genetic variation. The sticklebacks in Lake Washington contain DNA from both marine (saltwater) fish, which tend to be fully plated, and freshwater sticklebacks, which tend to be low-plated. When environmental pressures called for increased plating, some of the fish had copies of genes that controlled for both low and full plating, and so natural selection favoured the latter. ■

SOURCE: FRED HUTCHINSON CANCER RESEARCH CENTER



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Historic photo of the 12th century abbey, the Chartreuse de Vaucluse, which now lies submerged under 60 meters of water



Photos by Domain Henri Maire



French wine makers take to diving

Domain Henri Maire, a leading French wine-maker, have placed 276 bottles in the ruins of an abbey that is now submerged 60 metres below the surface of an artificial lake in Vouglans, in the Jura region of eastern France.

The wine company intends to keep them there for many decades to see how they differ from bottles stored above ground for

the same period. Built by monks of the order of Saint Bruno in the 12th century, the Chartreuse de Vaucluse was submerged in 1968, when France's electricity operator, EDF, created a huge dam and France's third largest lake. A team of divers placed bottles of Arbois wine, kept in wire crates, within the walls of the ruins where the wine will be kept at 4°C, with pressure at seven bars and between 4 to 8 mg of oxygen per liter.

Every 20 years, a crate of 24 bottles will be brought to the surface to test how the wine has

developed in comparison to normally conserved bottles. Besides the wine, 12 bottles containing messages from "different personalities from the arts, media, the world of wine and gastronomy" were also laid to rest at the bottom as a testament to "future generations about our art of living today," said Henri Maire.

Arbois whites are produced from Chardonnay and Pinot Blanc and its yellow wine from the obscure Savagnin variety. The reds contain Pinot Noir, Trousseau and Poulsard grapes.

The Henri Maire domain last

year sent 20,000 bottles around the world as an experiment, while crates of its yellow wine are currently stored in the Norwegian island of Spitsbergen, far inside the Arctic circle, in minus 40 degree temperatures. Henri Maire himself started the craze for such tests in 1955 by walling in bottles of vin jaune in the bowels of the Tour d'Argent, one of Paris' most famous restaurants with a sumptuous wine cellar. These bottles are due to be removed in 2055. ■



PRESS RELEASE



And why not Champaign?

Roederer, one of France's oldest champagne producers, is also testing the underwater environment to find out if its wine tastes better if it is kept in cold sea water and rocked by currents than in the traditional cellars. Luis Roederer told Reuters that it had placed several dozen bottles 15 metres (50 feet) underwater in the bay of Mont Saint-Michel, a

rocky tidal island off the coast of Normandy.

A cellarman came up with the idea after realising that the water temperature in the bay, a constant 10°C (50°F), was ideal for aging wine. In 12 months' time, Roederer will hold a tasting session to compare champagne from the bottles kept on the seabed with those from its cellars in Reims.

Roederer, founded in 1776, is one of France's last independent family-owned champagne makers and its bottles are among the most expensive in the country as production is small accounting for about one percent of total champagne production.

Roederer is the first producer to test the unusual aging method for

sparkling wine. Other firms have tried it out in the past four years for still wines, including red Crozes-Hermitage, white Muscadet and white Burgundy. "It would appear that tides and the cold water had less of an impact on red wines than on white wines," Herve Boucton, commercial director for Roederer, explained to Reuters. ■

Ancient Deep-Sea Coral Reefs Serve as Underwater 'Islands' in the Gulf Stream

NOAA has found that some largely unexplored deep-sea coral reefs off the coast of North Carolina are not only larger than expected but also home to commercially valuable fish populations and many newly discovered and unusual species.

"These deep-water coral banks can grow to be 100 meters tall and kilometers long. It is not what people expect to find off North Carolina, probably the northernmost deep-water coral banks existing along the U.S. East Coast."

These deep coral habitats on the continental slope off the east coast of the US are perhaps hundreds of thousands of years old.

"We discovered that a number of animals thought to be rare are common around the corals, documented many animals outside of their previously known ranges, and discovered species new to science," NOAA zoologist Martha Nizinski said. "We also have had a firsthand look at how animals are using the habitat and interacting with each other. These discoveries relate to the fact that this has been a difficult habitat for scientists to sample because of the deep depths, rough topography and strong currents from the overlying Gulf Stream."

Nizinski says the coral habitats explored during the expeditions appear to be more extensive than previously believed and are important habitat for several species of commercially and recreationally important fish as well as sponges, crabs, brittle stars and other creatures. The corals also contain historical data about changing ocean climate and productivity, and are hotspots of biodiversity. Many organisms live in and around these deep coral habitats, including species new to science and species with pharmaceutical potential. She is still studying the biological and coral samples collected during the various expeditions, research that will take several more years to complete. ■

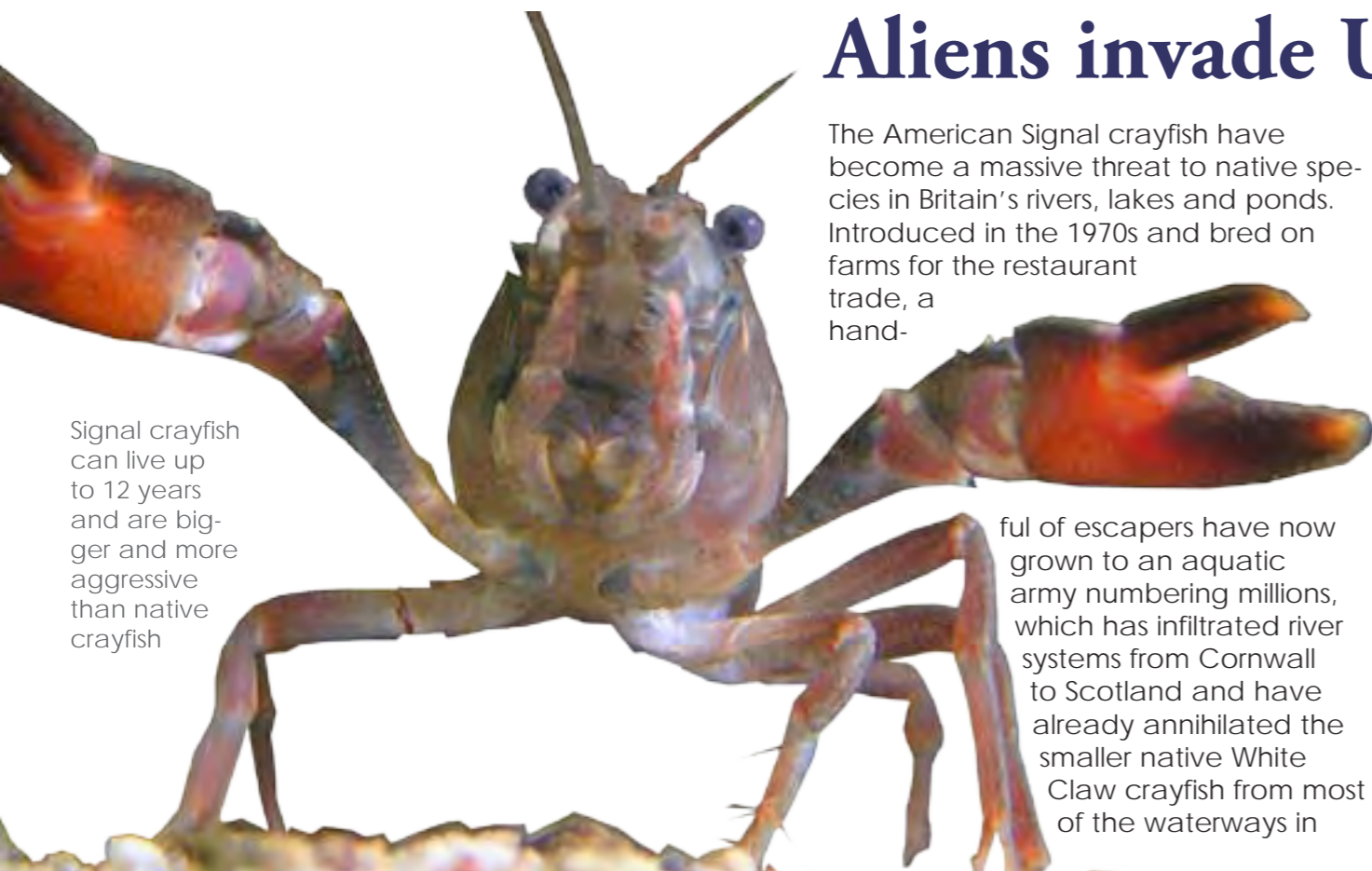


Aliens invade UK waters

The American Signal crayfish have become a massive threat to native species in Britain's rivers, lakes and ponds. Introduced in the 1970s and bred on farms for the restaurant trade, a hand-

ful of escapers have now grown to an aquatic army numbering millions, which has infiltrated river systems from Cornwall to Scotland and have already annihilated the smaller native White Claw crayfish from most of the waterways in

the south of England. The crayfish is extremely aggressive, encased in a tough shell and armed with two large pincers. They are equally at home on land and can walk for several miles across country in search of new territory. When the crayfish move into a stretch of river, it is virtually a death warrant for other species. American Signal Crayfish will eat plants, invertebrates, snails, small fish, fish eggs and its own young. The loss of plants means there are fewer places for insect larvae and for fish to lay their eggs, which in some rivers has reduced trout and salmon stocks. The creature also digs burrows up to three feet long in river banks where, each year, it lays more than 250 eggs at a time. At a time of increased flooding risk, the numbers and size of the burrows is increasingly causing river banks to collapse. ■



Signal crayfish can live up to 12 years and are bigger and more aggressive than native crayfish

Bleach and Vitamin C Could Help Shield Lakes from Deadly Fish Disease

David Hand, a professor at Michigan Technological University professor has developed a new treatment of ballast water in vessels that could help keep deadly fish diseases out of Lake Superior.

Viral hemorrhagic septicemia (VHS) is an often-fatal disease that has caused massive dieoffs of fish species ranging from walleyes to salmon in all of the Great Lakes except Superior. Infected fish die from bleeding of their internal organs and often have open sores and bruised-looking, reddish tints on their skin.

Professor Hand has devised a simple way to treat ballast water in vessels ranging from pleasure craft to ore boats and kill the

virus that causes the disease. The ballast water is disinfected with sodium hypochlorite—ordinary household bleach. Then it is treated with ascorbic acid, or vitamin C, which neutralizes the bleach before the water is released into the lake.

"Ships unload their ballast water from all over the world, and with it all kinds of exotic, invasive species, from viruses and bacteria to the zebra mussel," said Hand. It's unfair to point the finger only at ocean-going ships, says Hand, a devoted angler and boat owner himself. All boaters should sterilize their bilge, ballast and livewell water. ■

Five divers swept to sea off Komodo and went missing for two days

The divers were exploring waters off Tawa Besar Island in the Komodo National Park, between the islands of Flores and Sumbawa, an area which is notorious for strong “washing machine” currents, when they went missing for several days.

A dive center employee explained to BBC that two groups had entered the waters, which are a popular draw for divers keen to explore an area of unspoiled coral reefs teeming with marine life, but only one group returned.

When an initial search failed to locate the second group, authorities were alerted and police and rescue teams called in. The dive was organised by Reefseekers—a diving center based in Labuan Bajo—Flores and one of the missing divers. The group leader was Ms. Kathleen Mitchison who runs the center and turtle sanctuary with her husband Ernest Leandowski.

The search of the area was called off at 3:00 am local time and resumed at dawn. It was a new moon and very dark at sea. As he continued to search for the party 36 hours after the divers vanished, Mr Lewandowski told CNN: “Time is critical. It’s absolutely blistering hot out

there. There were three boats out today searching. I was on a speed-boat going around all the beaches and

everything, to see if they had washed up.”

A local diver who works for Reefseekers told the Telegraph: “It was a very strong current, going from north to south, so it may be that the divers have been swept out a long way, and the local boat didn’t find them because it’s too far. It’s also possible that they’ve been trapped in the eddies at the end of the island.

At the end of the island, there is a meeting current, which creates turbulence, and I have a big worry that the people got into trouble because of the turbulence. It’s a washing machine current. All five divers were experienced, but there is a strong current in the national park when there is a new moon. When the accident happened, it was low tide and very, very strong.”

Found

The divers were found drifting, but alive, on Saturday after having been missing for two days. After 12 hours adrift, they managed to scramble ashore on Rinca, where they spent two nights battling dehydration and came face-to-face with a Komodo dragon. Police in the Nusa Tenggara island chain told AFP that fishermen had spotted the group waving frantically on the shore.

The five were taken to nearby Flores Island for medical treatment. ■



GRAPHIC: AQUASCOPE

Coming to a computer near you: Google Ocean

If you’ve ever used Google Earth to locate your home, you’d be familiar with how technologically advanced, yet user-friendly, it is.

Now, imagine this same technology being applied to the world’s oceans. It does seem like an impossible task, considering that much of our ocean’s terrain and environs remain unmapped and unexplored. Then again, we are talking about Google here. If anyone could do it, it would be them.

Which was why last November, the company gathered a group of researchers from all over the world together to discuss plans for a 3D oceanographic map, tentatively dubbed Google Ocean. Like its existing counterparts, Google Earth and Google Sky, users will be able to locate specific spots and manoeuvre via zooming and panning.

In Google Ocean, there will be a basic layer showing the depth of the ocean floor, with specific areas featuring high-resolution images. Additional information concerning ocean currents, temperatures, weather patterns, coral reefs, algae blooms and even shipwrecks will also comprise part of Google Ocean. In addition, there will also be other specific layers featuring specialised data.

This is, of course, easier said than done, considering that only a very small portion of the ocean floor has been mapped using sonar, and this is likely to remain the case for the near future.

“It would take about 100 ship years to map the oceans at high resolution,” said Dave Sandwell, a geophysics professor at the Scripps Institution of

Oceanography (SIO).

Nevertheless, Google Ocean would be the ideal starting point. “Google will basically just provide the field, and then everyone will come flocking to it. There will be peer pressure to encourage people to get their data out there,” said Stephen P Miller, who heads the Geological Data Center at SIO.

Some of the data needed to compile Google Ocean is expected to come from SIO’s Predicted Depth Map, which infers the ocean-floor depth from the bumps and dips in the ocean surface. Another possible source is the high-resolution tiled images from multibeam and predicted topography compiled by the Lamont-Doherty Earth Observatory of Columbia University.

Indeed, Google Ocean possesses much potential for more collaboration and research amongst oceanographers, geographers, marine scientists and other experts.

Said Miller, “We hope that one of the outcomes of Google Ocean will be an understanding of how much remains to be explored. We know far more about the surface of Mars from a few weeks of radar surveying in orbit than we know of the bottom of the ocean floor after two centuries.”

So, if everything goes according to plan, we would one day find ourselves exploring the underwater world within the dry comforts of home. Possibly not as exciting as the real thing, but it would be something to help us get through the ‘drier seasons’ of the year. ■

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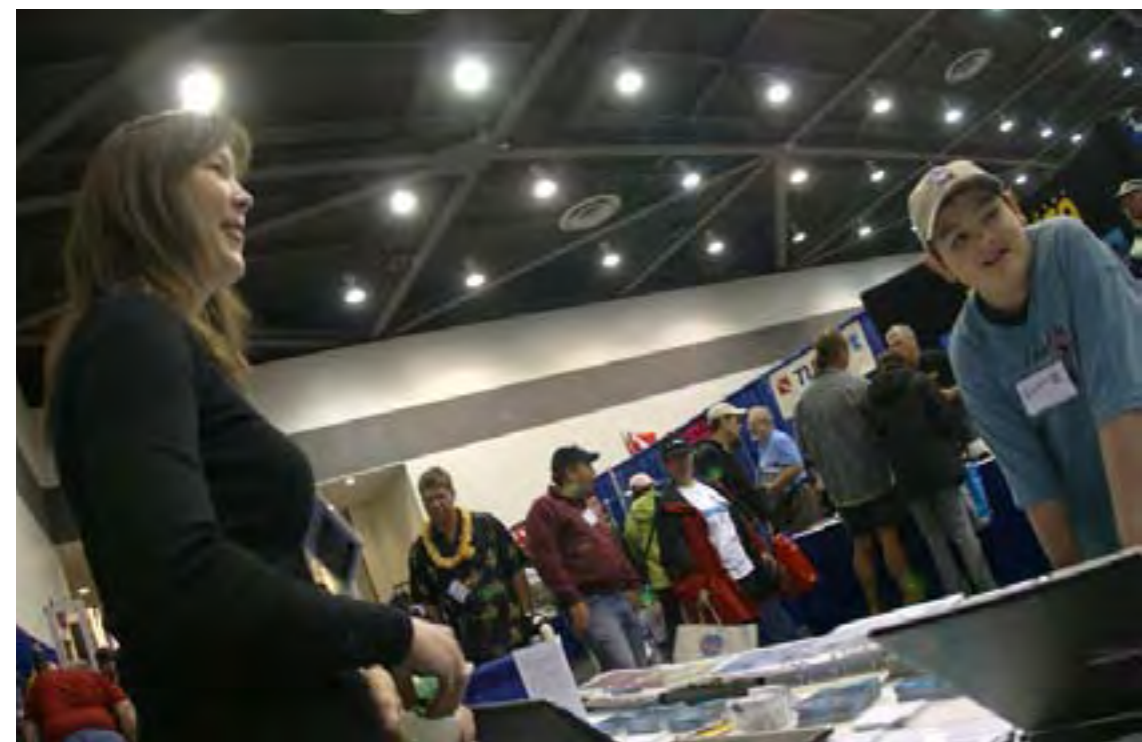
NWDTE

in Tacoma, WA, USA

Text and photos
by Peter Symes

Tacoma, a city of over 200,000 located just south of Seattle in the US Pacific Northwest, is more time zones away from our European HQ than even the Asian dive expos we also attend—the time difference was nine hours. So, we were still a bit bleary-eyed when we checked into the beautiful new exposition center in downtown Tacoma. The Northwest Dive & Travel Expo (NWDTE) was not only the first real dive expo in this area in over 25 years, but also our first consumer show visit in this neck of the woods. So, we did not quite know what to expect other than we sensed it was going to be an interesting visit. After all, there is a quite sizable diving community in these parts.

The shiny new Greater Tacoma Convention and Trade Center



Let me jump right in: Kudos to the organiser Rick Stratton, publisher of Northwest Dive News, for putting together a very nice event. The teething problems that always bother first instalments of new expos were absolutely insignificant to the point that I have now forgotten what they might have been. The venue is a new complex with nice open architecture that makes it pleasant to be in. Granted, you can't quite escape the sore feet from walking around all day long on hard floors, but the building's glass facade opens up towards a nice view over the harbor.

The show was well-visited, and especially Saturday saw the aisles pretty packed. Sunday, the attendance was

markedly slower, which I attribute to the fabulous weather we had that day. Warm and sunny spring weather is a tough competitor. It made me wonder if it was better to hold such a show a little earlier in the year, but since there was a well-attended treasure hunt on Saturday, you also want the season to be started. So, a compromise is obviously needed here, and early May is not such a bad choice.

For overseas exhibitors like ourselves, it was actually an advantage, as it steered clear of the other major expos that tend to be crammed into a period from February to April.

The audience is clearly made up of many cool water divers at home with drysuits and twin tanks. This was also reflected in the types of exhibitors present—there was a lot of fancy gear around—though it was clearly not the venue where new innovations would be presented to the public. There aren't many cold water diving areas in the world that can offer a wide selection of diving resorts, and it was quite interesting to learn about the ones in this area. The region probably boasts the most options, compared to similar regions around the world, with Scandinavia as a close runner-up. Plus, the renovated downtown area of Tacoma has a host of restaurants and boutiques, museums and galleries and attractions such as a public art tour including several installations by world famous glass sculptor, Dale Chihuly (see his portfolio of ocean-related works in **X-RAY MAG issue #12**), who is based in Tacoma. ■

Show review

TDEX

in Bangkok

Text and photos
by Catherine GS Lim



Sawatdee Kaa from the Land of Smiles!

When I decided to attend the Thailand Travel & Dive Expo (TDEX) 2008, little did I expect it to be a baptism of sorts. For one thing, travelling there represented my first time on an airplane, separated from terra firma by—according to the captain at one point—39,000 feet of air.

Secondly, I knew absolutely no one there, and being on my own, it represented a potentially daunting challenge. However, this turned out to be a non-issue, as I was quickly swept up by the warm hospitality of the Thai people.

On the first day of the show, held at the Queen Sirikit National Convention Centre, I quickly realised that TDEX was more than just another dive expo. This was because it was held in conjunction with Thailand Golf Mart 2008. This meant that amidst the booths selling dive gear, dive courses, dive expeditions and all things dive-related, I had to contend with booths promoting golfing holidays, golf resorts and spas.

Which was fine in itself, since it provided a wider variety for the visitors. In doing so, a family would have a higher chance of enjoying a productive weekend together. Specifically, in addition to the dive seminars, the TDEX Underwater Photo Contest was held in conjunction with the Thailand Travel

Photo Contest. The Thailand Bouldering Competition took place at the expo as well, with the participants winning the visitors' admiration with their climbing skills. There were other booths offering lasik surgery, air travel, car rental, etc.

For me, having little interest in sinking a hole-in-one, I sped past the golf-related exhibitors and made my way to the dive portion of the expo, and was promptly rewarded by handouts offering promotions on dive courses and expeditions. Dive merchandise companies like Oceanic, Beuchat, Advanced Photo Systems and Hydro Sapiens Divewear were the hot spots for divers looking to pick up items at discounted prices. Even Feel Easy (kayaking) and Gulf Charters Thailand (yacht training) were around to capitalise on the crowds. At such retail-intensive booths, the visitors-turned-shoppers had a field day lapping up the items.

While I was there, I met a few familiar faces, and also made a few new friends (most notably with the friendly folk at Koh Tao Easy Divers, Green Fins Project and Bubble Dive). Everyone turned out to be very hospitable. Even those who could not speak English welcomed me into their booth. This, on one level, was the way it should be—the love of diving and the underwater world is, after all, universal, and should not be con-

THIS PAGE: Scenes from the Thailand Travel & Dive Expo show a large participation of young people both as participants and exhibitors, some presenting new eco-tourism, dive business and conservation concepts developed as a result of the 2004 tsunami



finned by man-made language barriers.

Some of the organisations that struck a chord with me included those conceived in the wake of the 2004 tsunami. The Ecotourism Training Centre, located in one of the worst-hit areas, provides career training to the affected young people in the area, and engages them in environmental protection projects. The intensive nine-month course includes English language, computer literacy, dive training and marine conservation. Graduates are certified PADI professional undersea tour guides, enabling them to be employable and custodians of the marine environment.

Another organisation, For Sea Foundation, was conceived two days after the tsunami, on 28 December 2004, when 50 divers came together to work out how to provide assistance to the affected areas. The resultant projects of this foundation included a study into the tsunami's impact on the coral reefs around the Similan Islands, reef recovery, sea fan restoration and marine conversation by youths. They were also responsible for the creation of artificial reefs in the Bang Tao area by using retired air-

craft from the Royal Thai Air Force (see **X-RAY MAG issue #23** for our report).

That such positive initiatives could come out of the devastation caused by the tsunami was heartening, allowing one to feel hopeful in light of the recent disasters in Myanmar and China.

In all, TDEX was a worthwhile show. The number of visitors was reported to be 60,000, with sales volume at more than 200 million baht. Personally, I would have preferred an expo that focused solely on diving and underwater photography, but I guess this was not an ideal world in which everyone was a diver...

Still, as I said my good-byes to my new friends, I knew that this would not be my last trip to Thailand. It's a charming country, endowed by both the traditional and modern, populated by a gracious people. So, it leaves me to say *khorb khunka!*



(thank you!) to everyone I have met, for the wonderful memories and experiences. ■

NSS Convention

With over 12,000 members and 200 grottos, the National Speleological Society does more than any other organization to study, explore, and conserve cave and karst resources; protect access to caves; encourage responsible management of caves and their unique environments; and promote responsible caving.

In August, NSS-CDC will hold its convention in Lake City, Florida. Besides caving and cave diving, there are many things to do in the area, including canoeing, tubing, open water diving, and exploring state parks. Florida is especially famous for its springs. Be sure to visit Floridasprings.org to learn more about them. Prevent WNS! Please bring clean caving gear!

Please note that the NSS-CDS Mini Workshop overlaps the 2008 Convention at the fairgrounds—you can attend both. nss2008.com ■



DAN and CMAS Americas announce alliance

Divers Alert Network and the American chapter of the Confédération Mondiale des Activités Subaquatiques (CMAS AMERICAS) recently announced a new training alliance. As part of the alliance, CMAS AMERICAS now incorporates DAN training programs into its own training. The alliance begins with the training of CMAS AMERICAS Instructors and the requirement that all CMAS Instructors also carry DAN Instructor credentials. From there, provider-level DAN programs will be taught from the CMAS Two-Star Diver courses through all subsequent levels of training. ■

“The focus of this particular alliance on information and education reinforces one of the core tenets of DAN’s mission—the promotion of dive safety through education. We applaud CMAS’s dedication to this end, and we deeply appreciate its support of DAN through the use of our programs.”

—Dan Orr, DAN president and CEO

SDI/TDI/ERDI opens new regional office in Hong Kong

via: DiveNewsWire

“We feel that our close association with the SDI / TDI Hong Kong team—all of whom are accomplished divers and successful business people—offers exciting potential for growth, both for SDI / TDI and for our newest regional partner,” said Brian Carney, president of International Training to DiveNewsWire. “Obviously, the expansion of our organization into the hugely promising Chinese market is wonderful news. Hong Kong already has a thriving diving community and is a vibrant member of the South Asia diving industry.”

Scuba Diving International (SDI) is the sport diving certification branch of the world’s largest technical diving agency, Technical Diving International (TDI). Also included is Emergency Response Diving International (ERDI), the only global public safety certification agency.

To find out more about International Training’s educational programs, how you can join their team, and other dive business opportunities visit: www.tdisdi.com ■

DAN Announces Weblink, DVD of Technical Diving Conference

Given the enthusiastic reaction to the technical diving conference DAN convened in January, DAN has placed a weblink of the conference on its website. DAN has also created a Technical Diving Conference DVD for viewing on a PC or Mac computer. It is available free from DAN.

The weblink and the DVD are opportunities to share with the entire diving world the collective expertise of all the conference’s exceptional speakers. More than 165 divers, scientists and physicians attended the two-day conference in Durham, N.C. Participants came from across the United States and from Finland, the United Kingdom, Canada, American Samoa, Australia, New Zealand and Grand Cayman. Simon Mitchell, M.D., one of four workshop chairmen and a fellow in anesthesia at the Auckland City Hospital in Auckland, New Zealand, said the technical diving conference was the first such opportunity for technical divers to meet with experts in the field of dive medicine and dive physiology.

“The information on the DAN website and tech DVD is designed to communicate what we know about technical diving. It is also designed to encourage the tech diving community to improve this knowledge by recording information from their dives and reporting it to DAN,” said Richard D. Vann, Ph.D. and vice president of DAN Research.

The weblink offers both PowerPoint and video (MP4) presentations of the conference proceedings. To download, visit: www.DiversAlertNetwork.org. To receive the free Technical Diving Conference DVD, contact DAN at 1-800-446-2671 ext. 295, (+1) 919 684 2948 ext. 295 or email: ProMember@DiversAlertNetwork.org ■



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The oceans are striped

Oceanographers have uncovered a regular pattern of mysterious stripes stretching across every ocean on the planet. The strange phenomenon was only discovered after scientists took a closer look at data collected from a global network of 3,000 free-floating buoys that measure the temperature and salinity of the oceans and are tracked by satellites.

The main influences on the paths of the buoys are known global currents fuelled by wind and differences in the temperature and saltiness of seawater.

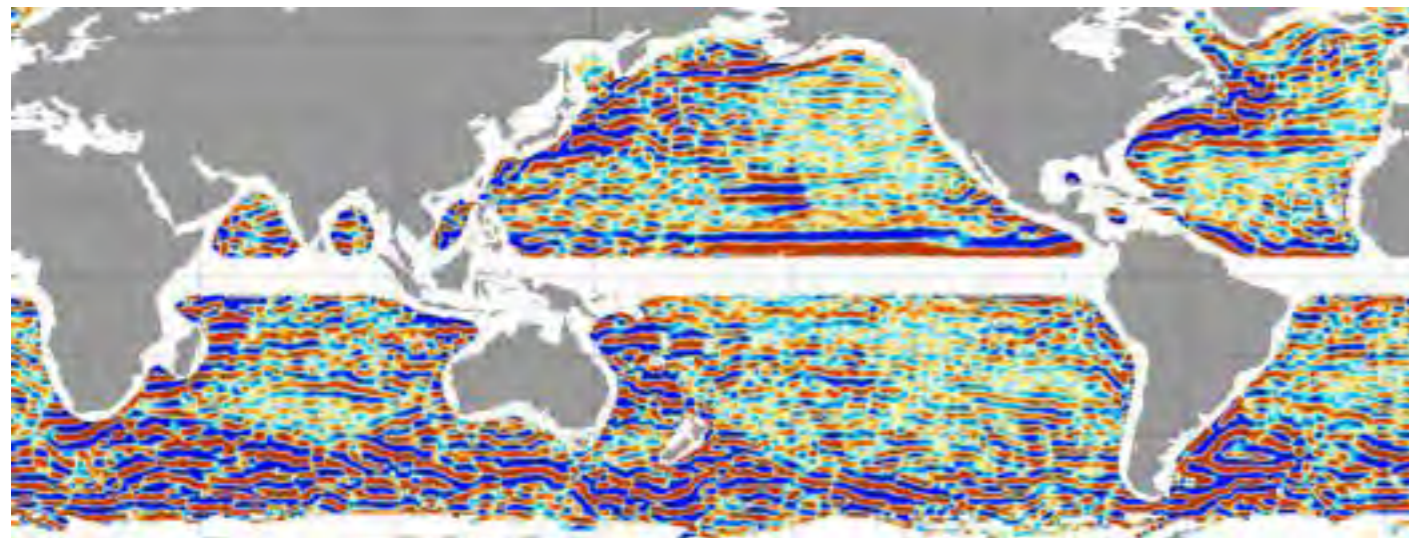
But when the team at

the Scripps Institution of Oceanography in San Diego looked at the data across the time span of a decade, it became apparent that something else had also been subtly changing their path. They found narrow lines of current called "striations" running eastwards or westwards, which they couldn't explain.

The scientists found the 93 mile-wide bands covered almost every ocean basin. They recorded the striations flowing in opposite directions at about 0.022 mph, says the study published in Geophysical Research Letters.

This is slower than most known currents, which is possibly why they have remained hidden until now.

The researchers also found the striations extend below the surface to at least depths of 700 meters, and the eastward bands are slightly hotter than westward ones. This could turn out to play a role in the circulation of nutrients, and it is hoped that the new data could help scientists significantly improve high-resolution models that help them understand trends in climate and marine ecosystems. ■



A worldwide crisscrossing pattern of ocean current striations has been revealed through measurements of ocean velocity made by drifting buoys over a period of more than 20 years. Blue bands represent westward-flowing currents and red bands indicate eastward-flowing currents that move at roughly 1 centimeter per second.

Scientists Discover New Ocean Current in the North Pacific

Scientists at the Georgia Institute of Technology have discovered a new climate pattern called the North Pacific Gyre Oscillation. This new pattern explains, for the first time, changes in the water that are important in helping commercial fishermen understand fluctuations in the fish stock. They're

also finding that as the temperature of the Earth is warming, large fluctuations in these factors could help climatologists predict how the oceans will respond in a warmer world.

The data suggest that this current is undergoing intensification as the temperature of the Earth has risen over the past

few decades. This newly found climate pattern may help scientists predict how the ecosystem of the Pacific Ocean is likely to change if the world continues to warm, as predicted by the Intergovernmental Panel on Climate Change. ■

SOURCE: GEOPHYSICAL RESEARCH LETTERS



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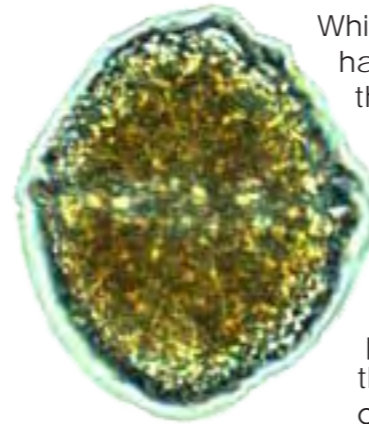
matthieuvoisard



Bacteria could be a red tide killer

Red tides and related phenomena, in which microscopic algae accumulate rapidly in dense concentrations, have been on the rise in recent years, causing hundreds of millions of dollars in worldwide losses to fisheries and beach tourism activities. Despite their wide-ranging impacts, such phenomena, more broadly referred to as "harmful algal blooms," remain unpredictable in not only where they appear, but how long they persist.

New research at Scripps has identified a little-understood but common marine microbe as a red tide killer, and implicates the microbe in the termination of a red tide in Southern California waters in the summer of 2005.



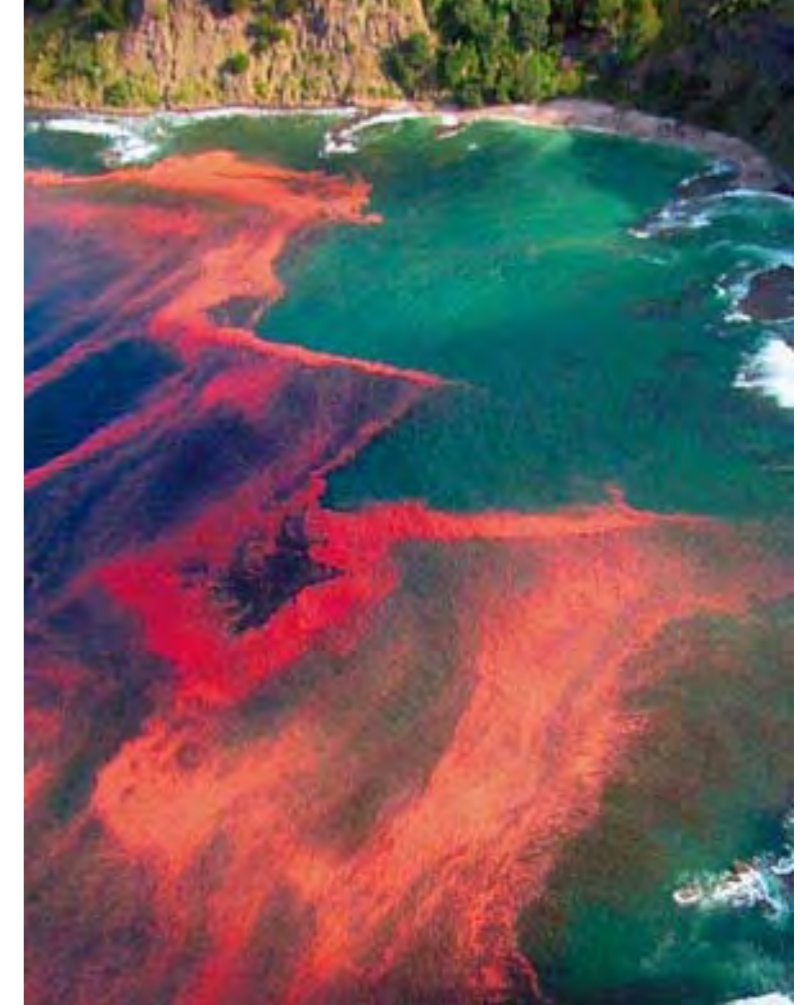
While not all algal outbreaks are harmful, some blooms carry toxins that have been known to threaten marine ecosystems and even kill marine mammals, fish and birds.

Using a series of new approaches, Scripps Oceanography's Xavier Mayali investigated the inner workings of a bloom of dinoflagellates, single-celled plankton, known by the species name *Lingulodinium polyedrum*.

"It's possible that bacteria of this type play an important role in terminating algal blooms and regulating algal bloom dynamics in temperate marine waters all over the world,"

The techniques revealed that so-called Roseobacter-Clade Affiliated bacteria—several at a time—attacked individual dinoflagellates by attaching directly to the plankton's cells, slowing their swimming speed and eventually killing them.

"Our understanding of harmful algal blooms and red tides has been fairly primitive. For the most part, we don't know how they start, for example," said Peter Franks, a professor of biological oceanography in the Integrative Oceanography Division at Scripps. "From a practi-



Red tide

cal point of view, if these RCA bacteria really do kill dinoflagellates and potentially other harmful algae that form dense blooms, down the road, there may be a possibility of using them to mitigate their harmful effects."

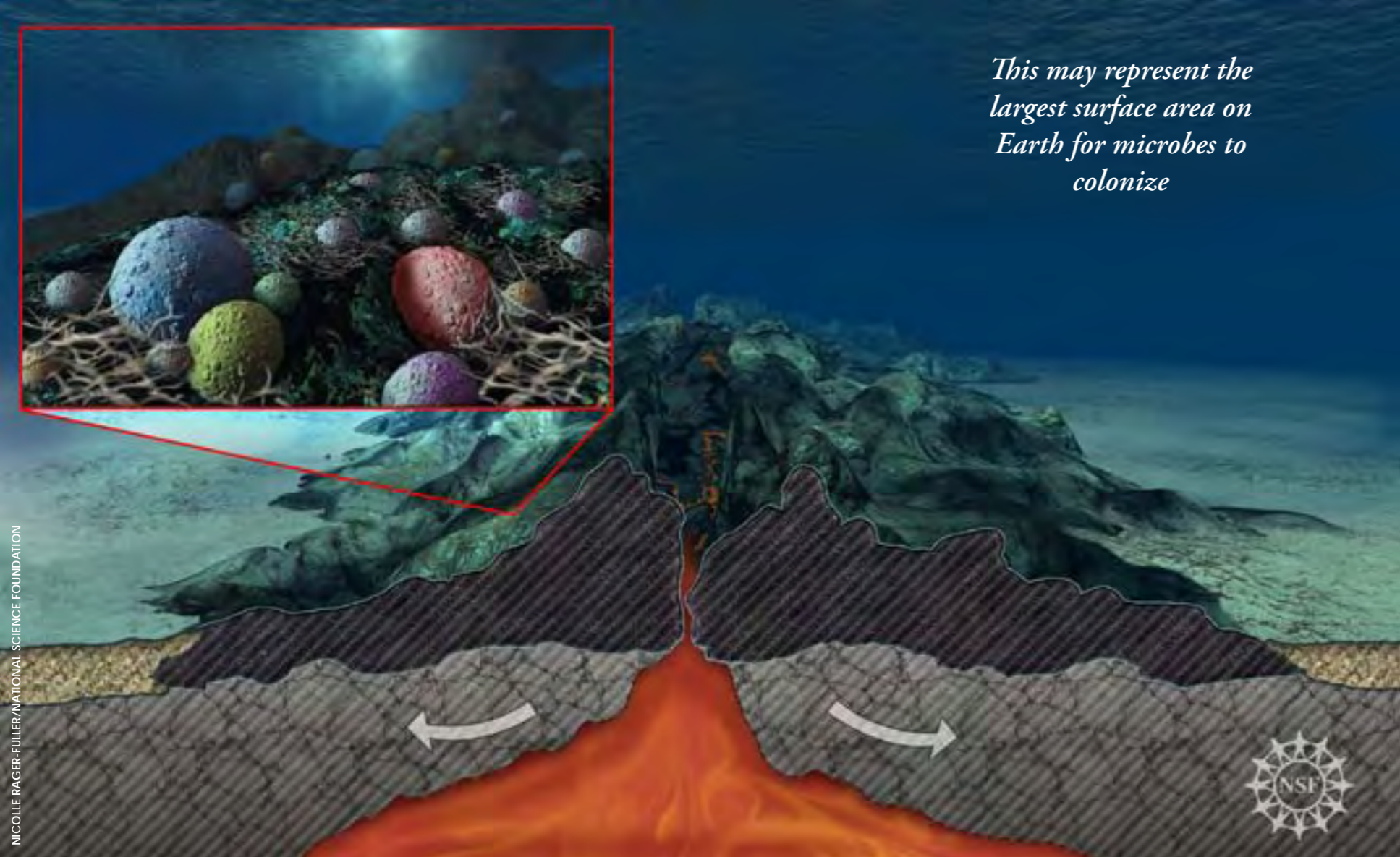
Franks said he found it a bizarre concept of scale that *Lingulodinium* dinoflagellates, which at 25 to 30 microns in diameter, are known to swim through the ocean with long appendages known as flagella, are attacked by bacteria that are about one micron in size and can't swim.

"It's somewhat shocking to think of something like three chipmunks attaching themselves to an elephant and taking it down," said Franks. ■

Algal blooms has also been linked to epileptic seizures and behavioural abnormalities in Californian sea lions



NICOLLE RAGER-FULLER/NATIONAL SCIENCE FOUNDATION



This may represent the largest surface area on Earth for microbes to colonize

Scientists have found that rocks beneath the seafloor are teeming with microbial life

sity on ocean-bottom rocks compared favorably with other life-rich places in the oceans, such as hydrothermal vents. These findings raise the question of where these bacteria find their energy, Santelli said.

"We scratched our heads about what was supporting this high level of growth," Edwards said. With evidence that the oceanic crust supports more bacteria than overlying water, the scientists hypothesized that reactions with the rocks themselves might offer fuel for life. In the lab, they calculated how much biomass could be supported by chemical reactions with the rocky basalt. They then compared this figure to the actual biomass measured. "It was completely consistent," Edwards said.

This discovery lends support to the idea that bacteria survive on energy from Earth's crust, a process that could add to our knowledge about the deep-sea carbon cycle and the evolution of life.

Did life begin on the seafloor? Many scientists believe that shallow water, not deep water, is better suited for cradling the planet's first life forms. Up until now, dark, carbon-poor ocean depths appeared to offer little energy, and rich environments like hydrothermal vents were thought to be relatively sparse.

But the newfound abundance of seafloor microbes makes it possible that early life thrived—and perhaps began—on the seafloor.

"If we can really nail down what's going on, there are significant implications," Edwards said. "I hope that people turn their heads and notice: there's life down there." ■

In addition to Santelli and Edwards, the paper's co-authors are: Beth Orcutt of USC; Erin Banning of WHOI; Wolfgang Bach of WHOI and Universität Bremen; Craig Moyer of Western Washington University; Mitchell Sogin of the Marine Biological Laboratory; and Hubert Staudigel of the Scripps Institution of Oceanography.

Rocks made of basalt on and under the ocean bottom harbor surprising numbers of bacteria.

Bacteria Feed on Ocean Bottom Crust

Rocks on and under seafloor offer feast for microbes. Seafloor bacteria on ocean-bottom rocks are more abundant and diverse than previously thought, appearing to "feed" on the planet's oceanic crust, according to results of a study reported in the journal *Nature*.

The findings pose intriguing questions about ocean chemistry and the co-evolution of Earth and life. Once considered a barren plain dotted with hydrothermal vents, the seafloor's rocky regions appear to be teeming with microbial life. While seafloor microbes have been detected before, this is the first time they have been quantified.

Using genetic analysis, Cara Santelli of Woods Hole Oceanographic

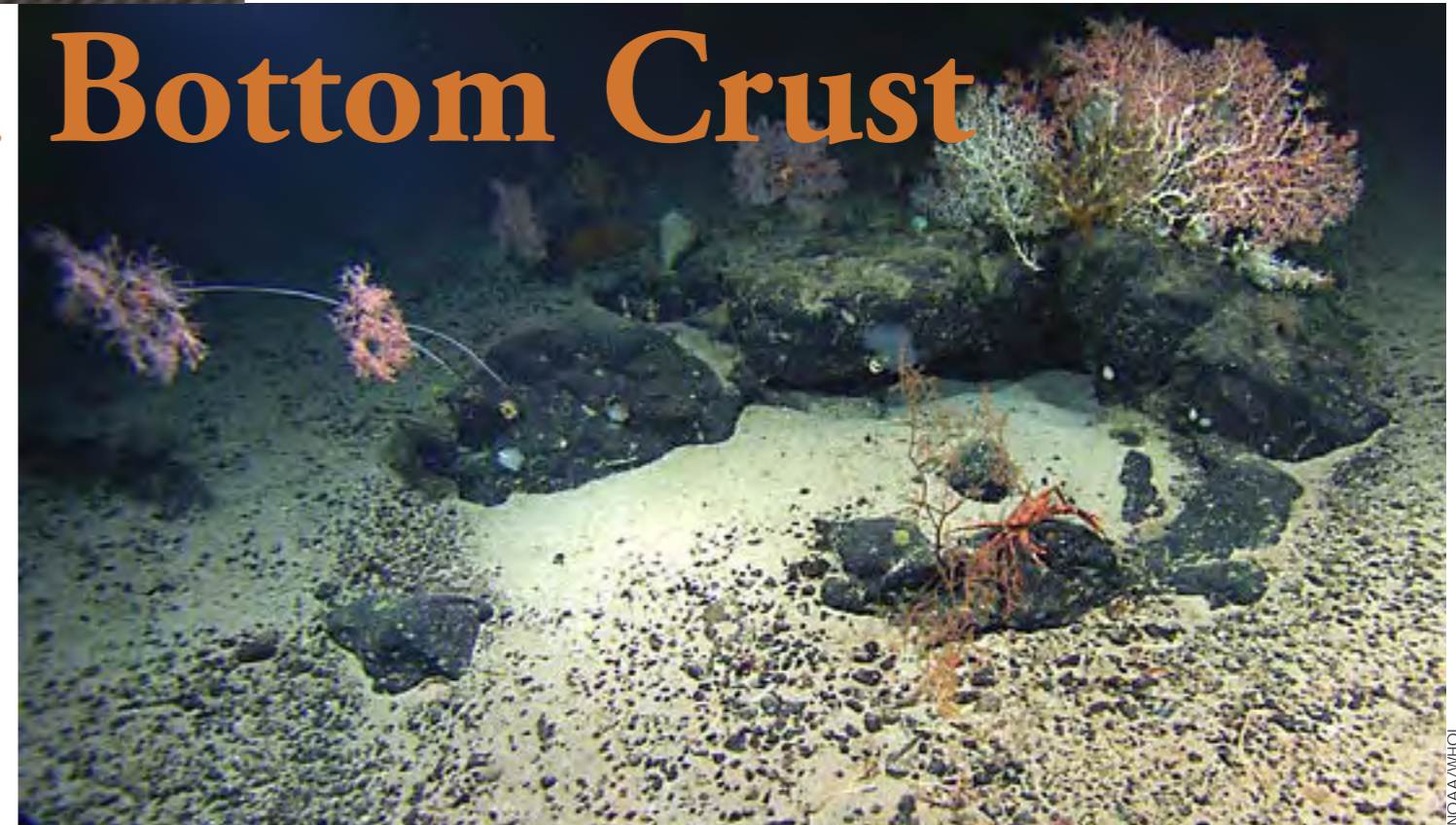
Institution (WHOI), Katrina Edwards of University of Southern California (USC), and colleagues found three to four times more bacteria living on exposed rock than in the waters above.

"Initial research predicted that life could in fact exist in such a cold, dark, rocky environment," said Santelli. "But we really didn't expect to find it thriving at the levels we observed."

Surprised by this diversity, the scientists tested more than one site and arrived at consistent results, making it likely, according to Santelli and Edwards, that rich microbial life extends across the ocean floor. "This may represent the largest surface area on Earth for microbes to colonize," said Edwards.

Head scratcher

Santelli and Edwards also found that the higher microbial diver-



NOAA/WHOI

Wooden Helmet Diver

A new dive training course in Scandinavia

Text and photos by Andrey Bizyukin & Jouko Moisala

The diving seminar, “Underwater environment: From bottom to surface”, was a part of the 50-year celebration of Swedish diving, which was held in Lysekil on the Swedish westcoast. Events on the schedule ranged from interesting lectures and

presentations, to competitions in rope-pulling for four-person divers’ teams with fins. In addition, a Swedish coast guard vessel was present to demonstrate original professional and historical diving equipment in liaison with a historical diving team.

During the event some people were given the opportunity to try on and dive in Siebe Gorman gear, a very unique two bolt Danish helmet. A select few divers were also given the chance to dive with a wooden helmet—a replica of a unique helmet from the Stockholm museum. Most people, even professional divers, had only to look at this wooden helmet to render them speech-

less or amused. Some of them just smiled and laughed and asked to take a picture. I decided, on the other hand, to take a closer look and to interview Jouko Moisala and Harri Jylhä about the helmet and the museum where it is usually exhibited.

Inspired by William Beebe
“No, this is not just a museum replica, it is a real working example,” explains Jouko.

The whole story actually begins with the American marine biologist and scientist William Beebe who researched the marine life in Haiti around the end of the 1920s. During his research under the sea, he dived with an open helmet, which he had built himself. The helmet was surface-supplied with the air pumped down to him by a hand pump, which was originally constructed to inflate car tires with air. With his helmet, he dove down to ten meters.

In Stockholm, Sweden, there were three brothers, Lars,

Lennart and Sten Ekholm, aged 12 to 15 years. The brothers used to spend their summer holidays at the Tisnare lake about 200 kilometers from Stockholm. The water of the Tisnare was very clear. One can easily see the bottom at 5 to 6 meters. The boys wanted to see what was under the surface of the lake. They all had read the book by William Beebe, *Beneath Tropic Seas*, and so, they began making their own open diving helmet.

“They didn’t have the means to make it out of metal, so they decided to make it out of wood. The air pump, they got from their fathers car,” explains Moisala.

Their helmet and diving adventures were presented in an article in the Swedish magazine, *Teknik för alla* (Technical Science for Everyone) in 1944. In 2005, the helmet was included in the collec-



tion of the Swedish Diving Historical Society museum, Dyktank huset, in Stockholm.

Making a wooden diving helmet

Jouko Moisala, Jean Finnberg, Harri Jylhä and myself visited the Dyktank huset in the spring of 2006. I asked Harri, who is a technical science teacher and very good with his hands, too, “How about making a helmet of our own?”

He liked the idea and made a replica. I got a copy of the original article from the library at Helsinki University, which featured the original drawings made by the Ekholm brothers. The first dive



“You have to trust me on this. We can pump enough air to the helmet with our manual bicycle pump, and you should breathe well underwater,” Jouko assured me





Wooden Helmet Diver

possible by swallowing hard and wiggling my jaw. From here, my support team lowered me very slowly, in the beginning. Communication with the surface support team was done by pulling (jerking) the air hose: one pull meant "OK", two pulls meant "down", three pulls meant "up" and many erratic pulls meant "emergency situation, go up very quickly!"

I confirmed that I was OK and concentrated on my breathing. I didn't have any depth gauge and could see very little through the small window. I tried to feel what depth I was at by feeling the pressure to my eardrums and seeing how quickly I needed to equalize. I wanted to have a look around me, so I tried



that as the air was released from the helmet, so was the carbon dioxide.

After having a lot of fun with the wooden helmet diving in lakes, I asked about the possibility of diving with the helmet in the Atlantic Ocean. Jouko Moisala was very happy to organize a real test for this gear, and he even was so kind to bring me his own dry suit and everything. I started to measure the helmet.

"You have to trust me on this. We can pump enough air to the helmet with our manual bicycle pump, and you should breathe well underwater," Jouko assured me.

I nodded eagerly inside my wooden helmet as much as it was possible. They helped me onto

the diving platform held by the diving vessel's hoisting crane. Then attached to my front and back, two very heavy lead weights with a total about 25 kg. I was ready to try the wooden helmet in the ocean.

Bicycle pump

The crane on the Swedish coast guard started lowering me into the green Atlantic water. The water splashed around me, outside the helmet and inside as well. I tried to keep my face upright and to breathe with my nose. Equalizing inside the diving helmet was only



to turn my body and to bend my head a little. The water very quickly started to enter the helmet. In order to keep my nose and mouth out of the water, I immediately stopped these movements.

The brilliant green colored water outside my small wooden helmet was a delightful sight. The smell inside was a bit rubbery—this was probably a good confirmation that the bicycle pump was working correctly.

The dive was amazing enough, but short. Moisala decided not to spoil the novice wooden helmet diver and gave the order to bring me back up onto the coast guard vessel. Everyone was happy, and I heard the clicking of cameras as soon as I arrived back on deck. I took off the wooden helmet and relayed my thanks to Jouko Moisala and all the historical diving society team for this unique opportunity to experience just a touch of diving history. Now, I am the very proud owner of the extremely expensive and, for me important diving certificate—North Atlantic Wooden Helmet Diver. I want to send a special thanks to everyone at the historical diving society team and all the crew members of the Swedish coast guard vessel who made this historical dive possible. ■

THIS PAGE: Scenes from X-RAY MAG's editor Andrey Bizyukin's wooden helmet dive in Sweden

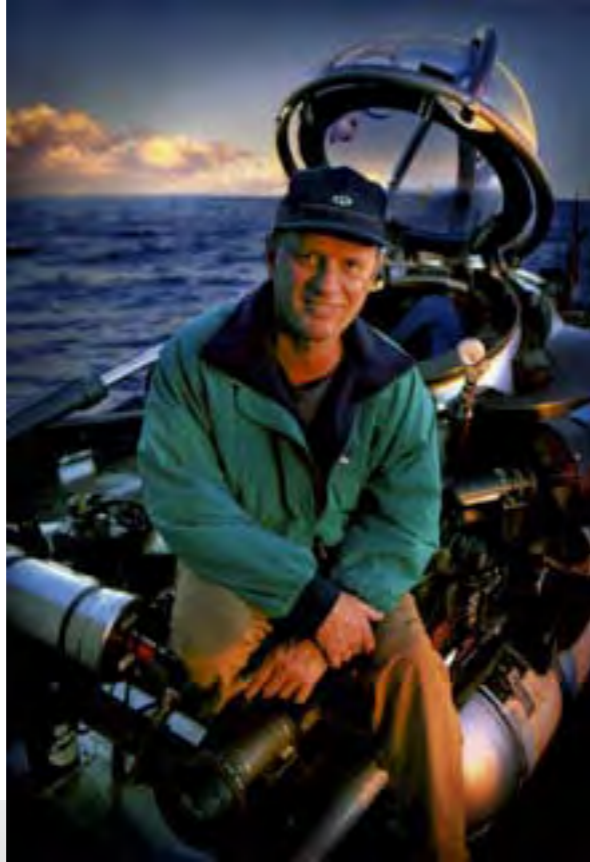
we made with the helmet was in a swimming pool, and we encountered the same problem as the brothers had encountered. Diving with a wooden helmet demands a lot of weight. The brothers didn't have lead, so they got their hands on a beak iron, which was made of cast iron. Its weight was about 25 kg, so we used approximately the same weight as well, but in lead.

I dived with the helmet ten times in open water, but never deeper than eight meters. The brothers wrote in their article that they dove to 15 meters with the helmet. At eight meters, supplying air with the hand pump was acceptable, and we hoped





"I couldn't tell anybody. There was a lot of pressure on me. It was a secret mission."



Robert Ballard: *Titanic* search was a cover for secret cold war submarine mission

Finding the *Titanic* was not his main goal during his expedition in the Atlantic in 1985. The well-known oceanographer, Robert Ballard, recently revealed that he was actually hired to use his advanced robotic sub to check on the status of two nuclear submarines, the *USS Thresher* and the *USS Scorpion*, which sank in the Atlantic in the 1960s. He wasn't allowed to look for the *Titanic* before he had completed his task for the US Navy.

"The Navy didn't want the Soviets to know they were looking for these subs," Ballard said on an interview with "Good Morning America".

The *Thresher* went down in 1963, and the *Scorpion* sank in 1968. Both

were nuclear subs, and their locations had never really been mapped.

The sinkings of the United States Navy vessels killed more than 200 men. The Navy's interest in Ballard expedition plans came after Dr Robert Ballard had developed a robotic submarine craft in the early 1980s. He approached the US Navy in 1982 for funding to search for the *Titanic*, which sank in 1912 with the loss of 1,500 lives after hitting an iceberg.

The Navy made a deal with Ballard. After his submarine search was concluded, it would fund an expedition to find the *Titanic*. "I couldn't tell anybody. There was a lot of pressure on me. It was a secret mission. I felt it was a fair exchange for getting a chance to look for the *Titanic*", Ballard said after having kept the secret for more than two decades.

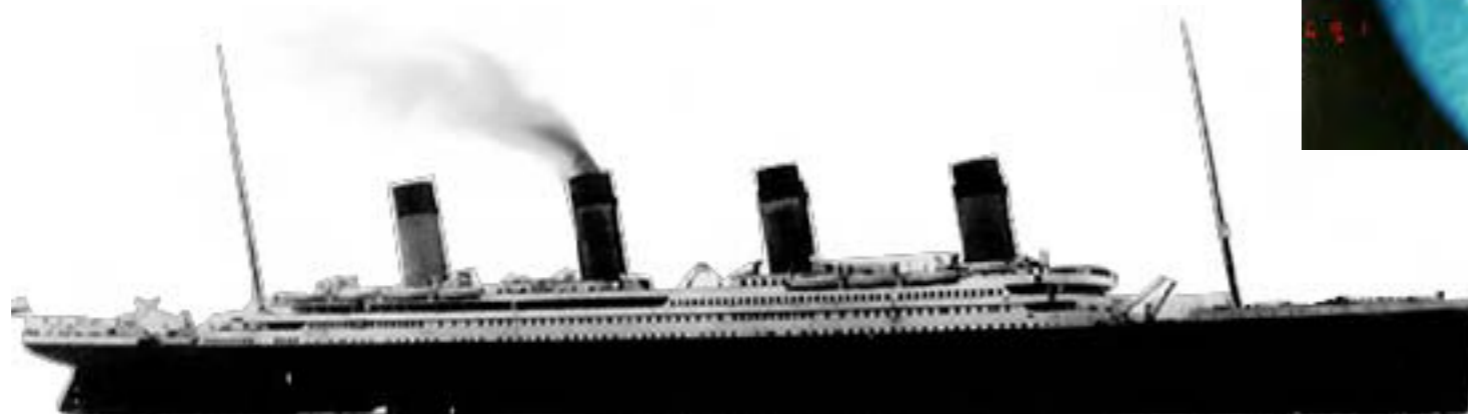
His work with finding the two lost submarines also gave him valuable lessons in how to search for the *Titanic*.

"Because the *Titanic* when it broke up—just like the *Scorpion* and *Thresher* when they imploded—all this material, thousands of objects began falling to the ocean floor. Now, you would think they would just land in a clump. But they didn't. When we saw the *Thresher* and *Scorpion* stretched out over a mile, we realized it was much easier to find than the ships or the subs themselves," Ballard said.

When he was finished with the task for the Navy, he had just 12 days to go searching for the *Titanic* in the vast North Atlantic. ■



Archive photo of *USS Scorpion*



Were weak rivets responsible for *Titanic's* doom?

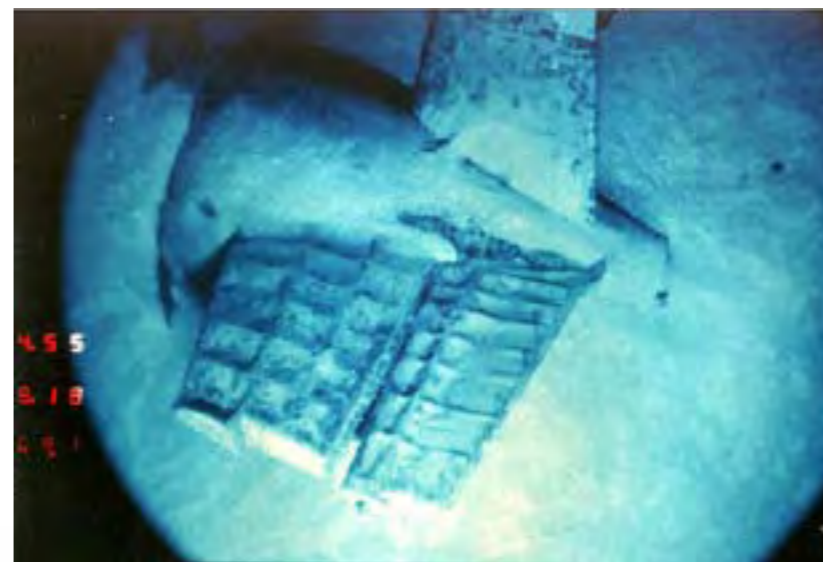
For a decade, the scientists have argued that the storied liner went down fast after hitting an iceberg because the ship's builder used substandard rivets that



popped their heads and let tons of icy seawater rush in. The builder's own archive, the two scientists say, harbors evidence of a deadly mix of low-quality rivets and lofty ambition as the builder labored to construct the world's three biggest ships at once: the *Titanic* and two sister ships, *Olympic* and *Britannic*.

The scientists studied 48 rivets that divers recovered over two decades from the *Titanic's* resting place, two miles down in the North Atlantic and found many riddled with high concentrations of slag. Slag, a glassy residue of smelting, can make rivets brittle and prone to fracture.

For its part, Harland and Wolff shipyard, after its long silence, now rejects the charge. "There was nothing wrong with the materials," Joris Minne, a company spokesman, said. Minne also noted that one of the sister ships, the *Olympic*, sailed without incident for 24 years, until retirement. (The *Britannic* sank in 1916 after hitting a mine.) ■



Stern section of the sunken American nuclear submarine *USS Scorpion*, photographed in 1986, just prior to the discovery of the *Titanic* wreck

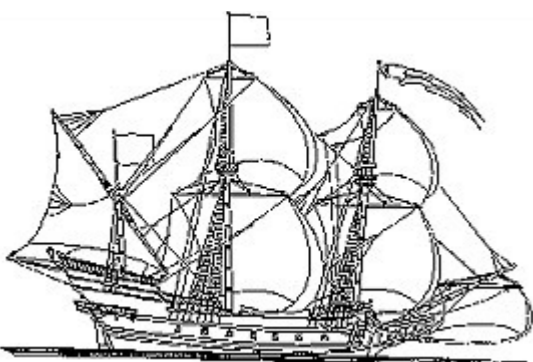


wreck rap



Santa Margarita wreck yields more treasure

Florida divers have found golden artifacts and pearls at the wrecksite of the *Santa Margarita*, a Spanish galleon which sank off the Florida Key's in 1622. At only 22 feet (7 meters) depth, the divers came across a tiny gold combined toothpick and earwax spoon, ceramics and pieces off the ship itself. The *Santa Margarita* was, in fact, the sister ship to the well known *Atocha*. Both were lost during a hurricane near the Florida Keys on 6 September 1622 and were salvaged by Mel Fisher and his company, Treasure Salvors Inc. This is not the first time that artifacts from the *Santa Margarita* have been found since the salvaging 25 years ago. About a year ago, gold bars and a lead box containing thousands of pearls carried by the *Margarita* ship were found. It was estimated to be US\$2 million worth of items. ■



Treasure found on Namibian coast

De Beers geologists stumbled on the wreck on April 1 as they prospected for diamonds off Namibia's south-west coast. Judging from the notables depicted on the hoard of Spanish and Portuguese coins as well as the type of cannon and crude navigational equipment, the ship went down in the late 1400s or early 1500s.

Additionally, the ship was laden with tonnes of copper ingots and elephant tusks. The archeologists believe that the coppers were for making cannons. There were also human remains and navigational instruments. Excavations in the area were halted immediately.

The Portuguese government was alerted to the find, and a team of experts were expected to be dispatched to the site for further investigations, said Hillifa Mbako, company spokesman for Namdeb Diamond Corp., a joint venture of the government of Namibia and De Beers.

The coast of Namibia is famed for its treacherous waters. It is called the Skeleton Coast. The coast is named for the bleached whale and seal bones that covered the shore when the whaling industry was still active, as well as the skeletal shipwrecks caused by rocks offshore in the fog. ■

SS Laurentic gold share sales

For GB£49 you can now buy the so-called *SS Laurentic* Share Pack, which includes amongst other things, a legal share certificate of Laurentic Limited. The real attraction of this package is supposed to be the 20 remaining gold bullions, which still are buried in the shipwreck. The majority of the 43 tons of gold the ship was carrying when it sank has already been recovered, but



Rare gold coins found in Louisiana wreck

A steamship that sank off the Louisiana coast during an 1846 storm has produced a trove of rare gold coins. Avery Munson and Gary Hebert discovered the sunken wreckage of a side-wheel steamship 60 miles off the coast of Cameron in July 1990. The first time Munson found any coins was in 1994, when he took up five coins worth a US\$ 80. It would take them more than 16 years before they really could start to recover some of their finds. By a February 2007 maritime judge's decision, the group today has ownership of more than a hundred gold coins and a thousand silver coins, including some produced at two mostly forgotten U.S. mints.

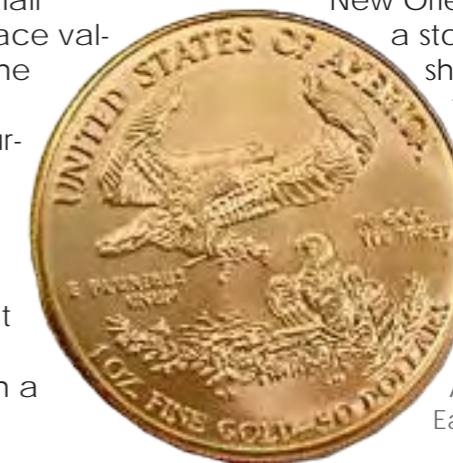
Some of these are in uncirculated or mint condition, and the best could bring US\$50,000 to US\$100,000 a piece at auction, according to David Bowers, co-chairman of New York-based Stack's Rare Coins.

Of particular interest to coin experts are gold pieces known as quarter eagles and half eagles, which carried face values of \$2.50 and \$5 in the days before the United States printed paper currency. These coins are relatively rare, according to specialists.

Gold resists saltwater corrosion, and mud that had collected on the coins was removed with a

chemical compound that does not affect the metal. The silver coins are etched by the seawater, giving them a "shipwreck effect" that is popular with collectors, Bowers also said.

The steamship *SS New York* was making regular commercial runs between Galveston, Texas, and New Orleans before a storm took the ship to the bottom, killing 17 of the 53 people aboard. The rest were rescued. ■



American Gold Eagle coin

Medival Wreck in the Baltic looted and damaged

The Swedish Coastguard and the Swedish maritime museums have discovered that a 16th century wreck has been damaged, and that objects have been removed. The so-called "Dalarö wreck" was discovered by divers in 2003. The wreck was unusually well preserved and was kept a secret from the public until 2007. In the meantime, the museum did a comprehensive documentation of the wreck. This is one of the reasons why they are able to say with certainty that the wreck has been disturbed and looted. There is a general prohibition for diving on the wreck. This didn't deter divers from looting the wreck sometime between October 2007 and April 2008. ■



the remaining bars are estimated to be worth GB£10m. Of the 3,211 ingots, a diving team under Commander Guybon Damant recovered all but 25 between 1917 and 1923. Under the worst conditions possible, the *SS Laurentic*, which had sunk at a depth of 40 meters, had been salvaged and not one life had been lost in the five thousand dives that had taken place. *SS Laurentic* was sunk by a German mine on 25 January 1917 with a huge loss of life of some 350 people and with gold bullion on board worth US\$3 billion at today's prices. The ship had

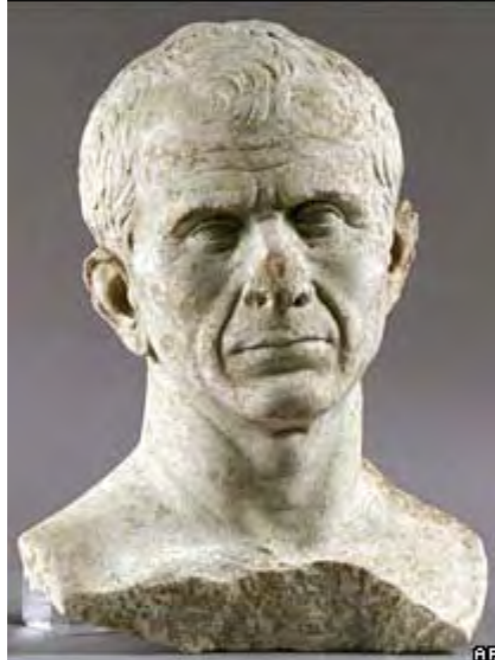
been en-route from Liverpool to Canada with the gold bullion to pay for munitions in WWI. www.laurentic.com ■



Spain and Egypt to investigate 19th century shipwreck in search of mummy

Spain and Egypt will start a project later this year to investigate the 19th century sinking of a ship that some believe contained the mummy of a Fourth Dynasty pharaoh, news agency MENA said. MENA cited Egyptian Ambassador to Spain, Yasser Murad, as saying the countries would first hold consultations and compare historical records, and attempt to establish the location of the shipwreck. Khafre, who ruled Egypt more than 2,500 years ago, is known for building the second largest of the three great pyramids at Giza, and may have overseen the creation of the nearby Sphinx. A ship carrying ancient artifacts from Egypt to Britain, which sank off the Spanish coast in the first half of the 19th century, is believed by some Egyptologists to have contained Khafre's mummy. ■

SOURCE:
RIA NOVOSTI



Divers find oldest known bust of Caesar in river

Divers in France have found the oldest known bust of Roman dictator Julius Caesar at the bottom of the River Rhone near Arles according french officials. The life-sized bust showing the Roman ruler with wrinkles and hollows in his face is tentatively dated to 46 B.C. This could be the oldest known bust of the Roman emperor.

"I suspect the bust was thrown in the river after he was assassinated, because it would not have been good at that time to be considered a follower of his," said French archaeologist Luc Long, who directed excavations at the underwater site.

Among other items in the river, there was a 5.9 foot marble statue of Neptune, dated to the first decade of the third century after Christ. Additionally two smaller statues, both in bronze and measuring 27.5 inches each also were found. It is "doubtless" that one of them—a satyr with his hands tied behind his back—originated in Hellenic Greece, the French cultural ministry said. The divers made the discoveries during an archaeological excavation made between September and October 2007. ■

Odyssey Marine Exploration to star in new *Discovery* series about shipwrecks

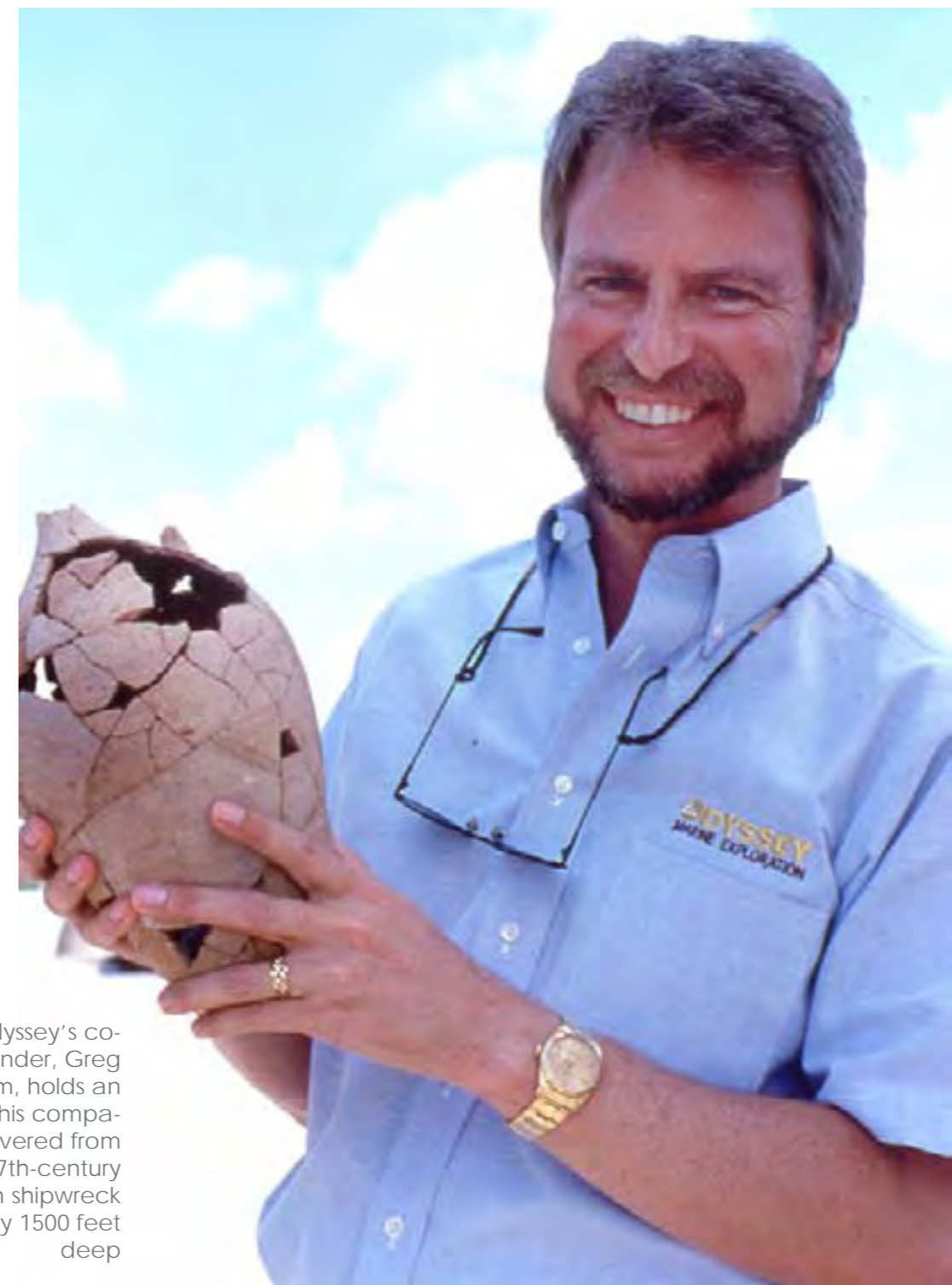
Discovery Channel and JWM Productions team up to film the searches of Odyssey Marine Expeditions as part of a new series for the network. The Discovery Channel will accompany Odyssey on its 2008 Atlas Search expeditions as it uses state-of-the-art equipment to locate and recover artifacts from the ocean's depth. The series will also cover the political red tape and courtroom clashes that come with exploring shipwrecks, as well as the history of the ships being explored. The production is already under way. The planned 11 programs will be aired in 2009.

Odyssey Marine claims two new shipwreck discoveries

Odyssey Marine Exploration Inc. is telling the world it has found two more shipwrecks. But, as is typical in the top secret world of treasure hunters, the Tampa company isn't saying much more. Odyssey filed papers May 29 at the U.S. District Court in Tampa, saying it has discovered a pair of shipwreck sites in the region of the English Channel. Court filings indicate the newly discovered shipwreck sites to be in about 200 meters of water, between 25 and 40 miles from the coast of England. While the exact locations of the sites were not disclosed, Odyssey said they are "outside the territorial waters or contiguous zone of any sovereign nation." The deep-sea exploration company said it has conducted preliminary surveys at the wreck sites and found cannons and other artifacts believed to date from the colonial period. It has not yet confirmed the vessels' identities. Odyssey's court filing, called an Admiralty Arrest Complaint, is intended to protect the company's legal interests and give it exclusive salvage rights. Once the sites are identified, the company said any potential claimants will be notified. ■

"We have the most experienced team of shipwreck explorers in the world manning our ships, and on a regular basis, they make amazing discoveries in the deep ocean—things that have never before been seen by human eyes. We're proud of the exploration and archaeological work our team accomplishes in the challenging

offshore environment, and for a long time, we've been looking for the right format to share the excitement of our expeditions with viewers around the world," stated Greg Stemm, Odyssey's chief executive officer. ■

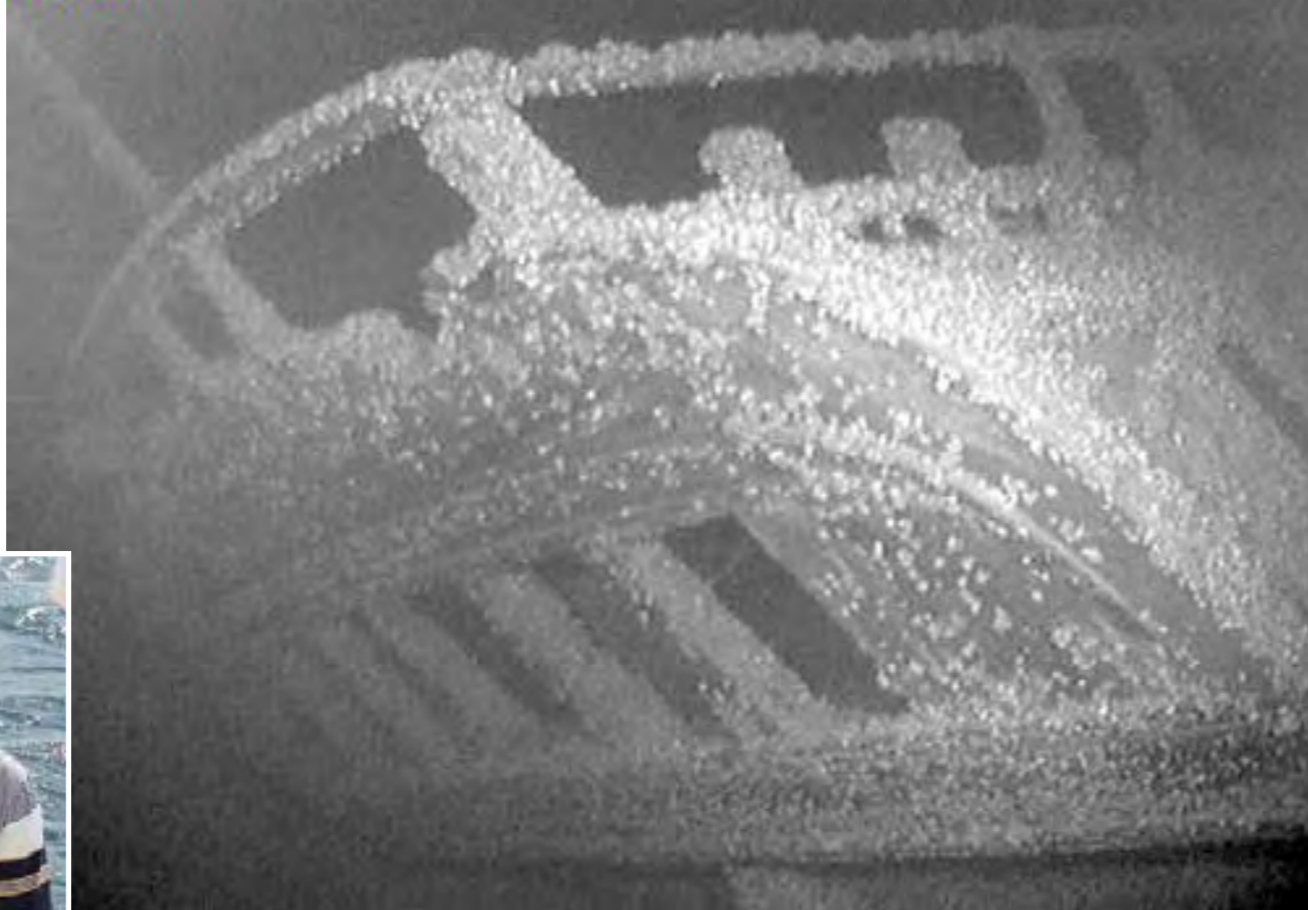


Odyssey's co-founder, Greg Stemm, holds an artifact his company recovered from a 17th-century Spanish shipwreck nearly 1500 feet deep



Shipwreck enthusiasts, Jim Kennard and Dan Scoville, located the ship utilizing side scanning sonar and an ROV

Photos by Dan Scoville and Jim Kennard



place rising up over 70 feet from the bottom. A portion of the bowsprit remains, and just below it, there is a beautifully carved scroll bow stem. Two of the cannons are visible in the bow area, but they have come loose from their original positions. Two of the large anchors are clearly visible. One anchor is still secure in its original position and the other has dropped off to the side of the ship.

The most characteristic feature of this ship are the quarter galleries that are located on either side of the stern area of the *HMS Ontario*. A quarter gallery is a kind of balcony with windows that are typically placed on the sides of the sterncastle—a high, tower-like structure at the back of a ship that housed the officers' quarters. Both quarter galleries are there with some of the window glass still in place.

Under the ship's tiller rests one of the small cannons that had been mounted

on the stern deck of the ship. A few deadeyes and pulley blocks can be seen lying about in the wreckage. Many of the belaying pins that were used to secure lines are still located on the rails of the ship. All of the hatch covers and skylights are gone leaving a slight opening to the deck below, however, the ROV was not able to penetrate into the lower deck due to the silt that has been deposited over the years.

War Grave Site

The shipwreck of the *HMS Ontario* is still considered to be British Admiralty property. The official record of the number of people on board the *Ontario* when she sank included: 74 military personnel, nine women and children, four native Americans, and one civilian. There were no prisoners-of-war officially listed by the British, however, private correspondence by an individual living at Fort Niagara indicated that there may have been a total of 120 people on board the ship including about 30 American prisoners. The shipwreck site of the *Ontario* is considered to be a British war grave and therefore should remain forever undisturbed. ■

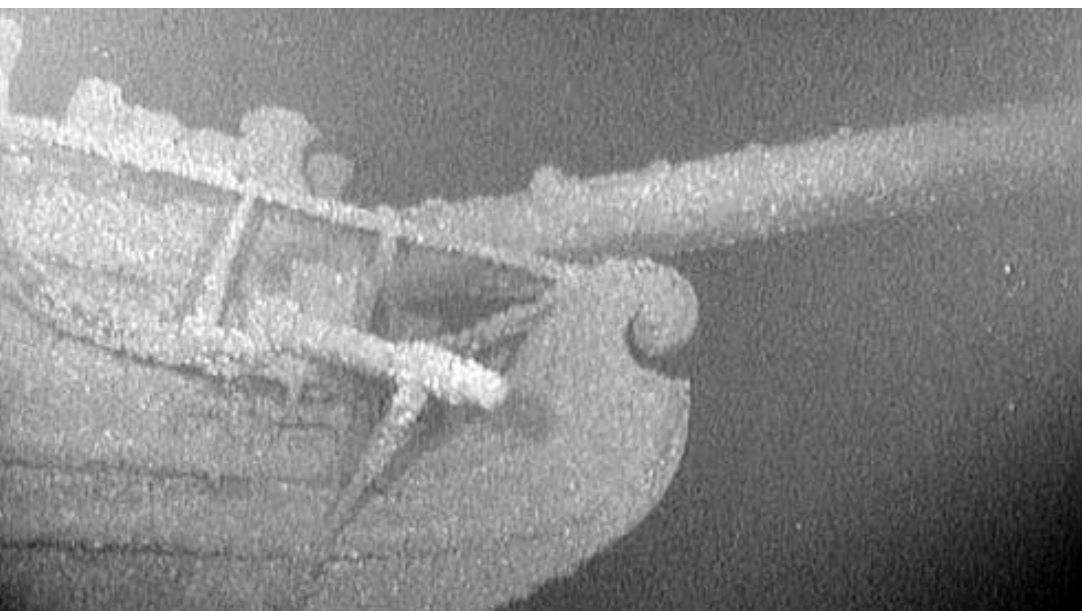
18th century British warship *HMS Ontario* found intact in Great Lakes

Shipwreck enthusiasts or—rather—finders, Dan Scoville and Jim Kennard, have done it again, and this time, exceeded themselves with the extraordinary find of *HMS Ontario*, the oldest confirmed shipwreck and the only fully intact British warship to have ever been found in the Great Lakes.

The *HMS Ontario*, a British warship that was built in 1780, was discovered utilizing side scan in deep waters off the southern shore of Lake Ontario after an extensive search, which took three years and covered over 200 square miles of the lake.

The *HMS Ontario* was considered to be one of the few "Holy Grail" shipwrecks in the Great Lakes. The sonar imagery clearly shows a large sailing ship

partially resting on one side, with two masts still in place. The remains of two crow's nests on each mast provided good confirmation that the sunken ship would be the brig-sloop *Ontario*. A remote operated vehicle with on-board cameras and high intensity lighting was deployed to bring back images of the sunken shipwreck. The schooner was found sitting upright on the bottom leaning over to one side. The masts are still in



The last global act of colonisation

Text by Arnold Weisz

The international race to establish sovereignty over underwater territories is gaining momentum. Claims are being processed by the New York-based UN Commission on the Limits of the Continental Shelf. States may extend their territorial rights over the seabed beyond the 200-mile limit and up to 350 miles from an adjacent coastline.

As mineral and energy prices soar, there is growing international interest in exploring the seabed for increasingly scarce reserves. Countries like Great Britain, Russia, Mexico, Norway, France, Brazil, New Zealand and Australia have already staked out claims. The two latest submissions made in 2008 came from Great Britain, which has formally laid claim to 200,000 km² of the Atlantic seabed surrounding Ascension Island. This area is as large as the country itself. The small Caribbean island state of Barbados submitted a claim this month to a wide swath of underwater territory on the outer rim of the Caribbean. Its documentation was assembled with the help of the National Oceanography Centre in Southampton, one of the units that helped the UK to plot its territorial claim.

Far from home

As a rule, all maritime states are entitled to claim an exclusive economic zone of 200 nautical miles (370.4 kilometers). They have to prove that the

Great Britain has formally laid claim to 200,000 km² of the Atlantic seabed surrounding Ascension Island.

Maritime states are entitled to claim an exclusive economic zone of 200 nautical miles (370.4 kilometers)

seabed is part of a continuous continental shelf adjoining their coastline. Often these claims are made based on territory far from the main land. Ascension Island is situated in the mid Atlantic, between South-America and Africa. The island has a land area of just around 100 km² but, due to its isolated location, it generates an exclusive economic zone with an area of more than 440,000 km². If the submission is approved by the commission, Great Britain will gain nearly 200,000 km² of additional seabed in which it will have sovereign rights to exploit living and non-living resources.

France has made similar claims to the continental shelf off the coast of French Guiana (South-America) and the island of New Caledonia (Western Pacific). In their submission to the UN Commission, France stated that there were no disputes between France or any other state regarding their claim off the coast of French Guiana, but their claim off New Caledonia was subject to informal disputes with New Zealand and Australia. Norway has made claims on three separate areas in the North East Atlantic. One



of those is the so-called "Loop Hole" in the Barents Sea, which for many years has been subject to a dispute with Russia.

The quest of the poles

The ocean beneath the North Pole has been subject to the most intensive race lately. In August this year, Russia sparked what has been widely described as a "race" for the North Pole, by sending a mini-submarine to plant a flag at the North Pole sea floor at a depth of 4,261 meters (13,980 feet) as featured in X-RAY MAG #22.

Many of the nations around the North Pole are driven by a lust for Arctic Ocean oil, as global warming makes this part of the planet increasingly accessible due to the melting polar ice cap. The US, Canada, Denmark, Norway and Russia are all part of this race.

On the other side of the planet, there aren't going to be any cessions made easily either. Both Argentina and Chile have announced that they plan to make rival submissions for the seabed off the icy southern continent. Most of this continent—and there of, the continental shelf—is also seen by many countries as a political quest to gain more territory and the right for any natural resources in them.

Mare Pacificum

The vast Pacific Ocean may just contain a handful of tiny island nations. This doesn't mean that these tropical paradises are going to miss out on the race for natural resources. The peaceful sea may not be so peaceful in

Ascension Island, a seemingly tiny speck in the middle of the vast ocean, has all of a sudden become a piece of prime real estate

the future as more and more of, virtually all pacific nations are so called maritime nations race for their share of the seafloor. Fiji along with Solomon Islands, Kiribati, Palau, the Federated States of Micronesia, Tonga and Papua New Guinea have a credible claim to more than 1.5 million km² of additional space beyond their current 200 mile Exclusive Economic Zone. For many of these island states, obtaining new wealth from the seafloor may be their only way to elevate their economies, as their homelands are sinking into the very sea they claim.

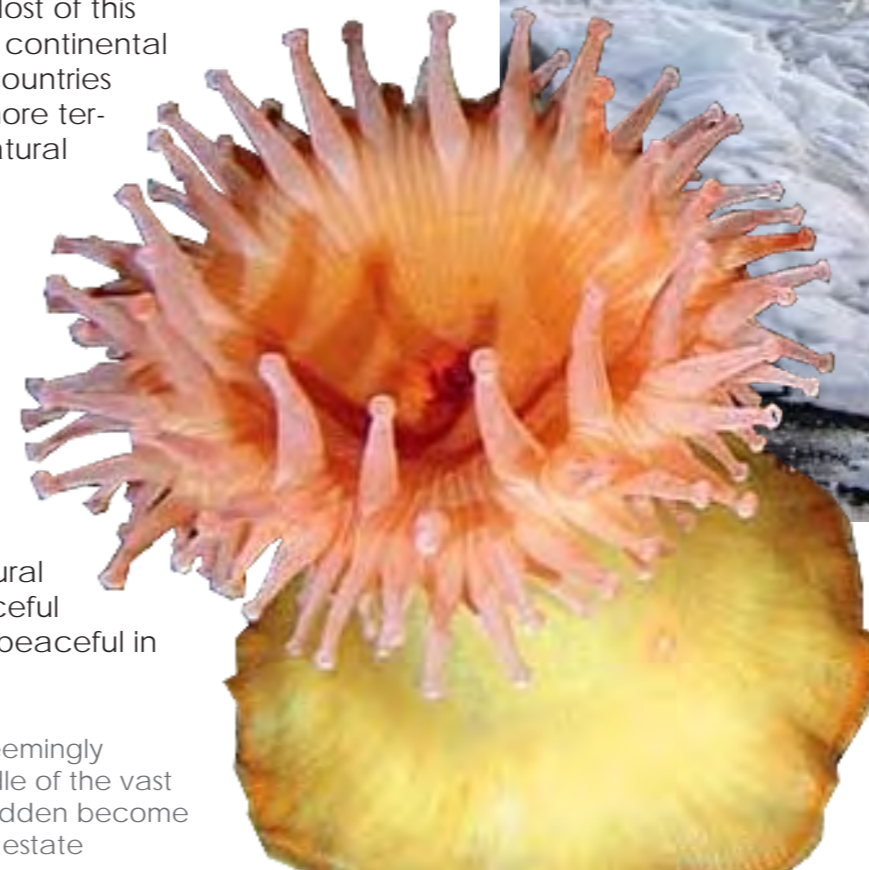
The deadline to submit the claims for the 122 countries involved, is May 13, 2009. ■



Australia has extended its continental shelf, under an agreement with the United Nations, and increased its territory by 2.5 million square kilometers



Three polar bears approach the starboard bow of the Los Angeles-class fast attack submarine USS Honolulu (SSN 718) while surfaced 280 miles from the North Pole



U.S. NAVY PHOTO



Edited by
Catherine GS Lim

New hyperbaric chamber in Singapore

One of Southeast Asia's largest multiplace hyperbaric chambers was launched in Singapore in April 2008. Housed at the premises of Hyperbaric & Occupational Medicine (HOM) Pte Ltd, in association of Flinders Practice Pte Ltd, the chamber is the nation's third hyperbaric chamber.

Text by Catherine GS Lim

As a multiplace hyperbaric chamber, the facility can treat as many as 18 people (20 if necessary!) at any one time, the highest number of patients possible among the existing two other hyperbaric chambers operating in Singapore. It offers hyperbaric oxygen therapy (HBOT) to treat dive-related medical conditions, as well as other conditions like the management of chronic non-healing wounds or ulcers and tissue rejuvenation.

HBOT involves the administering of 100 percent pure oxygen to someone in an environment of increased atmospheric pressure.

This provides a high concentration of oxygen to the body, and serves as the primary treatment in cases of decompression illness.

During treatment, cameras monitor the patients within the chamber through portholes. The medical team can com-

municate with patients in the chamber using an intercom. If necessary, a doctor or nurse can access the chamber during treatment through a larger porthole at the other end.

"The nurses are trained to look for complications such as oxygen toxicity. If oxygen-toxic signs and symptoms develop, we are able to modify the treatment or stop the treatment," said Dr Kevin Chan, the Medical Director of HOM.

At the launch, which was graced by Speaker of Parliament, Mr Abdullah Tarmugi, a S\$300,000 cheque was presented to Mercy Relief. Said Dr Chan: "We believe that while we are attending to the sick and needy in Singapore, at the same time, we should not ignore the sick and needy in the region. We found in Mercy Relief the conduit to express our care and address those needs." ■



Hyperbaric facilities along Turkey's Mediterranean coast: inoperative or lacking

The lack of a medical doctor in the only decompression chamber in Turkey's internationally known resort town of Bodrum in the Aegean, where about 100,000 tourists go scuba diving every year, has troubled tourism agents in the region.

The US\$300,000 decompression chamber in Bodrum is currently not in use and in the 750-kilometer coastal stretch from Kuşadası to Antalya, there are no other decompression chambers. The Aquatic Products Research Institute in Bodrum was closed four years ago, and as the institute's only decompression chamber, was then transferred to the Bodrum State Hospital; the hospital's only medical specialist in decompression sickness was appointed to a different province. Since then, the hospital has not had a medical doc-

tor to intervene in cases of decompression sickness. Consequently, the approximately 500 professional scuba divers and about 100,000 tourists that go diving every summer have been left without any access to hyperbaric facilities in case of decompression sickness. Bodrum Underwater Association Chairman Erman Akarsu said Turkey has only very few decompression chamber medical doctors, and that many of those are appointed by the state to landlocked provinces in eastern Anatolia. ■

SOURCE: DOĞAN NEWS AGENCY

Edited by
Scott Bennett



Swimming With Tuna the Next Trend in Dive Travel?

We've all heard about swimming with dolphins, but how about swimming with bluefin tuna? Off the coast of Port Lincoln in South Australia, a local charter company is offering a world first: the chance for tourists and locals alike to swim with one of the ocean's most highly prized fish. Port Lincoln is home to Australia's lucrative southern bluefin tuna fishery and boasts the highest number of millionaires per capita in the entire country. But the times are changing, and the other locals are fishing for the lucrative tourist dollars.

Matt Waller, a former skipper on the tuna fleet, has set up his bluefin pen in Boston Bay, off Port Lincoln. After a tour of the marina, the tour boat settles and pulls up to a pontoon at one of the tuna farms. Here, a big circular-mesh enclosure is secured to the sea floor,



where hundreds of tuna can be seen swimming below. The fish are originally caught in the open ocean and are then carefully towed back to port in nets.

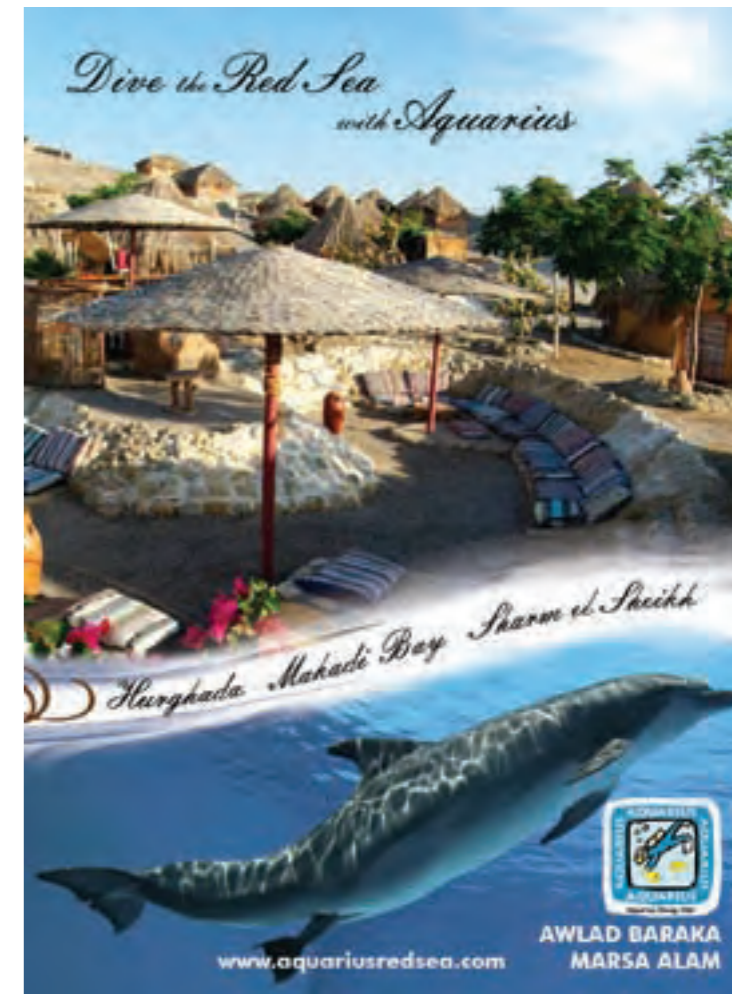
While the tuna are worth about \$1100 each, these aren't destined for the dinner table. Instead, Waller takes tourists to ogle the great fish up close, swim-

ming alongside them as they dart around eating pilchards. Measuring a meter in length, the muscular, black fish are capable of swimming in bursts of up to 70 kilometers an hour.

While the tuna fishermen have been supportive in the venture, Waller says they have little interest in showing tourists around their farms, considering it a distraction from the big business of exporting sashimi-grade tuna to the Japanese. "That leaves it open for people like us to show tourists what the industry is about," he said.

Running into one old tuna fisherman, Waller said he had tuna in pens for tour-

ists to swim with. "Why would you want to do that when you can catch them?" was the baffled reply. ■



Solmar V YouTube VIDEO CONTEST

This year *Solmar V* liveaboard is sponsoring a YouTube video contest, and the winner gets a free trip to Socorro.

All you have to do is create a video (using pictures or video footage taken on the *Solmar V*) and post it on the popular YouTube website. Remember, you can create a "video" using still photos, titles and captions, as well as regular video clips. There's more complete information on exactly how to do this on their web site.

Please make sure to mention *Solmar V* in the YouTube title and description so that viewers will be able to find and vote on your video. After all the videos are posted, the public will then vote on their favorites and decide the winner.

The contest will run throughout 2008, and *Solmar V* will be posting updates regularly. For more complete details, and to see videos already entered for this year, please visit: www.solmarv.com/videocontest_2008.html ■



Jean-Michel Cousteau Signs 10-Year Agreement with Ritz-Carlton

The Ritz-Carlton Hotel and Jean-Michel Cousteau have signed a ten year agreement to further develop and expand the award-winning "Ambassadors of the Environment" (AOTE) program. Emphasizing education and respect for ecosystem sustainability through "hands-on" activities, the innovative program was recently named "Best Children's Program for 2007" by Virtuoso, the consortium of travel professionals specializing in ultra-luxurious business and leisure destinations. Through the program, children have snorkeled to explore coral reefs, discovered the critical role of mangrove trees in the ecosystem and participated in the breeding programs of rare species like the endangered Grand Cayman blue iguana.

From the current location at The Ritz-Carlton, Grand Cayman, the company will expand the program to some of its other resort and urban hotel destinations around the world, including Kapalua, Maui and Sanya, which opened 24 April 2008.

"We are very excited to continue our highly successful relationship with a man whose entire life has been spent dedicated to preservation of the environment, with particular attention to marine conservation and education," said Simon F. Cooper, president and chief operating officer of The Ritz-Carlton Hotel Company.

"As we join in this new and expanded collaboration with The Ritz-Carlton, we will look to what has been done

at Grand Cayman, and with Ocean Futures Society, to make certain our new locations, on land and sea, are in concert with the local community and culture," Cousteau said.

With the motto, "Protect the ocean and you protect yourself", Cousteau is carrying on the legacy of his renowned father through the work of his non-profit Ocean Futures Society. Based in Santa Barbara, California, USA, the OFS also has offices in Paris; Lucca, Italy; and Sao Paulo, Brazil. For more information, visit www.oceanfutures.org.

For more information or reservations, contact The Ritz-Carlton U.S. toll free reservations line at 1 (800) 241-3333, or visit the company web site at www.ritzcarlton.com. ■

Edited by
Scott Bennett

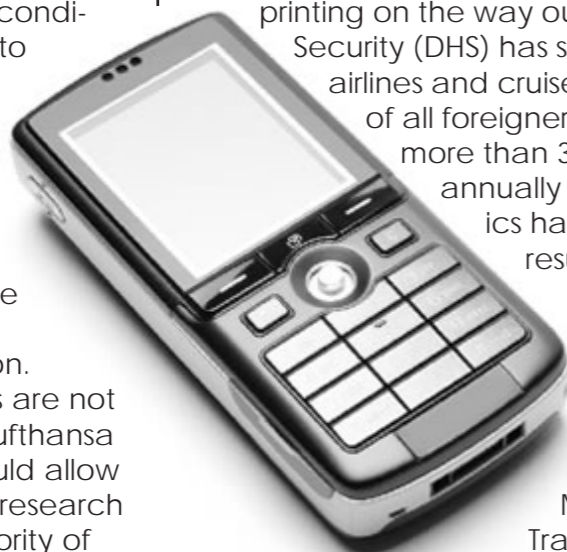
Airlines: Mixed response to in-flight mobile phone calls

One of the last refuges from the mobile phone will be breached before the end of the year after the European Commission has set out the rules for in-flight mobile use. The formal agreement covers legal and technological conditions for all 27 EU nations to permit mobile use in their airspace.

Ryanair is planning mobile use on all European flights while Air France, bmi and the Portuguese carrier TAP are running six-month trials to gauge passenger reaction.

Other European airlines are not planning to allow calls. Lufthansa said yesterday that it would allow only internet usage after research showed that a large majority of passengers were opposed to the use of mobile phones.

Emirates allows passengers to use mobile phones in-flight while Qatar will only allow texting and internet use. According to Qatar's chief executive Akbar al Baker, "We will have the facility on board—it's just a question of flicking a switch. But we have decided not to allow mobile calls on planes for a very simple reason—comfort. We don't want people to start speaking loudly in the cabin on a night flight," he added. However, the airline will allow text messaging and is providing WiFi and high-speed broadband access for laptops. ■



US airlines: Cancellations and new charges for checking bags

Continental's fuel bill will be US\$2.3 billion more this year than in 2007, with ticket price increases not enough to offset the massive 75 percent hike in jet fuel. In addition, the company will implement job cuts, representing roughly 6.5 percent of the carrier's total staff. "These actions are among many steps Continental is taking to respond to record-high fuel prices as the industry faces its worst crisis since 9/11," the company said.

Oil prices recently hit an all-time record of more than \$135 a barrel, before receding to trade around the \$120-a-barrel mark. Many airlines are starting to take drastic steps to cut overhead and increase revenue, including grounding planes and canceling less-lucrative routes.

Meanwhile, American Airlines has become the first major

US carrier to charge passengers to check in a first bag. Several others, including Qantas, British Airways and Virgin Atlantic, have also increased their fuel surcharges. The International Air Transport Association (IATA) has warned that the airline industry faces a "grim" outlook, as soaring fuel costs coupled with a global economic slow-down will seriously impact passenger numbers. ■



US to tighten both entry and exit rules

First came finger printing on the way in. Now comes fingerprinting on the way out. The US Department of Homeland Security (DHS) has sparked fresh indignation by ordering airlines and cruise lines to collect the digital fingerprints of all foreigners before they leave the country. With more than 33 million travellers to be fingerprinted annually as part of the "air-exit program", critics have warned that this new scheme will result in worldwide airline pandemonium.

"The 9/11 Commission called for biometric entry and exit records, because biometrics confirm that travelers are who they say they are, and that the purpose of their travel is as they claim it to be," stated DHS chief Michael Chertoff. The International Air Transport Association sees the situation differently, proclaiming that the fingerprinting of every departing passenger will lead to "delayed departures and missed connections around the world".

"It's incredibly ill-conceived," said Paul Charles, of Virgin Atlantic. "Our check-in staff aren't immigration officers, and they're not trained to decide whether or not someone should be allowed to leave the country."

However, there is a glimmer of hope. As a political appointee, Chertoff may be out of a job when the new American administration takes charge in January, but not before the set-up of one final hurdle. Come autumn, anyone visiting America will be obliged to seek an online pre-travel authorization at least 48 hours prior to departure. ■

"It's incredibly ill-conceived. Our check-in staff aren't immigration officers, and they're not trained to decide whether or not someone should be allowed to leave the country."

Bikini Atoll Divers closes

After 13 years of operation, escalating financial losses have forced closure of scuba diving at Bikini Atoll, the Marshall Islands' premier tourist destination. Skyrocketing fuel prices, combined with a national airline plagued with mechanical problems has undermined the once profitable scuba diving business that lured visitors from Europe, America and Australia.

Although heavily booked in advance for both 2008 and 2009, the persistent airline disruptions have resulted in a wave of cancellations by divers wary of being stranded. Although Bikini has been open since February, the national airline did not resume flights until early May. As a result, only two groups of divers have managed to get to Bikini this year.

"After 13 great-though-challenging years as one of the premier wreck diving and fishing tourism sites in the Pacific, Bikini Atoll will be closed to tourists as of June 11," stated Bikini Atoll Divers manager Jack Niedenthal. With a recession-bound U.S. economy on the horizon, the prospect of a 2009 opening remains doubtful. ■



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Edited by
Scott Bennett

IATA ends paper ticket system in shift to 100 percent electronic tickets

The International Air Transport Association has ended its paper ticketing system in a shift to a 100 percent electronic ticketing system. At a ceremony on June 1 in Istanbul, IATA Director General Giovanni Bisignani announced, "the beginning of a new, more convenient and more efficient era for air travel."

In addition, airlines will now be able to reissue electronic tickets more easily in the event that passengers lose their electronic tickets. The new system will also enable the global airline industry to save US\$3 billion a year in costs associated with paper ticket issuance.

As of April 30, 95 percent of global tickets were electronic with the percentage for North America, Europe and northeastern Asia, including Japan, being nearly 100 percent.

The first electronic ticket was issued in 1994 and by 2005, a total of 285 million paper tickets had been issued. The IATA made a decision to phase out paper tickets in 2004. ■

Airline opts to fly slower to save fuel and cut costs

Belgium's Brussels Airlines has announced it is slowing speeds and reducing weight on some of its aircraft in order to reduce fuel costs. The airline said slowing its planes by about 10km/h would cut its annual fuel bill by 1m euros (US\$1.6m; GB£800,000) but only add a minute or two to flight times. The measures will also reduce the airline's emissions of global warming greenhouse gases, a spokesman said. Other options to cut down on fuel use and reduce weight are carrying less water, getting rid of built-in stairways on planes and adding angled tips (winglets) to wings to reduce drag on take-off. Brussels Airlines is also putting pressure on the EU to adapt a harmonised air system. The current system often forces planes to fly a zigzag route over Europe as they pass over different countries' airspaces. This measure alone would result in a significant savings of aviation fuel. ■

2,681 airports with Wi-Fi locations

USA today has posted an extensive list of airports worldwide that have Wi-Fi. See <http://usatoday.jiwire.com/hotspots-hot-spot-airport-directory-browse-by-country.htm> ■



Stay in touch worldwide with the Bluefire Global Roaming SIM Card available from Singapore Airlines' inflight KrisShop. With one global phone number, save up to 80 percent on international calls and receive incoming calls almost anywhere without contracts, connection or activation fees. Compatible with 99 per-

cent of unlocked GSM, mobile phones, the card features voicemail, text and call divert and 24/7 global customer support. The price S\$102.00 price tag also includes US\$10 worth of initial talk time.

Don't you just hate those cheap earphones with itchy foam rubber pads that get handed out on flights? Despair not. For 5-6 Euros or dollars you can buy a little converter plug at an electronics' store. This little thingy allows you to plug in your own headset. That way you also avoid having to hand back the headset before the movie is over.



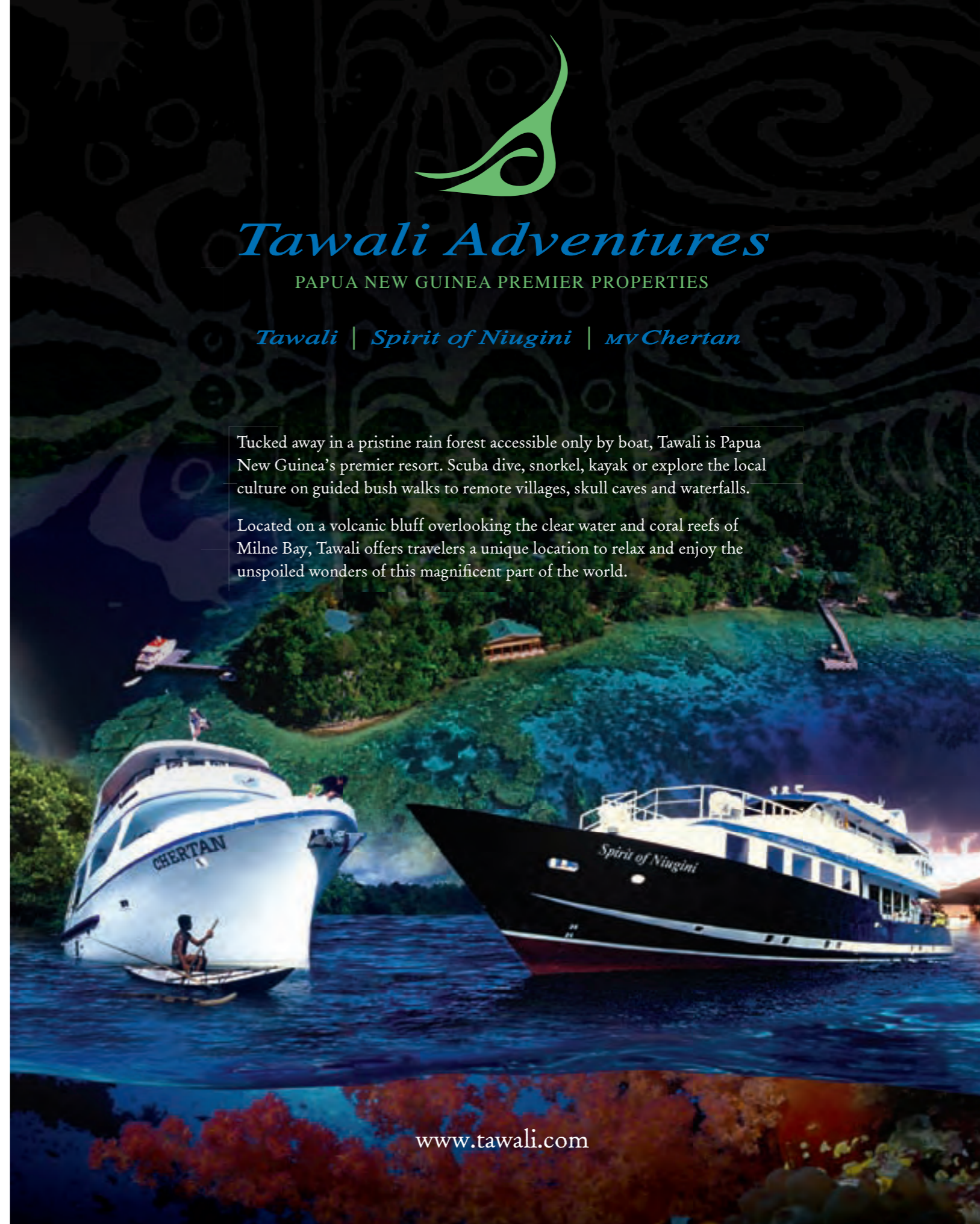
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Rising fuel prices a threat to dive travel

Text by Arnold Weisz

The spiking price of staple foods is affecting all our lives, the price hike of oil in the recent months even more so. The airline industry is in turmoil. Service providers at

tourist destinations eventually have to charge more, as their profit margins evaporate. Divers who love to travel can be in for a rough ride ahead, so will the people whose livelihoods depend on diving tourists.

The leisure travel industry faces one of its worst shocks since 9/11 or the SARS epidemic in 2003. Airlines are struggling with soaring fuel prices. British Airways for example, set in motion new fuel surcharges on June 3. On a long-haul flight lasting less than nine hours fees will increase from US\$29 each way to \$153, while the surcharge on longer journeys will increase by \$59 to \$214 a flight.

They haven't fully unloaded their increasing fuel bills on the con-

sumers...yet. Facing bankruptcy, they will.

Within the dive travel industry, the skyrocketing prices on fuel and food will take effect soon. The ripple effects are many. Out of the way resorts, which rely on land or sea transport for their goods and rely on diesel generators for electricity, will have to raise their prices. Liveaboard's and dive boats will have to increase their prices as diesel becomes more expensive.

One live-aboard owner in Indonesia told me that they would have to look closer at their itineraries, if the diesel prices continue to climb, e.g. travel to less distant reefs and stay longer at the same dive sites.

In the last few months, the price of diesel in Indonesia has risen 20 percent. Even the local restaurant at a Thai resort will up your holiday spending, as the price of rice has jumped 48 percent just this year.

A falling US dollar has cushioned those price hikes somewhat, but not nearly enough. For US consumers, who are the largest consumer group for the diving industry, the weak dollar has made travel abroad more expensive.

Saving the planet

Divers have been a great support to ocean conservation. The demand for pristine coral reefs has saved many reefs from destruction. Many countries have realized that they need to take care of their natural assets, like a clean ocean.

The slow down in world travel is

good news for environment. Fewer airplanes in the sky means less carbon emissions. Price induced energy conservation to fight global warming is not a new thought. However, there are some ugly side effects to this scenario.

Divers traveling to far flung corners of the planet have given many island nations much needed income and created invaluable jobs, as in the Maldives. On other hand, the increased use of fossil fuels, which evidently keeps airplanes in the air, is also a part of the global warming problem, which is threatening the very same island paradises.

The divers that don't fly off to tropical islands for their vacation will not stop diving. Many local dive centers could therefore look forward to this trend. In the US, divers swapping their gasoline gulping pick-up trucks to more fuel efficient cars will take to the nearest ocean instead, to get their fins wet. A downturn in dive travel to the Red Sea might bring more business to dry-suit manufacturers in Britain or more local divers to resorts on the Norwegian coast.

You probably won't see any dive boats lining up in ports on fuel strikes, but the dive industry has to bring out their voices as well. Many countries and territories like the Maldives, Belize, Fiji, Bonaire and many other Caribbean islands where aquatic tourism is a major source of income, will feel the changing trends in travel, if the oil and commodity prices continue to eat up profit margins. ■

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Carlos Hiller is a painter of ocean light and life



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North Sulawesi

unplugged



WOLFGANG PÖLZER

Text by Wolfgang Pölzer
Photos by Wolfgang Pölzer
and Andy Ferrari

I can't help likening this island to a chromosome. It's contorted shape not only looks like one, but also has its different features spread out along different points even when you zoom in. Our focal point is the northern region. On the western side of the tip, we find Bunaken national park with its majestic drop-offs, on the top of the area around Gangga Island, and on the eastern side, Lembeh, famous for its critter diving.

Previously known as Celebes, Sulawesi is Indonesia's fourth largest island, and it is at its northeastern tip where we find the region famous for having a number of the best dive spots in the world. It can only be the most ignorant or newly minted divers who haven't heard the names Manado, Bunaken or Lembeh uttered somewhere. Lesser known is it that this region is called

the Minahasa, and the inhabitants, the Minahasan. Originally inhabited by Malay-speaking peoples, the region was first colonized in the 16th century by the Portuguese. It was the Portuguese who first to referred to



WOLFGANG PÖLZER

Sulawesi as 'Celebes'. The meaning of this name is unclear, but originally, it did not refer to the entire island as the Portuguese thought Sulawesi was not one island but an archipelago.

The modern name, 'Sulawesi', possibly comes from the words sula ('island') and besi ('iron') with

reference to the historical export of iron from the rich iron deposits at Lake Matano in the Southern end of the island.

The Portuguese were soon followed by the Dutch who left the most

significant imprint on the area. Manado, the regional capital and cultural center of the Minahasa people is a former Dutch stronghold and the center of the Dutch settlement in colonial times for which reason North Sulawesi still retains many traces of Western influence. The Minahasa identify themselves strongly with the Dutch

language and with 97 percent of the population being denominated as Christian—most are protestant, Lutheran—North Sulawesi stands out as a Christian enclave in an otherwise predominantly Muslim Indonesia. It is said to have the highest density of church buildings in Indonesia, with

CLOCKWISE FROM LEFT: Red coral and diver at Bunaken; Sunset over North Sulawesi; Clownfish guarding their sea anemone home

ANDY FERRARI





ANDY FERRARI



WOLFGANG PÖLZER



ANDY FERRARI

approximately one church for every 100m of road.

For a long time, Manado prospered through trade with the nearby Philippines and the spice trade with the rest of the world, but was badly damaged by bombing during the Second World War. In any case, most divers would head directly from the airport to the nearby resorts along the coast and on the surrounding islands, so let's get on with it, and dive right in...

Bunaken National Park

The boat stops right in front of the reef. The surface is as smooth as glass, and the top of the reef is densely covered by hard corals.

On the outer side of the reef, the water seems clear as crystal, and suddenly, we realise that our fins are dangling over an endless dropoff. I find myself longing for having my own twin tank, wing jacket and deco tank with me here—that would have been ideal. Fans of deeper diving will be thrilled at this spot.

Since there is no continental shelf here, the depth rapidly reaches more than 200 metres where there is a small plateau before it continues down into the deep blue of the open ocean. This unique topography is the cause behind the often strong currents and good options for encountering big

pelagics.

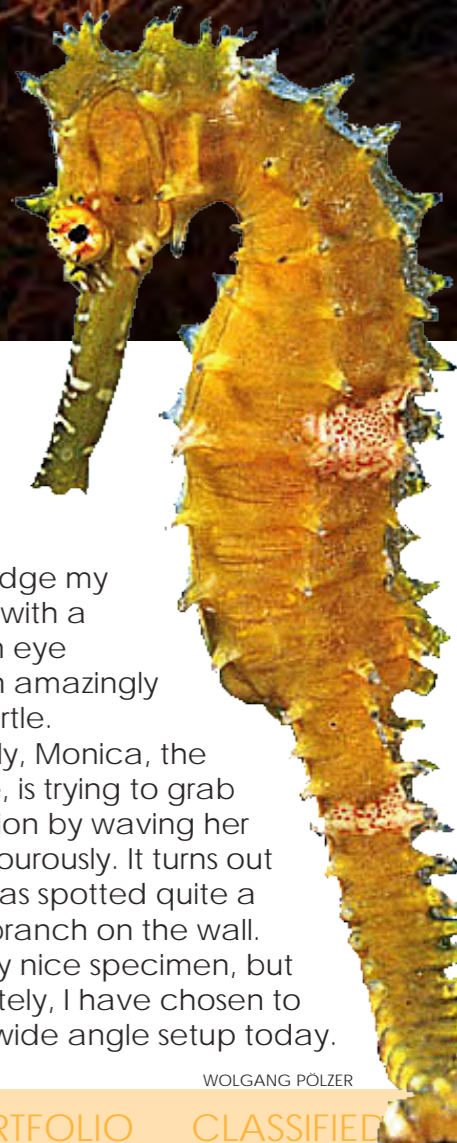
As we slide in, we marvel at the protruding fan corals, huge sponges and big bushes of black corals that are covering the wall. At 30 metres, we stop our descent. The current gently pushes us along the wall.

I suddenly note a large green turtle sleeping right next to me under an overhang on the reef. She does not seem to be the slightest perturbed by my presence. Right here in the heart of the national park, she appears to be neither afraid of intrusive divers trying to grab, or touch her, or of fishermen trying to catch her. Patiently, she bears with the repetitive flashes as I take series of turtle portraits. She

doesn't even seem to

acknowledge my presence with a blink of an eye—what an amazingly relaxed turtle.

Suddenly, Monica, the diveguide, is trying to grab my attention by waving her hands vigorously. It turns out that she has spotted quite a rare nudibranch on the wall. It is a really nice specimen, but unfortunately, I have chosen to bring my wide angle setup today.



WOLFGANG PÖLZER



Instead, I focus in the hanging gardens of soft corals, blazing red whip corals, huge gorgonians and pretty barrel sponges—one motif is followed by the next. And, fortunately for me, it is apparent that is not the first time Monica has worked as an underwater model. She not only guides me in a very professional manner but is also a perfect model.

Wherever I turn my gaze, there is some sort of action. While two sharks on patrol glide past underneath us, we watch as an understandably apprehensive school of tunas hurry in the opposite direction.

As our air reserves drops towards the 50 bar mark, the current push gently into a shallow bay. It is a region where in former year's invasions of the predatory starfish Crown of Thorns laid waste to huge swathes of coral leaving the reef dotted with white patches of dead coral half a meter across.

To remedy the damage, artificial reef structures have been set down to encourage new growth of coral in the region. These three dimensional structures are made from a special open-pored ceramic that doesn't react chemically with sea water and serves as an optimum substrate for the coral larvae. An ingenious but rather costly fix.

Conservation

Environmental protection, especially as regards to the reefs, goes back a long time on Sulawesi. The highly regarded Bunaken National Park was created 17 years ago as one of



Jump out of bed and dive right in



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- * Bastiano's Resort & Diving
- * Bunaken Cha Cha Nature Resort
- * Bunaken Divers Seabreeze Resort & Sea Dancer Live-aboard
- * Celebes Divers
- * Eco Divers
- * Gangga Island Resort
- * Kungkungan Bay Resort
- * Lembeh Divers
- * Living Colours Dive Resort
- * LumbaLumba Divers
- * Minahasa Lagoon Resort
- * North Sulawesi Aggressor
- * Siladen Resort & Spa
- * Dive Center Thalassa
- * Two Fish Divers



doesn't feel quite right to highlight just a few, but on any given trip, you can only pick out so many sites from the huge buffet of great locations on offer here. Nonetheless, on the basis of my own restricted experience, I can

only speak warmly about the following sites...

Bunaken – Lekuan 2

At the southwestern corner of Bunaken, we find the most frequented and best dive sites of the island. The dives here lead you along a fantastic covered drop off from shallow water down to a maximum depth of 50 metres. In a depth of 20 to 30 metres, you will find some nice overhanging reef and crevices.

On morning

dives, many green turtles can be seen here. In the blue water along the drop-off, schools of mackarel, tuna, fusiliers can be seen passing by as well as napoleon wrasses, and from time to time, stingrays and blacktip reefsharks. This is a good place for lazy drift dives as the current is mostly slight. During ascent, you can enjoy huge fields of hard corals in the shallows.

Bunaken – Muka Kampung

This spot is in many ways similar to Lekuan, but due to its position at the southern cape of Bunaken, it is exposed to strong currents, which you have to be able to handle safely. The drop-off, which is absolutely vertical, boast a selection of all kinds of huge fan corals and soft corals. Visibility is usually in excess of 30 metres. Lots of turtles and schools jackfish tend to hang around here.

Manado Tua – Pangulingan

Situated between Bunaken and the volcano islands of Manado,

the first protected marine areas in Indonesia.

This unique area of 790 km² includes Bunaken, four neighbouring islands and two larger parts of the Sulawesi coastline. At the center lies the horseshoe-shaped island of Bunaken. It is also here we find most of the divespots.

This part of Sulawesi boasts an amazing bio-diversity. More than 70 genera (families) of coral and

over 2000 species of fish with many more awaiting discovery. It was, for example, here that the pygmy seahorses were first discovered.

Diving

With so many great spots to choose from, it



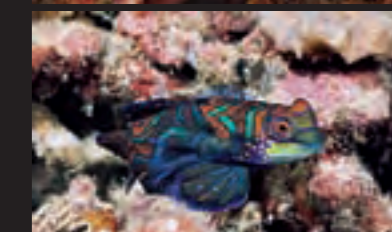
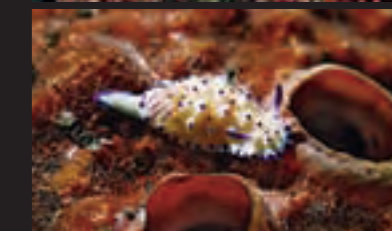
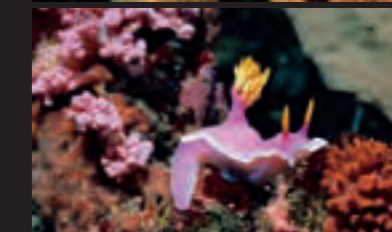
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Pangulinga is a tricky but very rewarding site for those who can handle the extreme and descending currents on this location... Tua. The dive starts in the slight current at the dropoff. Past the wall the current gets stronger, heading down and away from the wall towards the big blue. Those able to maintain position at about 20 meters depth will be rewarded by masses of fish. Barracudas, mackarels, big snappers and hundreds of batfishes seem to congregate here. Occasionally, mantas will be passing by, and predators as black tip sharks and hammerheads are hunting here. The dive boat is going with the current, taking everybody on board in the open water.

Critter capital of the world
Transferring all the participants of the photo-shootout and their equipment across the peninsula from Tasik

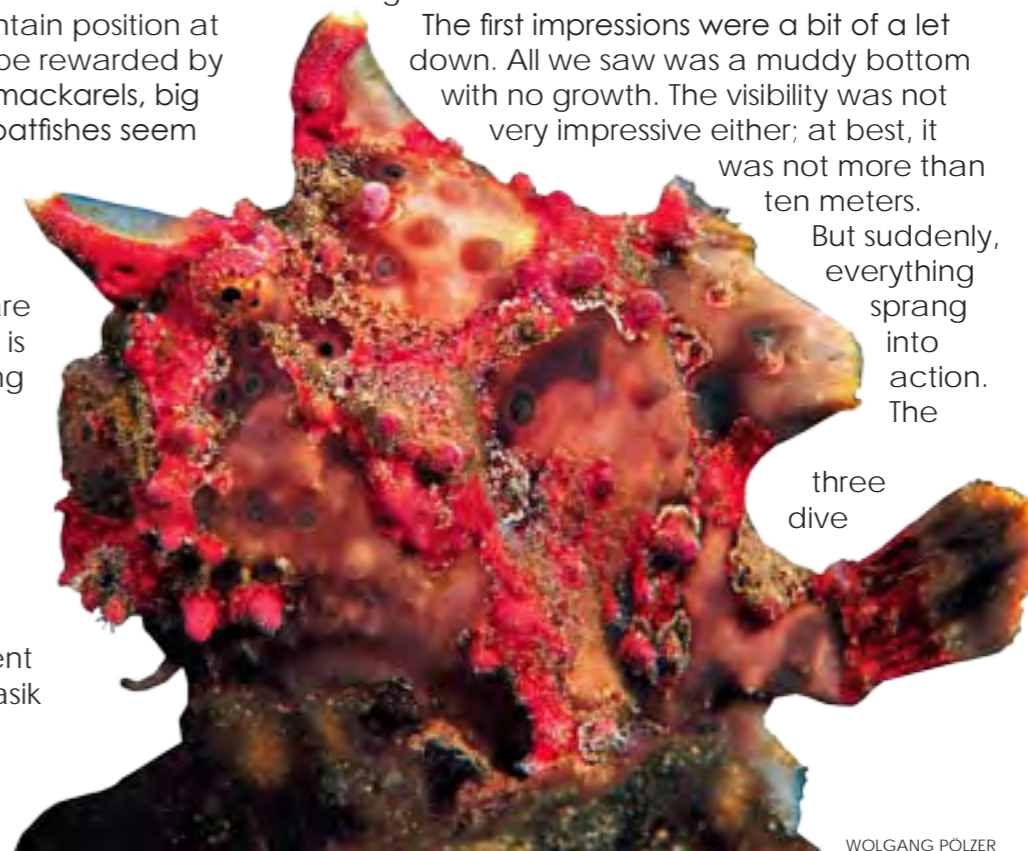
Spot the fish... if you can

ANDY FERRARI

Ria Resort Manado on the western side to the Kungkungan Bay Resort (KBR) at the Lembeh Strait took two hours by mini bus. After that ordeal, it only took us ten minutes after reaching this well known resort built in traditional style, to get into the dive boat and enter the water. The first impressions were a bit of a let down. All we saw was a muddy bottom with no growth. The visibility was not very impressive either; at best, it was not more than ten meters.

But suddenly, everything sprang into action. The

three dive



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Making friends



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were able to present an impressive palette of first class subject—there was hardly enough time to take all the pictures. Which brings me straight to the main point... Those who love nudibranchs, crabs, rare cephalopods and fishes will find a paradise here.

The region around Lembeh Strait at the northern coast of Sulawesi became

throughout every dive I did on this trip, I was constantly fascinated by what this hotspot of biodiversity could throw at me.

Divers who have no eye or sense for small parts of life and who prefer drifting and passing colourful reefs and drop-offs looking for the big animals, would have come to the wrong place. Also, you should not complain about the various items of human civilisation you may encounter on the sea bottom. There are some dive spots where old car tires, soda cans, bottles and plastic cups are the most remarkable structures on the sandy bottom.

Ironically, these artefacts have been welcomed as shelters for fishes, crabs and other animals. The pollution stems from the more than 200,000 inhabitants of the nearby city of Bitung, the most important harbour city

of North Sulawesi. To what

guides had disappeared in different directions, and now they each signalled vigorously with their metal shakers to draw our attention to them. A little orange frogfish was sitting on a sponge and seeming wanting to pose for our cameras. A perfect subject and a patient model! Two photos later, I heard another next signal: Wow, this time it was a couple of the rare Halimeda Ghostpipefish. I wasn't done with this subject when we heard the next signal. And so it went on all through the dive.

The dive guides were clearly accustomed to working with underwater photographers and

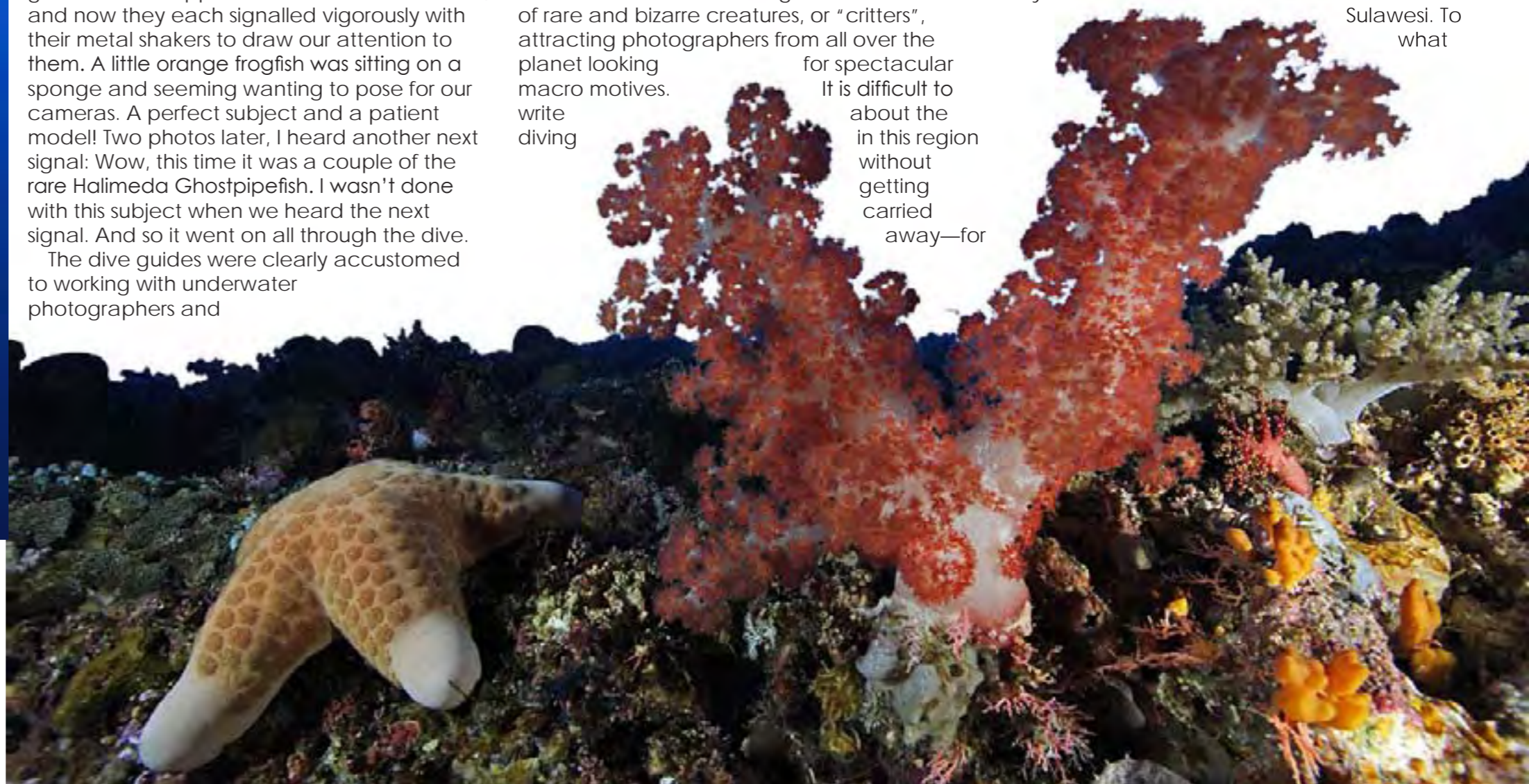
famous because of the huge concentrations of rare and bizarre creatures, or "critters", attracting photographers from all over the planet looking for spectacular macro motives. It is difficult to write about diving in this region without getting carried away—for

for spectacular macro motives. It is difficult to write about diving in this region without getting carried away—for



The walls are dramatic

Cuttlefish





degree the marine population is influenced or negative impacted by this city, has not been documented, and I am not sure what to make of it. Due to the strong tidal currents, the daily water exchange in Lembeh Strait is very significant. In any case, the diving centers in this area are

working closely together to designate the area a "Protected Marine Area". The regional diving centers are in a continuous dialogue and working close together.

Those days are over when the local dive guides, in hope for a good tip, presenting the critters to the clients by taking them out of their habitats holding them up in front of the cameras.

This led to the decision to disallow the use of diving gloves. Touching things can be dangerous, and even the casual touch of a random object might cause difficulties,

because there is no region in the world where you will find so many poisonous animals as on the bottom of the straits of Lembeh. On the other hand, you will rarely find other dive regions, were it is as easy as here to obtain perfect photo results.

Back on the diving ship, everybody seemed pleased with their resulting photographs. The participants of the photo competition were given three days to take the pictures for their competition portfolio. All along the way, the professional photographers on the jury offered their support and generously shared their extensive experience and knowledge. ■



The colours and shapes you can find is here are unsurpassed. Cuttlefish have a remarkable ability to rapidly alter their skin color at will. This color-changing function is produced by groups of red, yellow, brown, and black pigmented chromatophores with up to 200 of these specialized pigment cells per square millimeter.

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Biorock Electrifying Sulawesi

Text by Sebastian Ferse
Photos by Sebastian Ferse
and Wolfgang Pölzer

The northernmost tip of the odd-shaped island of Sulawesi, an area aptly named “land of the waving coconut trees”, lies in the heart of the region with the highest marine biodiversity found anywhere on this planet. This so-called South-East Asian Triangle of Biodiversity spans from the

Philippines in the North to the island of Borneo in the west, and over to Papua and the Solomon Islands in the east, and is home to over 700 species of hard coral and more than 2000 species of coral reef fishes.

A recent survey in Bunaken National Park found 390 species of stony corals, a diversity similar to that of famed locations like Wakatobi and Milne Bay in Papua New Guinea. The

researchers were baffled by the exceptionally high diversity at single locations throughout the park. This amazing diversity underwater is matched by a confusing mix of human cultures in North Sulawesi, where sea-faring Bajau sea gypsies have settled to build their stilt homes on some of the smaller islands that dot the waters north of the peninsula, while more agricultural peoples such as the Bolaang Mongondow or Minahasans inhabit the rich highlands, farming spices like cloves and vanilla. This host of

cultures mixes in the capital of North Sulawesi, the bustling city of Manado.

Visitors to the area immediately notice the coexistence of several cultures and religions—although Christian churches dominate the city, picturesque mosques and even some colorful Chinese temples can be found in Manado.

The marine realm of North Sulawesi has made headlines a number of times in recent years with the discovery of several very unusual

creatures, such as the mimic octopus, a species of pygmy seahorse and another related minute critter, apparently a new genus, which was discovered in Lembeh Strait in 2006.

Arguably, the most widely publicized discovery was that of a local population of Coelacanths, an ancient group of fishes that has been around for over 400 million years. Don't get too excited about meeting one



WOLFGANG PÖLZER



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The Colubrine sea krait or yellow-lipped sea krait *Laticauda colubrina* is a species of sea snake found in tropical oceanic waters. It is extremely poisonous, but not aggressive and its mouth not big enough to bite a human except perhaps on the hand.

est has not been able to guarantee the well-being of the coral-covered walls, gentle turtles, multi-hued swarms of fishes, intricate nudibranchs, bizarre sand-inhabiting critters, and other marine creatures that people come from all over the world to see.

front of the palm-fringed beaches and thick stretches of mangroves, several private initiatives have sprung up.

Restoring and building reefs

On Bunaken Island, dive operators have worked together with NGOs and scientists to restore damaged reef area with snow-flake shaped ceramic modules. These 'EcoReefs' mimic the branches of staghorn corals and provide habitat for fish to live in and substrate for corals to grow on. A lot of the local dive guides were involved in the construction, learning a great deal about the importance of the coral habitat—and about the amount of work needed to restore a reef once it has been damaged. But Bunaken is not the only place where dedicated people are working to preserve the reefs.

About 50km to the north of Manado lays Gangga, smallest of a group of three islands that form the beginning of the Sangihe-Talaud island chain, which stretches all the way north to the Philippines. Gangga Island Resort & Spa, perched on the southern tip of the

the region: the enormous potential for marine tourism.

North Sulawesi has firmly

Part of the problem is that a large part of the local population traditionally comprises farmers rather than fisher folk, and that an appreciation for the unique

diversity and vulnerability of the submarine realm has not been firmly established yet. In order to address this issue, increase environmental literacy, and foster the



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on your dives—these gentle oldtimers live at depths between 100 and 1000 meters. The Coelacanth was 'discovered' by mere coincidence—a marine biologist living in Manado took a stroll over one of the crowded fish markets when he spotted the unusual specimen.

The fish markets of Manado (the two biggest markets are the one next to the harbor basin at Calaca and the market at Karombasan bus terminal) are an exhilarating experience, albeit not for the faint-hearted. The mix of high temperatures under the tarpaulin roofing, the intensive smells of fresh fish and other produce, and the excitement of vendors and visitors alike certainly are not everybody's cup of tea, but they make for a truly memorable experience. Who knows, you may even make an unexpected dis-

covery... Even the non-divers can catch a glimpse of the richness of the local reefs.

Cyanide and dynamite

Unfortunately, the markets also give a pretty good impression of the problems these reefs are facing. Colorful small coral fishes are testimony to the fact that indiscriminate fishing among the fragile coral branches is still widespread, utilizing explosives, cyanide, or fine-meshed nylon nets. In either case, damage to the corals is inevitable.

Other items for sale are similarly disquieting: humphead wrasses are sold alongside large sea turtles. Although illegal, the trade in these animals still continues. These activities pose a considerable threat to one of the biggest assets of

established its reputation as one of the prime dive destinations in the world—the breathtaking walls of Bunaken and the fables muck dives in Lembeh Strait are well known in the diving world and feature in countless articles, documentaries and photo books.

In the last two decades, a large number of hotels and resorts have appeared on the scene, most of them particularly catering to divers. Alas, this surge in inter-

appreciation of the treasure trove right in

Healthy natural soft corals as we like to see them



WOLFGANG PÖLZER



Biorock

Building reefs. Coral settlement and growth are being catalyzed through sending a weak current through the metal grid

Davi have agreed to give a controversial restoration method a try. In the so-called 'BioRock' technology, a low electrical current is sent through a metal construction submerged in the reef.

Similar to industrial electrolysis, a titanium anode is placed close to an iron cathode, and both are connected by sealed cables to a regular car battery charger in a small shack on the beach.

The electrical current causes a rise in pH at the cathode, making the water around the surface slightly more alkaline, and results in the slow but steady precipitation of calcium carbonate (sim-

munity are gladly accepted, and a selection of literature on the environment together with knowledgeable staff ensure adequate information and education about the environment for those seeking it.

Trying a new approach

Not afraid of unconventional approaches, Hanne and her husband Gaspare



island amidst a grove of coconut trees swaying gently in the tropical breeze, appears worlds apart from the busy hectic of Manado City. However, excessive fishing and increased pollution have begun to make their mark on the reefs around this paradise island as well.

Hanne Darbøl, the Danish-born manager of the resort, is determined to stem the tide of reef degradation and to try and preserve the coral reefs in the vicinity. An avid diver herself, she has lived and worked in other exotic places such as Nepal and Bali. She knows well that people will only preserve what they value—and so she is working to install a sense of ownership and an appreciation of the intrinsic value of the local reefs in the people from the neighboring vil-

Involving the locals

Many villagers from Gangga Satu, just a short stroll to the north, are employed in the resort, and the children from the village frequently are invited for sessions of environmental education, drawing contests, and the like. When diving in front of the village, a site frequently used for dive training, a shimmering forest of TV antennas mounted on bamboo poles shows the guests that their money spent at the resort is helping to increase the well-being of the local community.

On the other hand, guests at the resort are kindly reminded of the role they play in this mutualistic relationship. Collection of shells and use of gloves are discouraged, small donations for the local com-

A new reef is being created



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SEBASTIAN FERSE

ilar to natural limestone) on the iron cathode structure. If electrocuting a reef doesn't sound like a good idea to you, you may be surprised to learn that corals attached to these structures have been observed to grow and survive better than other corals in the vicinity.

Tried elsewhere too

Dr. Thomas Goreau, one of the inventors of the method, enthusiastically envisioned this technology as a means of helping stressed corals to cope with increased temperatures caused by climate change.

In Pemuteran on the north coast of Bali, local resorts have teamed up with Goreau to create a huge assortment of oddly shaped iron structures, covering an area of several hectares. After several years in the water, the structures are home to a colorful array of corals and



SEBASTIAN FERSE

fishes, and have become a new attraction for divers and snorkelers in the bay, which was almost completely destroyed by destruc-

tive fishing a decade ago. Since the success of Pemuteran, BioRock structures have been built in a number of places in Indonesia—the

Corals attached to these structures have been observed to grow and survive better than other corals in the vicinity

Thousand Islands, Lombok, Makassar, and, since 2005, in North Sulawesi.

The method itself is not without controversy among scientists, partly because of a lack of published studies, and partly because the mechanisms that could be responsible for better coral growth are not really understood.

Are corals able to tap into the energy of the electrical field, or is it easier for them to form their skeleton in the water layer with elevated pH that surrounds the surface of the BioRock structures? The mystery is not likely to be solved very

soon, but that there is something about these structures that makes them attractive for corals is obvious to anyone diving around them. A more detailed study on photosynthesis, growth and survival rates of corals grown on and around one of the BioRock structures at Gangga has shown that two corals that look almost identical to the untrained eye respond very different to the method.

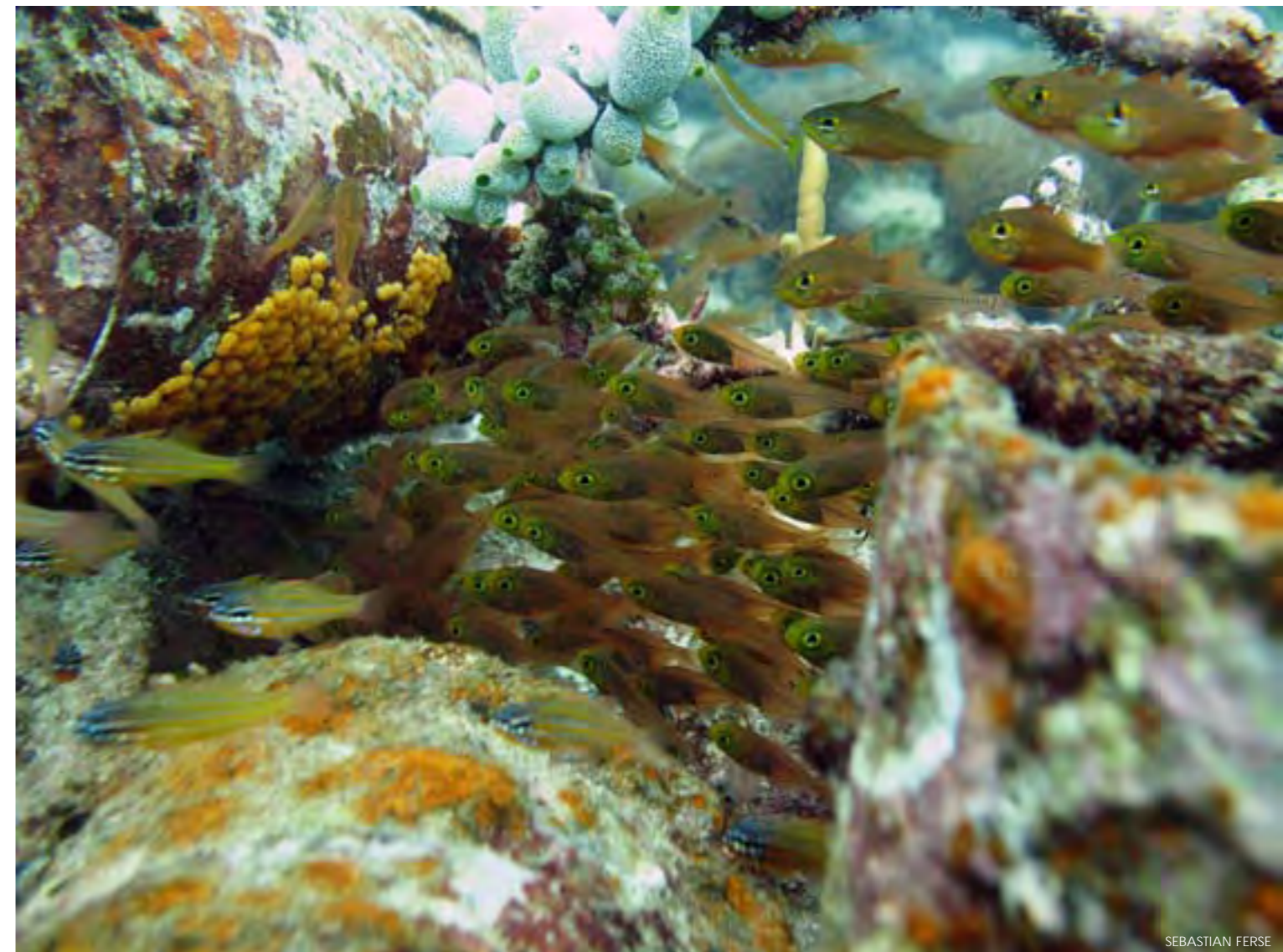
While we do not yet know what exactly is happening to the hot-wired corals and whether we can save our coral reefs by wiring them up like a garden in a frenzied neighbor-

hood Christmas competition, one effect should not be forgotten.

Any shape you like

Similar to other artificial reefs, the BioRock structures serve to attract a rich host of marine life, especially in reef areas that have already lost a lot of their natural coral cover. Compared to old cars, scrap tires and other pieces of junk sometimes sunk in the water under the guise of 'artificial reefs', these structures have a unique adventure: they can be made into almost any shape and size! This is especially

Biorock



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Creating small oasis's of life

Biorock

directly from the beach and providing some nice photo opportunities for the patient observer.

Hanne Darbol is quite fond of the small habitats the resort has been able to create in its house reef, but she is also aware of the grim future the local reefs may be facing. Yet, she remains hopeful. "We have to do what we can do for both the people and the reef if we're

and the resort has helped to set up a recycling scheme for plastic bottles from the village.

For Gangga Island, this concept is beginning to bear fruits: people from nearby villages have already approached the resort, asking for possible co-operations to sustainably use their coastal resources.

Government support

However, the future of the reefs in North Sulawesi also depends on the course the local government is setting. Manado is slated to become a 'World Tourism City' by 2010, and there are ambitious plans to host



SEBASTIAN FERSE

appealing for dive resorts, as they can create an underwater trail customized to cater to the need of their guests, e.g. with large swim-throughs or domes for buoyancy training, or provide artificial habitat for certain kinds of reef fauna that would otherwise be rare in the area. Additionally, coral larvae seem to love this human-made substrate, and after several months in the water, the structures have become dotted with a colorful mix of small corals.

The artificial reefs at Gangga Island have become small oases of life, teeming with juvenile wrasses and damselfish, and frequently visited by cuttlefish and batfish. While other tiny gems such as pygmy seahorses, blue-ringed octopuses, nudibranchs and frogfishes are at home in the reefs of Gangga as well, the BioRock structures have added another attraction to the house reef, accessible



SEBASTIAN FERSE

here to stay," she explains, her eyes shining with joyful determination.

Thus, fish for the restaurant (no reef fish, of course) are bought from local fishermen rather than the markets in Manado,

a global conference on marine and ocean issues in 2009. The government has begun a number of measures to enhance the tourism value of the city: the harbor area has been

rebuilt, streets are being improved, and waste removal has been made a priority.

However, it sometimes seems that there is confusion about what draws most visitors to Manado. The rapid construc-

tion of ever new shopping malls appears to be more important to some decision makers than, say, increased environmental education to reduce the ongoing degradation of the local reefs.



SEBASTIAN FERSE



WOLFGANG POLZER



WOLFGANG POLZER

Pillow stars

Biorock

approach chosen now, and it is up to the visitors to the region to let local decision makers know where this focus should be. North Sulawesi deservedly ranks among the world's top dive spots, but only if this potential is fully appreciated and protected will the dives in that area continue to be what they are now—truly electrifying. ■

What can be more rewarding than restoring or creating coral reefs to their colourful natural beauty?

Spending the money wisely

A few strange plans have surfaced as well. Rumours of a 200,000 US\$ coral transplantation scheme circulated the city—such an enormous amount of money would be much better spent on environmental education or waste water treatment, given the negative impact that large-scale removal of corals from one reef area has on that reef, together with the poor performance of transplanted coral in many cases.

Another idea, fortunately abandoned, was to connect the lush island of Bunaken with the mainland by a huge bridge for automobiles (never mind that there aren't even streets on Bunaken). Not abandoned and still very much alive is the plan to build a bridge connecting Lembeh Island with the city of Bitung, which is certainly going to spell disaster for the unique underwater wonders of Lembeh Strait.

Thus, the future of North Sulawesi currently is on a knife's edge. The next few years will decide whether a harmonic balance can be struck between an intact ecosystem, sustainable tourism and a lasting opportunity to utilize the coastal resources, or whether a priceless natural asset will be sacrificed for the sake of short-term shopping mall tourism.

Many of the local resorts, dive operators and others working in the tourism sector are committed to operating sustainably and educating guests, staff and neighbors about the value of an intact environment, because they understand that their own future depends on it. Sometimes this effort takes unusual forms, like wiring up corals to create a new habitat where the old one has been lost.

In the end, the future of North Sulawesi's marine environment will be decided by the focus and



WOLFGANG POLZER



Asian Diver's Ocean Odyssey Digital Shoot Out 2007

OVERALL WINNERS (PORTFOLIO). Joint judgment of 6 competition photos from both Tasik Ria and KBR.

1. Brad Cox (Australia) – prize: Nikon D80 Camera plus UW housing by Ikelite
2. Maria Rivarola (from Paraguay, residency in Jakarta)
3. Chris Doyle (USA)

Tasik Ria Resort:
CATEGORY: WIDE-ANGLE "MARINE LIFE"

1. Maria Rivarola (from Paraguay, residency in Jakarta) – prize: Mares Proton Ice-Atomic Regulator
2. Chris Doyle (USA)

CATEGORY: WIDE-ANGLE
1. Michael McEvoy (Australia, residency in Jakarta) – prize: Citizen Promaster Dive Watch
2. Chris Doyle (USA)



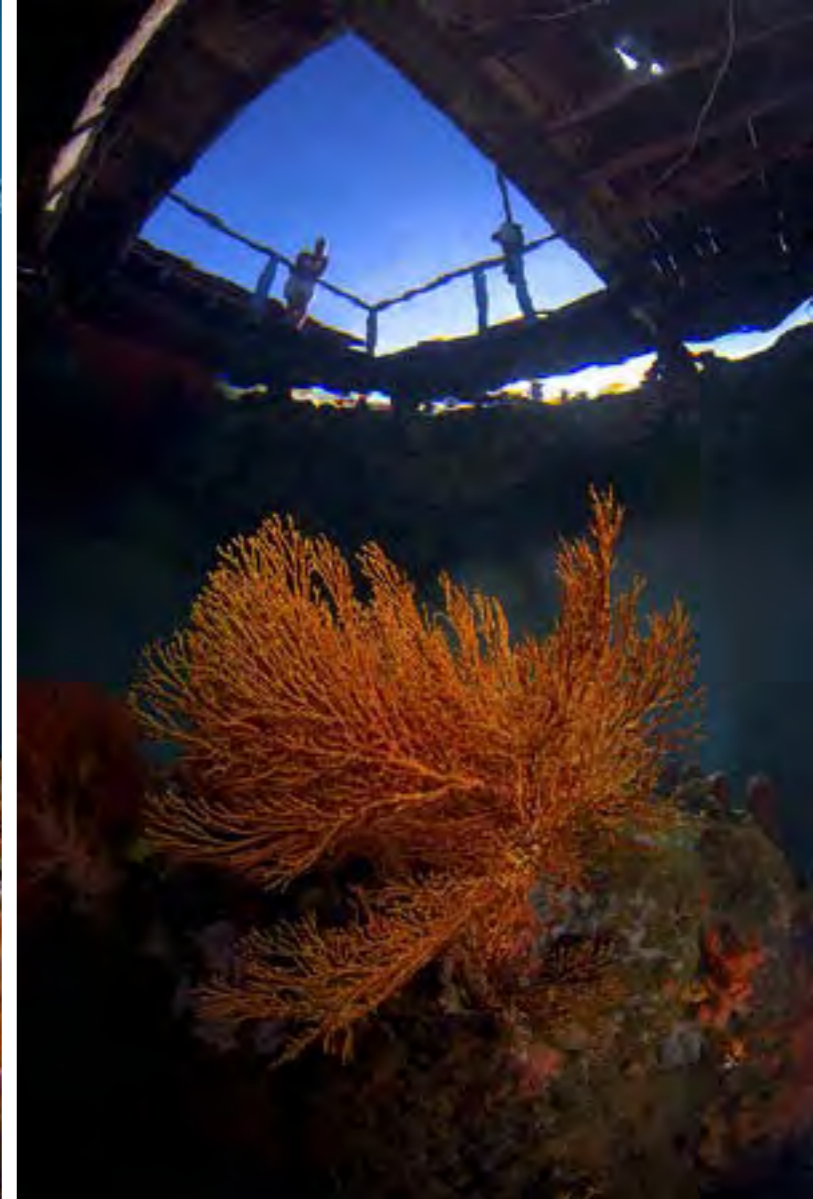
CATEGORY: MACRO
1. Brad Cox (Australia) – prize: One week all inclusive on Tasik Ria



with diving plus roundtrip flights to Singapore
2. Caroline Lim (Brunei)

CATEGORY: BEST SHOT
1. Caroline Lim (Brunei) – prize:

CATEGORY: MACRO „VERHALTEN“
1. Michael McEvoy (Australia, residency in Jakarta) – prize: Mares Proton Metal Atomic Regulator
2. Annaka Persson (Sweden)



one week Liveaboard-Safari with South Pacific Aggressor Fleet plus one Oceanic Dive Torch
2. Michael McEvoy (Australia, residency in Jakarta)

Kungkungan Bay Resort:

CATEGORY: WIDE-ANGLE
1. Maria Rivarola (aus Paraguay, residency in Jakarta) – prize: Citizen Promaster Dive Watch
2. Kim Jenkins (South Africa)

CATEGORY: MACRO
1. Maria Rivarola (aus Paraguay, residency in Jakarta) – prize: One Woche im KBR all inclusive with diving plus roundtrip flights to Singapore
2. Michael McEvoy (Australia, wohnhaft in Jakarta)

CATEGORY: BEST SHOT
1. Chris Doyle (USA) – prize: One week Liveaboard-Safari with Emperor Divers Fleet on Roten Meer plus one Oceanic Dive Torch
2. Kim Jenkins (South Africa)

fact file



Sulawesi, Indonesia



SOURCES: ANDY FERRARI, US CIA WORLD FACT BOOK, CITYSEAHOUSE.COM

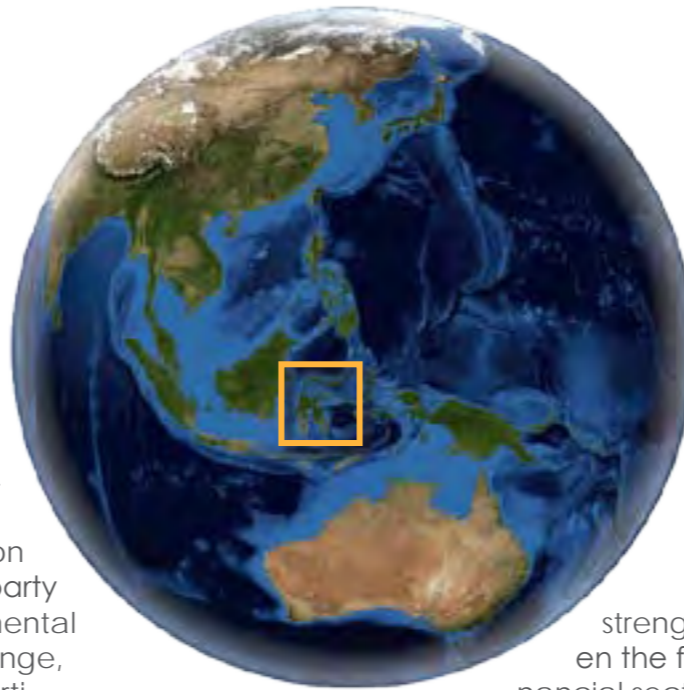
History In the early 17th century, the Dutch began to colonize Indonesia. From 1942 to 1945, the islands were occupied by Japan. After Japan's surrender in World War II, Indonesia declared its independence, but four more years passed mired by recurring hostilities and intermittent negotiations before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

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

RIGHT: Detail map of Sulawesi
BELOW: Global map with location in Indonesia of Sulawesi highlighted



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 most common)



Health Be prepared and get your shots before you go to Indonesia. There is a high degree of risk for food or waterborne 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.

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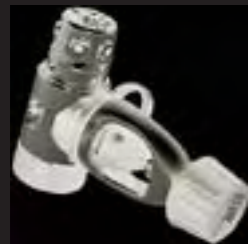
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POINT & CLICK
ON BOLD LINKS



Kowabunga Equipment



Edited by
Arnold Weisz



Reactor Gamma

Reactor has re-issued it's Gamma timepiece. Now with a massive 45.5 mm diameter case for easy viewing, and a application of Superluminova for extreme low-light performance. Other key features include a 10-year power supply, 300 metres depth rating and an anti-reflective coated crystal for easy viewing under water and a unidirectional rotating timing bezel. Weight: 200 grams.
www.reactorwatch.com

VR Technology VR3

A brand new VR3 model for 2008 has been released, armed with High Definition (HD) software giving enhanced screen visibility and some exciting new options as standard. In addition to the existing features that VR3 owners have enjoyed to date, the new 2008 model also has amongst others: backlit white screen, PIN upgradeability from single colour to multi colour, a faster and more user-friendly screen navigation process, mini-screen pre-dive check feature, and user friendly new dive profile and look ahead graphic feature on the dive screen.
www.vr3.co.uk

Body Glove ECO

The ECO is made of stretch rubber and ECO Flex exterior. Both materials are non-petroleum based and 100% environmentally friendly. The combination of these two materials is the purest form of non-toxic stretch material on the planet. Not to mention the production of these eco-friendly materials only consumes 1/10th the amount of energy normally used in the manufacturing of standard petroleum based wetsuits. The Body Glove ECO men's fullsuit comes in 4/3 mm and 3/2 mm and the exterior is 100% ECO Flex throughout. All the graphics are printed with organic water ink, and the zipper on the exterior pocket key holder is made from recycled plastic. The Vaporlock seams minimize water seepage and the interior floodgate helps keep the rider dry.
www.bodyglove.com

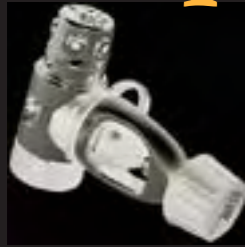


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equipment



Apollo Bio-Metal Pro

The new mask comes with a polished stainless steel frame with ceramic coating to provide resistance to corrosion. Designed to easily accommodate optional LED light systems and Flip-up magnification lens. The volume is almost half that of the standard aluminum version. The result is a nearly 180 degree horizontal viewing area. The slight angle adjustment maximizes center and lower vision for 102 degree vertical field. Further features: push button strap adjustment and soft surgical silicone and twin-curved rim, and provides a comfortable face hugging seal. www.apollosportsusa.com



SeaCure

custom made mouthpiece. The "Hi-Flow" version of SeaCURE Custom Mouthpiece replaces the previous "Sport" model. It has been improved and offers an expanded port for increased air flow. It also includes a new one-piece molding and sealing attachment. This device allows for easier molding and is then used to protect the regulator from debris and unwelcome guests during storage. Available in three sizes. The mouthpiece fits most regulators on the market, except Apeks ATX and XTX and Poseidon.

www.seacure1.com

Divers' boost

This offer of a supplement for divers of an herbal blend which is said to help reduce congestion and improve respiratory function. It contains vitamin E to improve oxygen efficiency of the cardiovascular system. Vitamin B complex is claimed to improve oxygen carrying capacity of the circulatory system, and it is stated that the vitamin C help counteract the stress and ill effects of diving on the body and circulatory system. For more details on the product. www.diversboost.com



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Announcements

Beware of copycats

Not every t-shirt with an iQ-fish on it has the quality divers are used to seeing from iQ-Company. A big portion of the t-shirts with iQ-designs sold in Egypt are forged. Thus many divers have been disappointed by their cheap holiday purchases. "On one hand, it is a compliment, that people like our designs so much that they copy them. But on the other hand, the customer has the damage, because of the bad quality. Most people are not even aware that they are buying copies that do not comply with our level of quality. This is why we wanted to take action," explains

Markus Courtial, founder of iQ-Company. iQ company strategy is to be active on the Egyptian market. Especially the "iQ-Stores" in Hurghada (Sea Gull Mall), El Gouna, and Makaadi Bay do not sell original iQ-products, even though they look like the real thing. With immediate effect, original iQ-products can be purchased at selected shops and resorts along the Egyptian Red Sea coast. A list of all authorised stores can be viewed at www.iqcompany.com/egypt





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Where the Girls Are...

Text by Cindy Ross
GirlDiver.com

GirlDiver has taken over Mermaid Matters! We are pleased to introduce X-RAY MAG's new editor for issues and stories related to women and diving: Cindy Ross is a certified diving instructor specializing in scuba diving education for women and girls. She is the founder and director of GirlDiver.com and DiveForTheCure.com (an organization committed to raising awareness and funds for breast cancer research through national diving events in the U.S.). GirlDiver will appear as a regular column in X-RAY MAG. Please send your comments, suggestions for stories and inquiries to Cindy Ross at: cindy@girl-diver.com.

Gorgeous neoprene clad GirlDivers have long graced the covers of the scuba periodicals, gear catalogues and dive shop posters, but lately, there seems to be an increasing trend of GirlDivers actually showing up at the dive sites.

Women in scuba are some of the strongest, most confident women in the world. Our sport draws women who are willing to explore a part of the planet most will never see, in an environment not designed for human habitation. The gear is intensive, both in weight and storage considerations, as well as initial entry cost into the sport. To the women of scuba, it is but a small price to pay to be witness to the deeper arenas of life around the world.

According to PADI—the world's largest certification organization—the ratio of females to males in Open Water certification classes is on the rise. There is close to a 50/50 ratio in beginning classes. However, according to DEMA (Diving Equipment and Marketing Association), the "active" divers are still predominantly male (86 percent).

Coming into the pool, however, are women who want to make diving easier for other



Funky Fins—fun fins with creative imagination

women to actively stay with the sport, not just get certified. What does it take? Fun colors? Better fitting gear? A more zen-like experience in the underwater realm?

So where are the girls?

Here's a list of just a few of the females promoting the sport of scuba in a manner which encourages other women to come on board. Women dedicated to building our sport, not specifically for women, but simply in a softer

way, to encourage women to become more active with scuba and maybe introduce the boys to a different view under the waves.

GirlDiver

Seattle—Dedicated to promoting the sport of scuba for women of all ages, all over the globe. This site has articles created for women to help with everything from gear selection to dealing with the effects of the sea salts on hair. GirlDiver has a line of clothing and boutique items, with fresh, new inventory on the near horizon. Believing that proper training and education is what creates lifelong divers, the GirlDiver focus is on creating a fun environment with an emphasis on education.

With the goal of catering to the fast emerging female diving market, GirlDiver made the decision to bring a full line of gear into rental designed specifically for the female physique. The She Dives line from Mares was chosen as the official gear of GirlDiver. As the first head to toe scuba kit designed for women, by women, it matched the mission of GirlDiver. "Our clients are thrilled with the fit of the gear. A lot of women are intimidated by the gear considerations necessary for our cold water diving environment, but with the improved fit and function of gear designed for their shorter torsos, and allowing for some feminine curves, the fit of the gear is more comfortable right from the start. We find that with proper fitting gear in a gear intensive sport, the process of learning to dive has become much easier," says GirlDiver teammate Leigh Ann Boswell. www.girldiver.com

Funky Fins

UK—While on holiday, Michelle Lewis came up with a better design for fins. Funky Fins sport brilliant graphic designs that seem to float in the water. With Hibiscus and Water Droplets set on a warm water fin platform, these are



CORTNEY SOLAND

says you have to have neon yellow paddles on your feet anymore?
www.funkyfins.com

Miss Scuba

California—Szilvia Gogh has launched a new website providing an online dive travel resource just for women. Szilvia says she noticed divers in California are predominantly men, so she created a site with the help of her friends that allows women divers to interact with each other. On this website, scuba girls can find journeys, photos, travel tips and gear reviews coming from fellow scuba girls. Scuba Girls from over a dozen countries are profiled on this site. www.miss-scuba.com

Liquid Fit

Florida—This GirlDiver creates wetsuits that fit like they were POURED on you. In her quest to find a great fitting wetsuit for herself, a company was launched. She has helped handicapped divers, irregular shaped divers (what's regular anyway???) and specialty divers with the right suit...

the right fit. Carolyn Tomes, founder, says, "The first time I ever snorkeled, I knew I was hooked. I knew I had to get closer. I got into the wetsuit industry because I saw that there was

a great need for divers to have well-fitting suits, especially women divers. For many years, women divers have been forced to wear suits that were not anatomically correct. I have

always loved beautiful colors in all aspects of my life. Creating bright beautiful wetsuits has brought great joy to my life." www.liquidfit.com

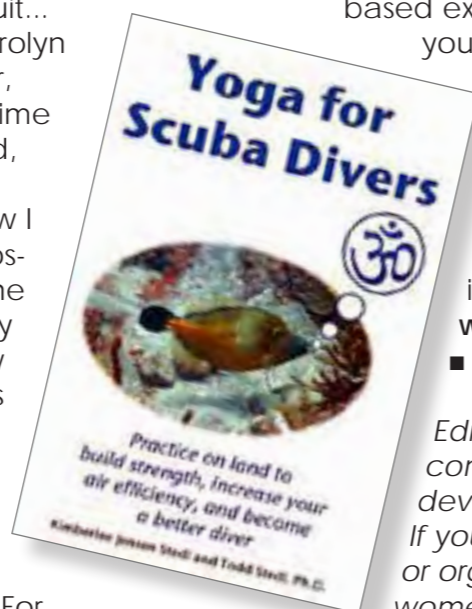
Diversitea

Texas—Janine Davis, an herbalist since 1989, blended her passion for diving and her expertise in herbal medicine in 2001 to support the health of fellow divers. This herbal tea blend containing molybdenum as its driving nutrient is reported to help divers not only with their hydration needs, but also with Nitrogen absorption in the blood stream. More information on testing methods can be found on her website. www.diversitea.com

Eighth Element Yoga

Seattle—Kimberlee Stedl has combined her passion for yoga with her love of diving to develop a series of exercises specifically designed to enhance diving. Her new book, *Yoga for Scuba Divers*, teaches the fundamental philosophies of yoga in relation to scuba, as well as land based exercises that will increase

your breath control and build the core muscle groups we use for hauling heavy tanks and carrying scuba gear over uneven terrain. They will be holding the first ever dive/yoga week in Dominica in early 2009. www.8thelementyoga.com



Editor's note: This is not a complete list of organizations devoted to women in diving. If you know of a dive business or organization committed to women and girls in diving or run by women divers, please forward the information to the editor at: cindy@girldiver.com



CORTNEY SOLAND

Equipment manufacturers, like Mares, are recognizing the fit and function necessary for female dive gear. It's more than just going pink

gracing the feet of female divers on all continents. But it's not just the look of the fin that the female divers love, it's the function. The foot pocket is comfortable, and the fin material allows the fin to be just flexible enough for comfort, while stiff enough to provide the quick acceleration you need underwater. Who

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Edited by
Peter Symes

About 600 out of a total of 1,115 sea turtles from south-east Sulawesi were caught at Wakatobi National Park.

Text and photos
by Kurt Amsler



We need your help

Sea turtles are being hunted in Wakatobi National Park

You can help stop it

The Indonesian archipelago is home to six out of the seven species of sea turtle that exists today. According to Indonesian law, sea turtles are protected nationwide, and the trade in both live animals or parts of them is forbidden. However, it is a public secret that these regulations have neither been adhered to, nor have violators been prosecuted. During the past decade, in Bali alone, 25,000 turtles have been slaughtered in the most brutal of ways, with the silent consent of the public as well as the police.

It was only following the fall of the Suharto Regime, that activists of **Profauna**—a national environmental and animal conservation organisation—has been able to intervene. Together with **SOS-Seaturtles** and other organisations, they have made the massacre public—a massacre of a species threatened with extinction. With the help of numerous publications all over the world, TV documentaries, petitions, letters of protest, media conferences, public announcements and various talks with government officials, regulations for the protection of sea turtles were finally being implemented. As a result, sudden regular police investigations against

hunting boats and dealers started to take place. Profauna activists were also able to build up an information network in order to be updated at all times about any movements in the turtle trade.

Initial successes

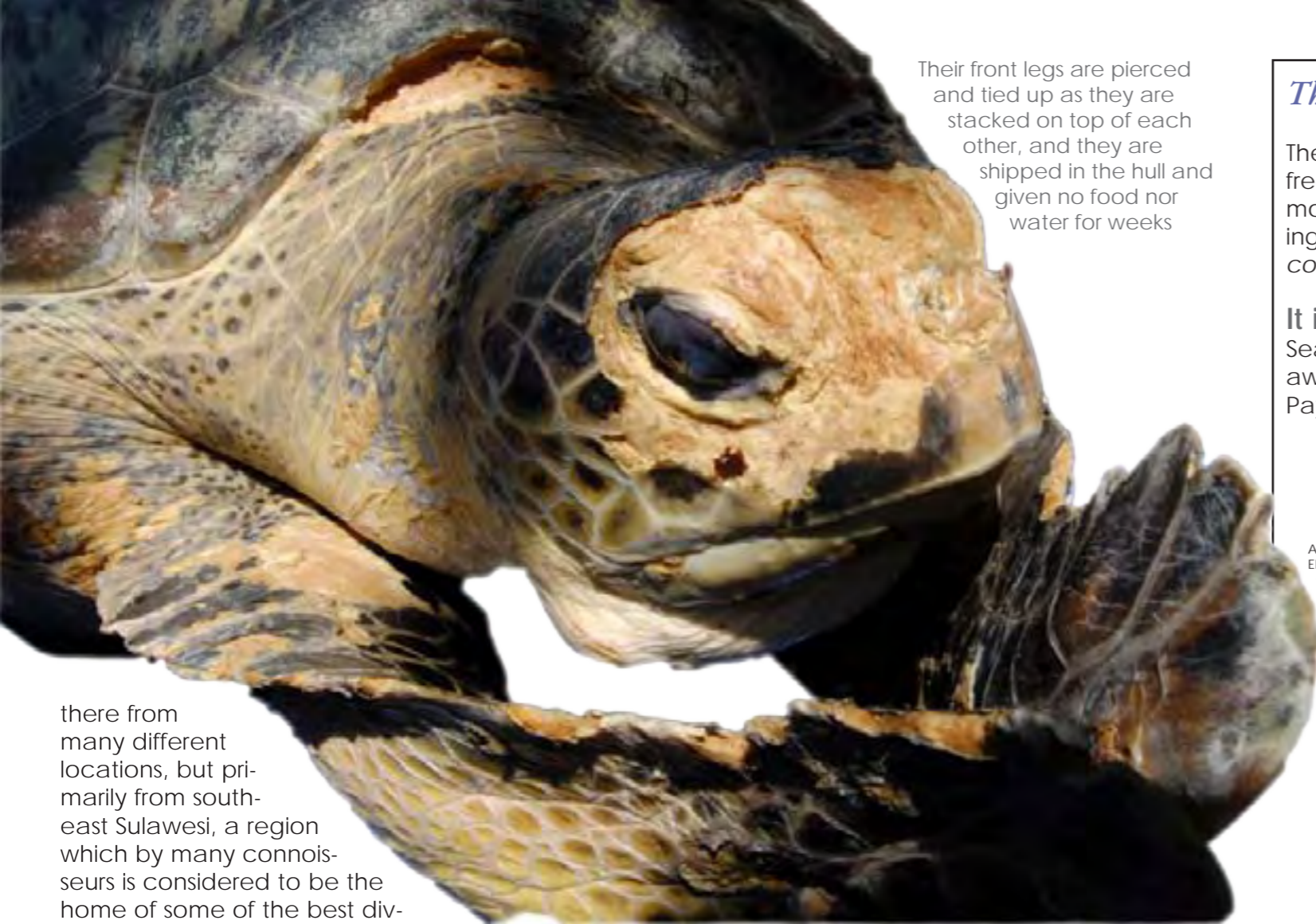
The good news is that it made a difference. The number of turtles killed within the past seven years has dropped from 25,000 to approximately 3,000 annually—a number that still continues to decrease. There hasn't been a public trade for a long time, although some trade has continued in private. Constant police patrols are now making the lives of poachers and dealers steadily more difficult. (Police reports can be found at www.sos-seaturtles.ch)

A battle is won, but not the war
It is, however, too early to speak of a victory against Bali's "turtle mafia" yet, but the achievements so far are impressive. However, the question remains whether it is the police or the poachers that will persevere. SOS-Seaturtles is going to provide continuous support to Profauna, as well as to Heinz von Holzen's "**Turtle Rescue Team**" wherever possible. We will also take care of photography and making documentaries on the spot.

Beauty is only skin-deep in Wakatobi national park
The turtles being processed in Bali have not been caught elsewhere simply because sea turtles don't exist around Bali anymore. They are being delivered



There is 1,000 km (640 miles) from Wakatobi National Park—where sea turtles are illegally hunted—to Bali, where they are landed. During this lengthy transport the turtles are stored below deck in squalid conditions with no food or water



Their front legs are pierced and tied up as they are stacked on top of each other, and they are shipped in the hull and given no food nor water for weeks

there from many different locations, but primarily from south-east Sulawesi, a region which by many connoisseurs is considered to be the home of some of the best diving in the world.

Long investigation

Profauna has been investigating the matter for many months and is now able to supply evidence with numbers and names of dealers. Detailed information can be found at www.sos-seaturtles.ch.

The area of Wakatobi is located between the Banda and Flores Sea and, at 1.39 million hectares, is the second largest national park in Indonesia. Sadly, the impression of tranquility that greets the visitors is misleading, because the park is where not only sea turtles, but also sharks, napoleonfish and jewfish are being caught for the Asian market. The problem is not lack of money—each tourist and diver has to pay a fee. The problem is corruption, bad or no centralised planning, lack of interest,

cultural disparity, bureaucracy and lack of motivation.

Cruelty

We are not only talking about the protection of a species, it is also a matter of animal welfare. These animals undergo unbelievable suffering when they are disembowelled alive!

The animals are being caught with nets, wires or harpoons, or captured when they come ashore to nest. Without food, they are put into small pools filled with brackish water, most of them not deep enough for them to cool down or get protection from the sun: Under these squalid conditions, they sometimes have to wait for months until a boat ships them to Bali. We have seen horrible injuries and skin lesions.

Legs are pierced

Their front legs are pierced and tied up, as they are stacked on top of each other, and they are shipped in the hull and given no food nor water for weeks. They are only put out of their misery when their lives come to a horrifying end in Bali.

Profauna and SOS-Seaturtles now want to put an end to the sea turtle trade once and for all. The point is to put pressure on authorities as well as organising activities for the public. These strategies worked very well on the island of Bali where the turtle trade decreased by 90 percent.

We urge the police to attend to their duties in south-east Sulawesi, especially in Wakatobi National Park. Profauna is going to use its contacts among high-ranked

This is how you can help

These campaigns and activities to free and protect the sea turtles cost money. You can help by donating. Every couple of dollar or Euros counts.

It is this easy Donating to SOS-Seaturtles is just a few mouse-clicks away. Click on this link to donate via PayPal or by credit card.



ALL PAYMENTS, ALSO BY CREDIT CARD, ARE PROCESSED ENTIRELY BY PAYPAL'S SECURE SYSTEMS. ALL PAYMENTS GO DIRECTLY TO THE NON-PROFIT ORGANISATION SOS-SEATURTLES. BY CLICKING THE BUTTON, YOU WILL BE TAKEN TO A DONATION PAGE UNDER PAYPAL'S WEBSITES.

Boat transporting turtles spotted by investigators in Benoa harbour, Bali. The other images speak for themselves. This meaningless slaughter and cruelty has to be stopped!

government officials. Meanwhile, SOS Seaturtles is going to act as the mouthpiece outside Indonesia to spread the word to media organisations throughout the world. This gives everyone the opportunity to take part and support petitions and protest letters worldwide.

You can help

Needless to say, all these campaigns and activities cost money. SOS-Seaturtles is a non-profit organisation and all donations (100 percent) will go to sea turtle conservation projects. Besides private donors, we have also been getting support from the dive and travel industries.

All supporters are acknowledged on the SOS-Seaturtles website www.seaturtles.ch.

—Kurt Amsler



Many, many divers, underwater photographers and filmmakers, when asked about the origin of their passion to go underwater, say that they were inspired by the films and books of Hans Hass. He must be a very remarkable person, interesting to listen to, not to mention, Dr Hass is the greatest celebrity in the diving world today. Is it possible to meet him, to talk?

I call. On the other end of the telephone line, I hear a very pleasant man's voice: "Interview? Oh, here, in Vienna... Yes, of course, but I am leaving for a week tomorrow." Deep in my mind, I bless the good fortune that I also planned to stay in Austria for some time, and we agree about our meeting.

Dr Hass was born in 1919. I know this fact and am enthusiastic about meeting him. He is the megastar in the diving research constellation. He gave thousands of interviews...

I wondered, would it will be interesting for him to tell his stories once more?

Text by Svetlana Murashkina
Photos courtesy of Michael Jung
at the Hans Hass Archive HIST.
Alexander Axenov and
Svetlana Murashkina

Hans

Hass *A talk with*



ALEXANDER AXENOV





Hans Hass talks with X-RAY MAG's editor, Svetlana Murashkina, at his office in Vienna

Hans Hass

there was great articulation.

The most frequent phrase in the Hass biography is "the first"—"the first to dive", "the first to research", "the first to apply..."

His fame in Europe and America and the whole world is great, but not widespread in Russia. Only one book, of the 25 by Hass, is published in Russia. His films were not shown. This was the case most likely because his pioneering research was made during WWII, and mostly before the 1960s. There were probably some other reasons as well. It's not fair.

That's why we are sitting here with Hans Hass, to listen... just dates, just thoughts, just ideas.

I always liked to experiment.
— Hans Hass

Interview with Dr Hass in his office in Vienna, 17 August 2007

Youth. "Let me go..." I am Viennese, my father was a lawyer, quite famous. My father went hunting, and we had hunting grounds just here, not very far from Vienna. We went there. And I also liked to fish at the Old Danube.

My mother was pretty. I loved my mother! She took me to France, so that I learned French. And when I was 18 and finished with my studies, my first studies, she said: "Now this summer, you go on your own to Paris," and in German they say it differently, "to cut off your horns".

I spent five days in Paris, and

then I went to Juan-les-Pins again, where we went always, and I fell in love with a very nice French girl... but she then decided that a French man was better (*Hass laughed*)... he knows better how to behave.

So, one morning, I went out to Cape Antibes and thought about my life.

The Turn. I was sitting at Eden Rock. In the cliffs, I was sitting and thinking about my future... and this nice girl... And suddenly something

happened to me that

changed my life completely. I saw a man swimming around. He was an American, Guy Gilpatric from *The*

Saturday Evening Post.

Here he was, the inventor of this new sport—spear fishing—with a long spear and small goggles, and so, I observed him.

I was very good in sports—diving. So, I joined him. And when I came back, I told many stories about the adventures I had, diving down to fish, and nobody believed me.

Then, I decided to make pictures to show everybody how it really was. So, I found a black smith, and he helped me to make a case, the first one for my photo camera. And already by the next year, I went on a little expedition with several friends of mine, four or six of them. We went to the Dalmatian coast, and we had a nice time. So, I wrote about all that in my first book.

The long awaited date, 17 August, comes. Dr Hass' office is situated in the center of Vienna. In the room, there are book shelves, a bureau with a green table cloth, a lot of books and albums, pictures and magazines.

Just before our meeting, the Russians had made the first dive expedition at the North Pole.

The achievement was still in the limelight of the world's media. Dr Hass was very interested in the story, and that's how our meeting began—not questions and answers, but just friendly conversation about current events.

Dr Hass just returned from Monaco with his Italian friends, so he apologised for the Italian words

that come first from his tongue here and there. (These Europeans, switching easily from one language to another...) We looked at the old picture books, and Dr Hass told me about his life. All the key points of his bright career are well known, but the details!

Very cordially, he spoke about Lotta Hass, his wife and partner. He

spoke about the fear that Cousteau and his companions had taken the idea of the oxygen breathing apparatus.

It was a great pleasure not just to talk, listen and converse with Dr Hass, but also to decode the interview (a very rare case). All the words and sounds were clear, nothing like "eee", "well", etc—



Hass with wife, Lotte—who also became an astute underwater photographer and diver—during the production of one of their underwater films in the 1950s

From spear fishing to making underwater pictures to the study of fish behavior...

I began spear fishing in 1937. But very soon, I changed to photography. It was very fascinating to photograph all these colorful fish, and to film, and study them. Then, I realized that if you want to find out what fish are, how they live, and what their behavior is, one must oneself behave like a fish-like creature. So, I invented the first underwater breathing

equipment, pure oxygen, and then, already in '39, I went to the Caribbean Sea with my friends, Jorg and Alfred.

We were the first to dive the coral reefs. In those days, nobody dared to go in the water, because everyone was afraid of sharks. And we soon found out that these sharks were—as every diver today knows—very interesting, beautiful animals, but not interested in human beings, with some very rare exceptions. And I loved it, and I still love the sharks today.

BIOGRAPHICAL TIMELINE

1919 January 23. Hans Hass (Hans Heinrich Romulus Hass) was born in Vienna (Austria) to the family of a well known attorney.

1937. Hans graduated from school and did his first trip to France without his parents. There he met Guy Gilpatric, and was grabbed by a strong passion for spear fishing. On return, he entered the Law Department of the University of Vienna.

1938. During the first expedition to Dalmatia, the first underwater photos were made with the assistance of a self-made underwater box. During the same period, Hans constructed an open diving helmet with an air pump.

1939. Expedition to the Caribbean, to Curacao and Bonaire (The Netherland Antilles Islands) with university friends, Alfred von Wurzian and Jörg Böhler. Publication of the first book, *Jagd unter Wasser mit Harpune und Kamera* (Hunting under the water with harpoon and camera).

1940. Beginning of the WWII made the three friends stay in Curacao longer than they had planned. They were away from home for nine months and managed to get back via the United States, China and Russia. After returning to Vienna, Hans, contrary to his father's wish, stopped his studies in law and went into biology and zoology. At that time, he realized the advantages of being a "fish among fish" when studying fishes and presented new research methods for marine sciences. Production of the first film, *Pirsch unter Wasser* (Stalking beneath the sea).

1941. Meeting with Hermann Stelzner, technical director of the Dräger company (Lubec, Germany). Together they modernized "Dräger-Gegenlunge", an oxygen rebreather, and made alterations to the breathing bag and the oxygen supply valve. The continuous flow regulator fitted to the Gegenlunge was replaced by a simple push-button valve, allowing the diver to manually admit oxygen to the breathing bag according to his varying consumption and to control his buoyancy. To produce an advantageous center of gravity in all swimming positions, the breathing bag was moved to the back. Hass replaced the original goggles he had been using up until this time, with a circular diving mask that enclosed the eyes and nose. The use of flippers turned the self-contained oxygen rebreather into a swimdiving apparatus, which Hass used constantly on all his expeditions from 1942 on. Publication of the book, *Unter Korallen und Haien* (Diving to Adventure).

1942. Expedition to Aegean Sea. On 12 June, Hass for the first time acted as a "swimdiver" (he swam underwater and did not walk like a heavy diver). It happened near a small Greek island, close to the western tip of Euböa Island. Production of the film, *Menschen unter Haien* (Man amongst sharks).

1943. Study of the immobile animalcule called "Reteporiden", which he began during this expedition, is regarded today as a milestone in marine biology research and the first marine biology project carried out with the swimdiving method.

1945. Hans Hass married Hannelore Schroth (their marriage lasted until 1949).

1946. The son, named also Hans, was born.

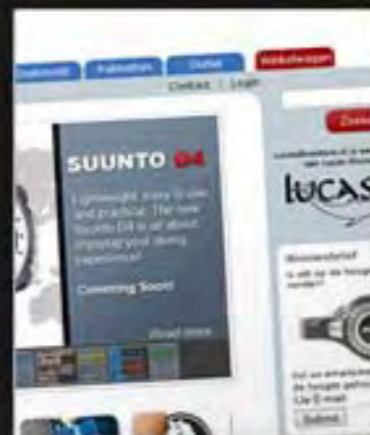
TOP TO BOTTOM: Hans Hass with underwater camera in 1938; Hass in action under the waves in 1939; INSET: Hass spearfishing with a wooden helmet in 1939





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Hans Hass

WWII. When we came back from the Caribbean (1940), the military found out that when I marched, my toes became absolutely black. So, they did not let me go.

I made hundreds of lectures in Germany, because I was not allowed to be with the army on the front lines. I was lucky to be able to make all these lectures, because I earned a lot of money through the lectures and was able to get enough money for my own ship, *Seeteufel* (The Sea Devil).

But after the war, the Russians took it. And now, we have found out that it is somewhere in Saint-Petersburg, not in the museum. It is standing somewhere, and everyone can see it. But we were not interested in getting it back; it's too small.

Lotte. After the war, I went to the Red Sea. I was the first to dive the Red Sea, and took Lotti, my future wife. We have now been married for 57 years, and we still feel very well with each other. The reason for the great success of our films was partly Lotti, because a woman underwater was more interesting. Lotta was not only very beautiful, but also brave. It is nice to have a mate for your life.

Now, I do not lecture, no, no. Lotti said, "Well, after all, you taught all those years... now it is time for family." We have a very nice daughter with two grandchildren. We take them always to Venice. We first go to Venice and then to the Greek islands... Lotta is happy now that I am with her more.

Money. I financed every bit of what I did. I never wanted to accept any money from the government or anybody. So, I



Hass shows the title page of *Jagd unter Wasser*, one of his many published books

started making money by selling fish—which I harpooned—to hotels. Then, I published my first book, *Hunting Underwater*.

After our expedition to the Red Sea, there came the film, *Red Sea Adventure*. That was our first world success. You can see that at the end, my diving was limited. But certainly after 1960, I was doing many films, because I had to make money for some time during my life.

Equipment.

The rebreather was such a

practical piece of equipment. But when the Cousteau team heard about it—they were thinking about the danger of pure oxygen—they said that after three minutes, I am dead.... Not at all. You can go 20 meters deep and stay an hour underwater.

The boat *Xarifa*. Now, I've seen my ship again. I spent a week in Monaco, on board *Xarifa*, I was hosted by Mr. Carlo Talio. I sold the boat to him over 50 years ago. Oh, it's so beautiful!

But imagine: he bought the ship,

ALEXANDER AVENOV

and for 50 years, he lived on the ship without using it! Is this not fantastic? I would not do that.

But I enjoyed so much to see my own ship again, and I mean, it hasn't changed much on deck... nothing. Certainly, in between, they had put a lot of money in it. It is now very luxurious, and I was staying there with Carlo Talio, and it was so much joy. So, we met again, and during the last week, we discussed his life, and my life.

Back to Umbria. In the beginning of the year, we went to a port in Sudan, and we went down to the *Umbria*—a very lovely ship, a tremendous wreck, tremendous wreck! From the time we first went there to now, it has changed quite a bit. It's overgrown with all these colors—it's like a fairy tale. It's as beautiful as ever.

It was little cold. It was February, and there was a strong wind, but it was only six days. We were invited on a very beautiful new ship for divers, and really, five days is very little. Every one of the five days I went diving with a lot of German divers going down and loved the sea... no, it hasn't changed. Not many people go diving there, as it is difficult to go—fortunately!

In the Egyptian part, there are so many hundreds of thousands of people, in many hotels. But the Red Sea is very beautiful. But you must go down for the details. You must not hurry, this is not important, but just sit down and watch what they all do, how they interact.

Evolution of human beings

Later, in 1960, my interest was not so much the sea anymore, but this mystery of our existence. What is behind it? What does it mean? I was interested in the evolution of man. I changed my life. And that was my *Energon Theory*. My first book. But nobody was happy now—they all wanted me to make more films about sharks, and all that. So, my scientific works became less interesting.

I think I have



made some advances, but today everyone wants new things and pleasure. In my importance... we must stop a little, stop, just stop.



Dr Hans Hass signs a photograph in his office in Vienna
LEFT: The 2007 DVD of Hass' underwater adventures during the 1950s

Concern

And only now, I try my last book. I am under the impression that we are in a very difficult time. And that the human—mankind—grows too fast, and they want too much. And it is very, very, very important within the next 20 years, that they do not increase anymore.

It is so simple. What to do is just three things, three sentences. Every woman in this world is permitted two children, not more. If one of them dies under six years, she may have a third. And if she really wants more, and if she has money and

the ability to put into raising her child, she can have a fourth one, yes, because there are enough women who do not have children and do not want to have children. In this case, we would not increase anymore.

But that certainly is very difficult, because everyone wants more money, more pleasure, new things, new ideas, and more and more and more and more... But I shall give enough reasons, I hope, to help that change. I will do it. Whether I'm successful or not, I do not know. I do not mind, I am unimportant. I have to address myself to the females on Earth. But

1947. The first showing of the film, *Menschen unter Haien* (Man amongst sharks) took place, a production that began in 1942 by the Ufa-Kulturfilm studio. After The Second World War, Hans Hass turned to anthropology and evolutionary biology. He founded in Liechtenstein his International Institute for Submarine Research (IISF).

1948. *Xarifa*. Hans Hass acquired a three-masted schooner, hired a crew, gathered a team of scientists around him and set off, with himself as expeditionary leader, to explore the various oceanic coral reefs in great style.

1949. The book, *Menschen und Haie* (Men and Sharks), was published.

1950. Hans Hass married Lotte Baierl. She approached Dr Hass as his secretary and very soon became a competent member of the expedition and shooting team, a talented cameraman, and also the first charming and very brave underwater film star. The film, *Abenteuer im Roten Meer* (Adventure in the Red Sea), received first prize for long documentary films at the Venice Biennale.

1952. Publication of book, *Manta: Teufel im roten Meer* (Under the Red Sea).

1953-54. The *Xarifa* sailed across the Atlantic to the Caribbean Sea and the Galapagos Islands of the Pacific.



THIS PAGE: Just a few of the posters of the many pioneering underwater films starring Hans Hass and his wife Lotte

remember again, it's a very fair thing if you say to a woman, you have a right to two. That is quite a lot.

Oh, here it is not the problem anymore. But in the other parts of the world... It's so unfair to put children in the world without any bit of money, any thing... and if you go to Rio de Janeiro, there are 20,000-30,000 children running around trying to eat any food that they can find. It is unfair! I mean you must have the help of your father and your mother... and you must have enough food, and especially learn languages and learn other things. Only then, can you start to be a human being. So, I think, I should impress the women. And we need the women more now. Men are not important anymore. It is unimportant to go to outer space, why? Keep the money first, and get it good on the planet Earth.

Planet Earth has a certain size. But if we would stop—we've gone over six billion—then, after a while we can go back to five billion, and the ideal would be four. If we go back to four billion or so, there would be no poor people at all, and if they are not so solid, then the world could go on...for millions of years!

If not, I tell you, within 20 years or 30 or 40, we will destroy, the human being will destroy the whole evolution of life. Very simple. And there are lots of people, who have the same idea.

But what can we do with the politicians? The politicians are uninterested... Every single person on this earth, if there is no change, will go down in terrific wars.

We are happy, because we had so much success. But we are changing our wishes to want more and more and more.

Satisfaction. I have been in so many places, and the sea is so big. Half of the world is covered with seas, which have been unknown. I've done what I wanted, I've been every where in the world, and had much success. We went to the Galapagos Islands, Coco Island, the Red Sea and the Indian Ocean and to the Great Barrier Reef of Australia, and wherever I went, I had the luck to be the first. But I am careful, I go closely, and it went quite well, and I succeeded in interesting people very much in diving. In the beginning, people did not like the sea. It was dark, and there were dangerous things. Today, there are millions of divers everywhere in the world. And science is changing wherever you go. Now, all scientists go underwater. They are not afraid of sharks.

I've made many films, and I made many scientific works, and many lectures everywhere, even in Japan you will meet a lot of people who have heard about me and my first expeditions. ■

1957. Lotte Hass gave birth to their daughter, Meta. Publication of the book, *Wir kommen aus dem Meer* (We come from the Sea).

1957-58. Hans Hass sailed through the Red Sea into the Indian Ocean to the Nicobar Islands and, finally, to Singapore. During these expeditions, many exciting events took place, sensational data obtained, lots of research work done. For example, the first encounter of man and sperm whale under the water. Also, the new theory of the origin of the Maldives atolls was proposed.

1959. After African and Asian expeditions, new TV serials appeared (about 100 TV programs were created all in all). The film, *Unternehmen Xarifa* (Under the Caribbean), was awarded the "Underwater Oscar" from the Underwater Photographic Society for outstanding underwater cinematography.

1963-1966. Beginning of the Energon theory development.

1968. Monograph, *Wir Menschen. Das Geheimnis unseres Verhaltens* (Men: The mystery of our behavior).

1970. Monograph, *Energon: Das verborgene Geheimnis* (Energon: The hidden mystery).

1977. Hans Hass became a professor at the University of Vienna.

1983. He continues to do research, lecturing, and other educational activities on the theme that interests him most of all, "The instinct of a predator in professional life", where marine biology, human behavior and management theory are connected. The Energon theory was not accepted by Academic science and was declared "pseudo-scientific".

1988. Monograph, *Der Hai im Management. Instinkte steuern und kontrollieren* (Business shark. Instinct control).

1999. Dr Hass is awarded the Konrad-Lorenz-Preis by the Ministry for Environment of Austria.

2000. On 1 December, the Hans-Hass-Institut für Submarine Forschung und Tauchtechnik (the Institute for Underwater Research and Diving Technology by Hans Hass) was created as a non-profit organization, originating from an amalgamation of the Hass Institute (IISF, 1947) with the Research Centre for Diving History (Forschungsstelle fuer Tauchgeschichte, FTG, 1995).

2004. Publication of the book, *Erinnerungen und Abenteuer* (Reminiscences and adventures).

2005. In January, Hans Hass dived the Maldives to witness tsunami consequences.

2007. In January, the trip to Port Sudan was held, devoted to the 50 years of *Xarifa* journeys and diving the *Umbria* wreck. In November, Dr Hass addresses us with "The letter to the women of the world". http://www.hans-hass.de/Englisch/index_english.htm

2008. On 23 January, Dr Hass celebrated his 89th birthday, he received phone calls from all over the world. Today, Dr Hass together with his wife, live in the center of Vienna. Hans and Lotta keep traveling and visiting important dive events. ■



whale tales

Edited by Peter Symes



NOAA

The population of the humpback whales is up to nearly 20,000 animals in the Pacific after hitting a low of 1,400 in 1966. A 1996 ban on hunting the mammals, as well as other conservation efforts, have contributed to their rebound.

Back in business; Humpbacks rebound

The number of humpback whales in the North Pacific Ocean has increased since international and federal protections were enacted in the 1960s and 70s, according to a new study funded primarily by NOAA and conducted by more than 400 whale researchers throughout the Pacific region.

However, some isolated populations of humpbacks, especially those in the Western Pacific Ocean, have not recovered at the same rate and still suffer low numbers.

The new research reveals that the overall population of humpbacks has rebounded to approximately 18,000 to 20,000 animals. The population of humpback whales in the North Pacific, at least half of whom migrate between Alaska and Hawaii, numbered less than 1,500 in 1966 when international whaling for this species was banned. In the 1970s, federal laws including the Marine Mammal Protection Act and the Endangered Species Act provided additional protection. ■

Right whales got their safe zone ...at last

Since June 1 endangered right whales have a new safe haven near Canadian shores. Ships have been asked to make a detour around a 3,000 km² area, about 64 km south of Cape Sable Island, Nova Scotia.

The area has been declared an "area to be avoided" by the International Maritime Organization in a move to protect pods of right whales that congregate there from June to September. The designation requires ships to voluntarily avoid the area. Hunted to the brink of extinction during the last century, the right whale continues to be under threat from being struck and killed by a ship. The faster the ship is travelling, the more likely the whale will die.

Initial successes

"In the first four days (since implementation of new policy), we've seen evidence of vessels complying," says Angelia Vanderlaan, a doctoral candidate studying biological oceanography at Dalhousie University. "Since this is new, and it is a voluntary measure, I'm hoping it will work."

In her office at Dalhousie, Vanderlaan can track movements of ships on her computer via specialized tracking equipment installed on cell towers near Cape Sable Island. On June 1st, for example, about 20 vessels travelled through the Roseway region, a thoroughfare for ships from Halifax to New York. Sixteen of those ships avoided the area, and another four could have, but didn't and went right through. On June 3 and June 4, tracking

revealed that some vessels clearly modified their routes to avoid going through the area. "I think it will take some time to get through the system," she says. "We think it will make a big difference; it certainly helped when the shipping lanes were shifted in the Bay of Fundy."

Why don't the whales just get out of the way?

Vanderlaan says while the whales likely hear ship traffic, they're so used to the noise, it doesn't serve as a warning. At one time, for example, researchers experimented by broadcasting alerts to the whales, but instead of scaring them away, it brought them to the surface where there was a greater likelihood of a collision. A collision with a ship's propellers can shear off a whale's tail, slice them apart, or cause huge contusions. "It's like living beside a train track," she says. "After a while, you stop hearing the trains go by."

White House stone-walls efforts in the US

There is also a proposal to create an area to be avoided in the Great South Channel, near Cape Cod in the US. Vanderlaan says while the changes they've proposed have been supported and embraced by Canadian companies, similar efforts in the US by the National Oceanic and Atmospheric Administration to impose seasonal speed restrictions in areas frequented by whales have been stonewalled by

the White House. The rule has been awaiting clearance at the White House Office of Information and Regulatory Affairs since February 2007.

Hydrophones help scientists pinpoint, protect Right whales

Researchers at the Cornell Bioacoustics Research Laboratory and Woods Hole Oceanographic Institute have teamed up to use hydrophones to protect endangered whales off the coast of Massachusetts.

"We think it will make a big difference; it certainly helped when the shipping lanes were shifted in the Bay of Fundy."

Using ten microphones attached by a stretchy data cable to buoys at the surface and special software that picks out the acoustic signature of right whales, the scientists are able to detect the slow-moving

marine mammals. When a hydrophone hears a whale, it makes a cell or satellite call to researchers who contact

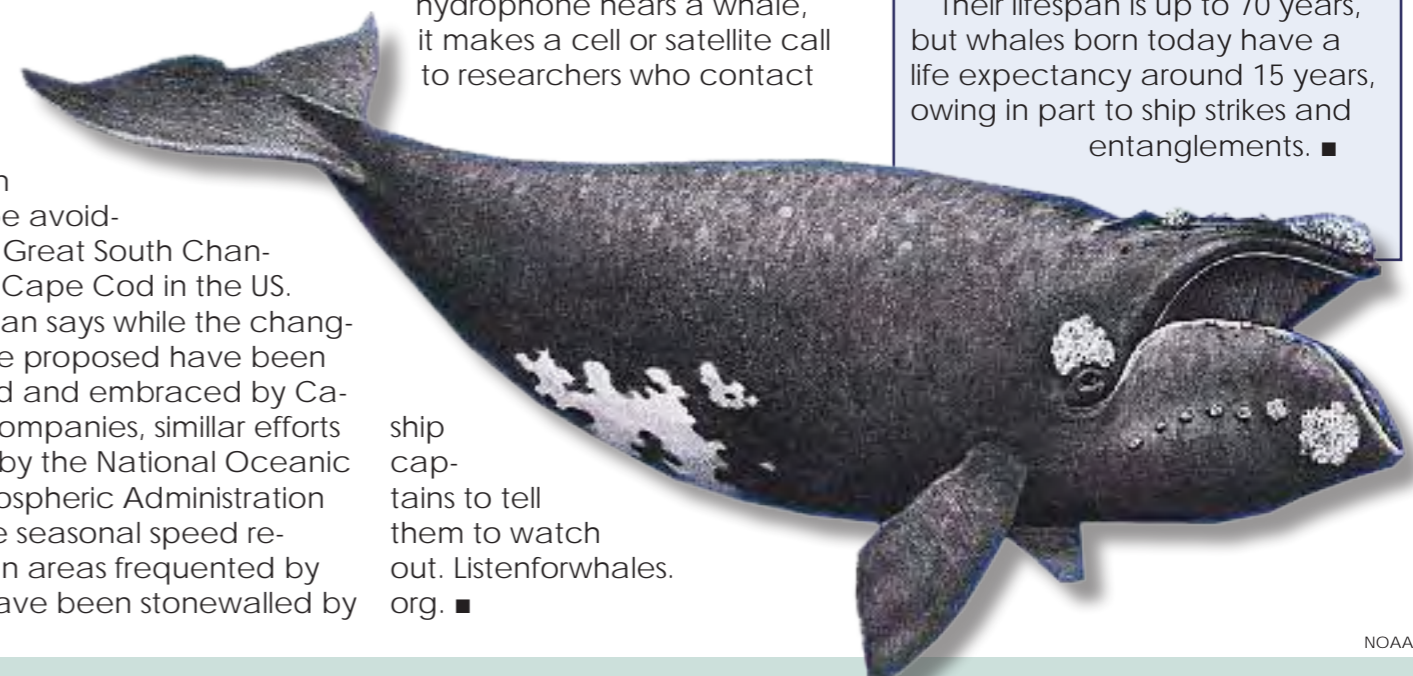
ship captains to tell them to watch out. Listenforwhales.org. ■

The North Atlantic right whale is a large, mostly black, whale with whitish patches on the head and belly, no dorsal fin, and a graceful, deeply notched "fluke," or tail. Two blowholes on the top of its head give a distinctive V-shape to a right whale's spout.

Whalers called the right whale – the "right" whale to kill because they were relatively easy to pursue, and their thick layer of valuable blubber kept the dead whale conveniently afloat.

There may be only 350 of these right whales left in the Atlantic Ocean. Without measures to protect and grow their numbers, they could be extinct by 2020, and the now protected area is a crucial habitat for the endangered whales. Once a year, pregnant females and a few other members of the population migrate south along the coast to Georgia and Florida. There the females give birth to calves that are 10-15 feet long and weigh around 1.5 tons. Calves drink mother's milk for 8 to 17 months after they are born.

Their lifespan is up to 70 years, but whales born today have a life expectancy around 15 years, owing in part to ship strikes and entanglements. ■



NOAA

Whale scam could mean the end of Japanese whaling

A Japanese public prosecutor announced on 19 May that it was launching an investigation into allegations that workers on whaling ships are embezzling whale meat and selling it to restaurant owners. The formal investigation follows on an undercover investigation by Greenpeace, which revealed the alleged embezzlement and

misuse of public funds.

Stake outs, testimony from informers, hidden cameras and tailing trucks full of stolen goods... it sounds like elements taken out of a blockbuster movie plot, but that was all part of a four month investigation by the Greenpeace activists in Japan, who cracked open a major conspiracy of

corruption at the heart of Japan's government-backed, sham scientific whaling operation.

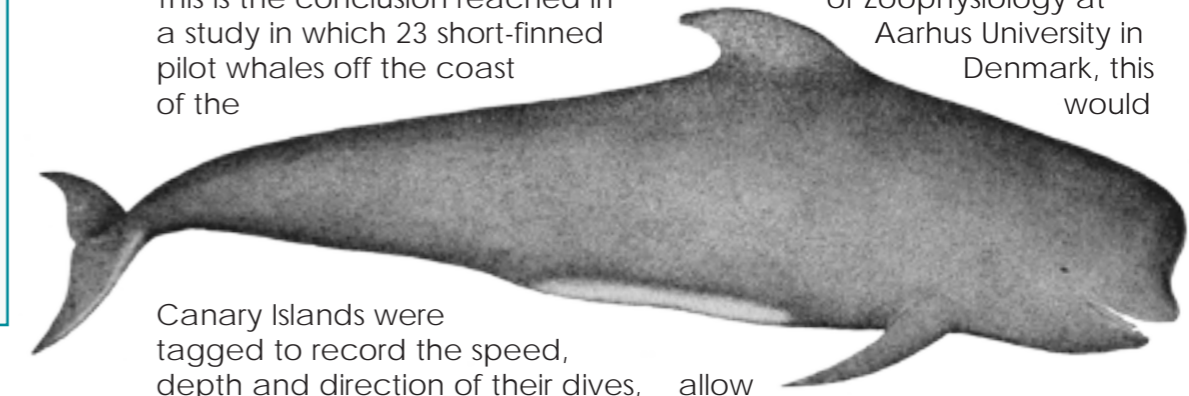
Greenpeace displayed a cardboard box filled with the best cuts of whale meat, smuggled ashore by the crew of the Japanese whaling factory ship, *Nisshin Maru*, for illegal trade and personal gain,

at the Japanese taxpayer's expense. The box, along with videotaped testimony and other evidence, suggest widespread embezzlement of whale meat has been occurring for decades under the noses of the public officials who run the whaling program, and are allowing it to happen. ■

Pilot whales are sprinters

Short-finned pilot whales are the sprinters of deep-diving mammals. This is the conclusion reached in a study in which 23 short-finned pilot whales off the coast of the

Canary Islands were tagged to record the speed, depth and direction of their dives, as well as the sounds they made. According to Peter T Madsen, Associate Professor of Zoophysiology at Aarhus University in Denmark, this would allow them to 'see' their surroundings in much greater detail. This could mean that the whales were hunting at this point.



allow them to 'see' their surroundings in much greater detail. This could mean that the whales were hunting at this point.

The tagged whales took just 15 minutes to dive to 800 to 1,000 metres (0.5 to 0.62 miles). What's more, they can chase after prey at an amazing nine metres per second, maintaining this speed for as long as 200 metres.

"As far as we know, no other whale has been recorded to swim nearly as fast at depth," said Natacha Aguilar Soto, a marine biologist at the University of La Laguna in Tenerife, Spain.

She added, "It was completely unexpected that short-finned pilot whales sprint at depth with limited oxygen reserves."

This hunting strategy is similar to that of the cheetah, which catches their prey after high-speed, energetically expensive sprints. However, unlike the cheetah, the short-finned pilot whale does this while holding its breath, and in the total darkness of the deep ocean.

The tags also reveal that once the whales reached the deepest point of their dives, they changed from using slow echo-location clicks to a fast series

of clicks. According to Peter T Madsen, Associate Professor of Zoophysiology at Aarhus University in Denmark, this would allow them to 'see' their surroundings in much greater detail. This could mean that the whales were hunting at this point.

"It would seem that for whales using sonar, the deep sea is like a plain, but for other animals, the dark water is like a jungle. If this is true, it is a unique combination of both environments rolled into one," said Soto.

A possible prey is the giant squid. In fact, Soto's colleague, Pablo Aspas, recently took a photo of a pilot whale half-breaching with a giant squid in its mouth. In addition, body parts of the giant squid have been found in the vicinity of the pilot whale's habitat.

"We have imagined battles between sperm whale and giant squid. But it may turn out that it is pilot whales, one-third the size of sperm whales, which are sprinting for the giant squid!" quipped Soto.

Commenting on the study, Patrick Miller, a marine biologist at St Andrew's University in Scotland, said, "This is an important finding that reveals a previously undescribed foraging strategy in a deep-diving whale." ■

Narwhals More at Risk to Arctic Warming Than Polar Bears

Unless something is done, climate change will claim the narwhal as one of its victims. The medium-sized whale with the long spiral tusk was named the most sensitive (and thus vulnerable) to climatic change, in a listing of 11 Arctic sea mammals—even more than the polar bear.

The listing, published in volume 18 of Ecological Applications, took into account factors like population size, distribution, habitat specificity, diet diversity and the species' ability to cope with sea ice changes. It was determined that the narwhal would be the least adaptable and the least able to withstand climatic change. The polar bear and the hooded seal came in second and third respectively.

"What we wanted to do was look at the whole picture because there's been a lot of attention on polar bears," explained

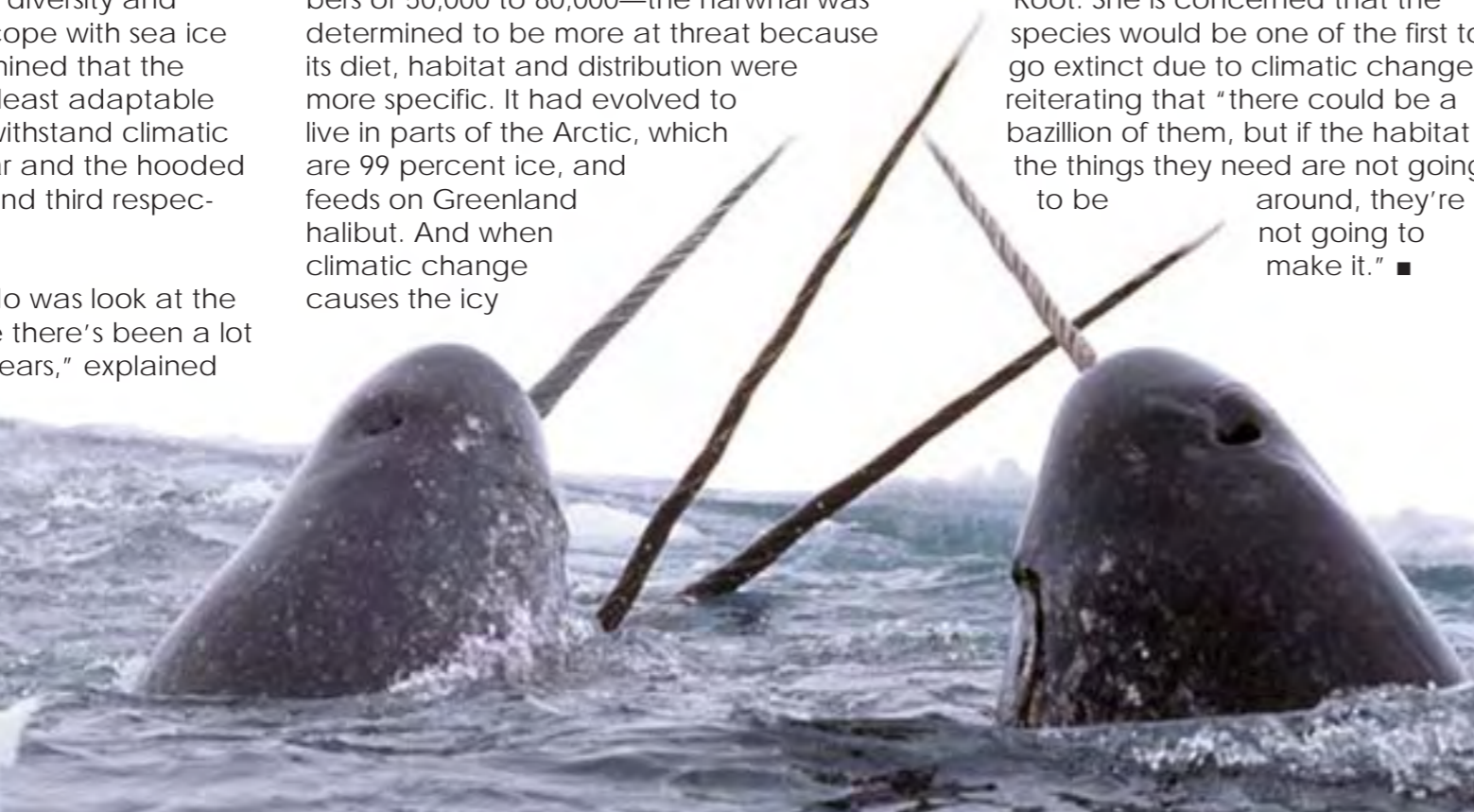
study co-author, Ian Stirling, an adjunct professor in the Department of Biological Sciences at the University of Alberta and one of the world's foremost polar bear researchers. "We're talking about a whole ecosystem. We're talking about several different species that use ice extensively and are very vulnerable," he added.

Although there are about 20,000 polar bears left—compared to narwhal numbers of 50,000 to 80,000—the narwhal was determined to be more at threat because its diet, habitat and distribution were more specific. It had evolved to live in parts of the Arctic, which are 99 percent ice, and feeds on Greenland halibut. And when climatic change causes the icy

habitat to melt, it would be even more at risk from predators like killer whales.

"Since it's so restricted to the migration routes it takes, it's restricted to what it eats, it makes it more vulnerable to the loss of those things," said Kristin Laidre, a research scientist at the University of Washington.

Also concerned about the narwhal's survival was Stanford University biologist, Terry Root. She is concerned that the species would be one of the first to go extinct due to climatic change, reiterating that "there could be a bazillion of them, but if the habitat or the things they need are not going to be around, they're not going to make it." ■



NOAA



“We expected to see these populations begin their recovery years ago, because fishermen have been so successful at reducing dolphin deaths.”

The Eastern Spinner Dolphin is distinguished by its triangular dorsal fin and uniform gray colour.

Pacific Ocean Dolphin Populations Improving

The numbers of northeastern offshore spotted and eastern spinner dolphins in the eastern tropical Pacific Ocean are increasing after being severely depleted because of accidental death in the tuna purse-seine fishery between 1960 and 1990, according to biologists from NOAA's Fisheries Service.

“These estimates are encouraging because they are consistent with what we would expect to see if these stocks

are recovering, now that reported fishery mortality has been dramatically reduced,” said Dr Lisa Ballance, director of NOAA's Southwest Fisheries Science Center protected resources division. “However, we have to be careful not to jump to final conclusions. We need to resolve the uncertainties around these estimates before we can definitively say these stocks are recovering.”

Between 1960 and 1990, the northeastern offshore spotted and eastern spinner dolphin populations dropped to 20 percent and 30 percent, respectively, of their pre-fishery levels when dolphins

were caught and died in tuna purse-seine nets. Since the early 1990s, however, the number of reported dolphin deaths has been very low because of severe restrictions on the fishery.

“We expected to see these populations begin their recovery years ago, because fishermen have been so successful at reducing dolphin deaths,” said Tim Gerrodette of NOAA's Fisheries Service. “The new data are the first to indicate the beginning of a recovery, but these initial indications are not enough to be confident that the populations will continue to grow.” ■

Whales are more worth alive than dead

A new report commissioned by the Australian government shows that whales are worth more to the world alive than dead

Australian Environment Minister Peter Garrett used the inaugural National Whale Day to launch a progress report on the government-commissioned Global Cetaceans Snapshot. The report, which

will be used to bolster the case for conservation at the upcoming meeting of the International Whaling Commission (IWC), outlines the economic benefits of whale watching, summarises the global conservation status of whales and dolphins, and lists the main threats to their survival.

The report found that visitors to whale-watching areas in high-income countries were

spending AUS \$1.5bn per year by 1998, with the figure forecast to grow by \$3 to \$4bn a year over the next 20 years. The number of whale-watching visitors was also expected to increase by 10 million a year. Garrett said he would be taking the report to the next meeting of the IWC, to be held in Chile on June 23.

“Critically this progress report shows that what we've been saying about the argu-

ments for whale conservation is strongly grounded in science. We don't think that scientific whaling is scientific. What we do say is that we need to increase our collaborative research with other countries, non-lethal research on whales, and recognise that whale-watching, as an economic activity, is a sustainable business for us, not only here in Australia but right around the world,” he said in Sydney. ■

Prehistoric whales got the bends

The ancestors of modern whales had an interesting medical problem – some of them suffered from decompression sickness. Evidence of this has been found in several different whale fossils examined by a team of paleobiologists recently.

Of course, it would have been natural for the ancient whales to suffer from the bends, way back in those prehistoric times when they first started diving deeper into the oceans. With time, they evolved and adapted, and decompression syndrome was no longer a big problem.

However, it seems that not all whales developed this ability at the same time. The toothed whales, which comprises orcas and sperm whales, conquered the condition very early in their evolution, as shown by the signs of the condition being

Westbury, US, examined 331 modern and 996 ancient fossil whales, using x-rays and fluoroscopy. Of these, only a handful of the 996 ancient fossil whales showed evidence of decompression syndrome.

“Maybe baleen whales and tooth whales independently arrived at the same conclusion — that going out into the open water and going deep was a good idea,” said Beatty.

Today, modern whales have developed adaptations to counter — or at least manage — the problem, which appears to be a natural part of a whale's life. Some whales exhale right before diving, so that their lungs do not have any nitrogen gas. Others allow sufficient time to pass between dives. However, there have been cases in which the bones of some sperm whales showed evidence — more than usual — of the bends, and this is sometimes believed to be due to sonar signals or submarine activity. Whether or not this is true remains to be seen.



Artists' impression of an early whale hunting

found only on the very ancient specimens. On the other hand, evidence of decompression syndrome were found on more recent baleen whale fossils, suggesting that their defences only developed much later.

These findings were uncovered after the team, led by Brian Beatty of New York College of Osteopathic Medicine in Old

Meanwhile, the research continues. Said Nick Pyenson, a paleontologist at the University of California, Berkeley; “Tagging modern whales as they dive will help researchers understand how their ancestors evolved to cope. As our sampling of living species gets better, these data will better inform our expectations of what to find in the fossil record.” ■

BRIAN CHOO / MUSEUM VICTORIA





Black, red and pink corals have been prized as jewelry for 5,000 years. Corals are actually living organisms which are being taken from the sea to satisfy the vanity of a few but wealthy individuals. This is a billion dollar industry.



The exploitation of corals has depleted stocks all over the world. This is not only destroying the seafloor, but has a much wider impact. Corals are more valuable if they stay in the oceans rather than around someone's neck. Coral reefs support more than 25 percent of all known marine fish species. As one of the most complex ecosystems on the planet, coral reefs are home to more than 4,000 different species of fish, and almost 5,000 species of corals, in addition to thousands of other plants and animals. Scientists estimate that coral reefs provide an economic benefit of US\$ 375 billion each year to millions of people around the world. Besides from indirectly feeding people, corals also offer cures for illnesses. Add to that that coral reefs protect our coastlines.

Wealth creates demand

The United States is the largest importer of coral reef species for food, jewelry and aquariums.

The US accounts for approximately 60 percent of the world demand for live reef ornamental products, about 70-90 percent of the live coral, and 95 percent of the live rock (rock with coralline algae growing on it). Seaweb estimates the trade to be increasing between 10 percent and 20 percent per year. It's not only the US that buy coral products. In Europe, this kind of artefacts are gaining popularity, as the populations gets wealthier. Not long ago, British media reported that hundreds of rare corals protected by international conservation laws had been intercepted at airports en route to aquarium shops in Britain. Raw coral commands an auction price ranging from US \$150 to \$900 per kilogram. Necklaces made of the red and pink corals, collectively known as Corallium, can cost up to US\$ 20,000.

A quick search on "red corals" on Google revealed a thriving industry for

coral jewelry. And their sales pitches are second to none. At one website you could read this: "Neptune's Gift. The coral is a mysterious gem with magical powers attributed to it. The Indians believe wearing a Coral will ward off the negative effects . . . the red firestone will help protect them from evil. Even Greeks and the



Text by Arnold Weisz

Corals for sale





Ban on trade hampered

After 5,000 years of trade in red and pink corals prized as jewelry, an attempt to restrict the trade to try to help the species recover after drastic over-exploitation was launched by USA.

Romans have used this stone to adorn rings, caskets, tiaras, etc. Since the sixth century, corals have fascinated humankind with their passionate red color." Precious corals have been used for the fabrication of items of jewellery and decoration since antiquity. Along with amber, precious coral may have also been used as currency for trade by Paleolithic man.

On June 15, 2007, at a United Nations wildlife conference, the Convention on International Trade in Endangered Species (CITES), they actually agreed on trade restrictions. "Corallium, the most valuable of the precious corals, has been fished for over 5,000 years," the US proposal said, adding that millions of items and thousands of kilos a year were traded internationally. The proposal initial-

ly passed on Wednesday, with 62 countries voting in support of the listing. Later the same day whole trade agreement went down the drains. Delegates voted by secret ballot to overturn their initial decision to list these overfished species under the CITES, following a massive lobbying effort by the coral industry and some exporting countries. Environmental organizations were very disappointed over this sudden turn in events.

- There are no international trade controls in place, nor any consistent management plan, TRAFFIC and WWF say.

Opponents to the red coral proposal, amongst others are Japan, a major red coral trading nation, and the industry group Assocoral.



- We started 800 years ago and we want to continue. We are not an industry; this is our tradition, our culture. Coral is our life, said Ciro Conditto of Assocoral, a lobbying group representing the craftsmen in the Mediterranean town Torre del Greco.

Coral in the red

The red coral trade is the most valuable and largest in volume with an estimated 30-50 metric tons per year. Seven red coral species are traded worldwide as jewelry and other decorative products. Many other species of coral are

remain extremely important in the Mediterranean Sea, with annual harvests in the last years ranging between 22 and 28 tonnes according to official data from the FAO. Captured both dragging the bottom with a wooden cross provided with rope mops and by diving. The total catch reported for this species to FAO for 1999 was 26,5 t. The countries with the largest catches were Spain 6,9 t and Italy 3,9 t.

already protected by CITES. Since deepwater reefs are not visible to the general public, dissemination of information through the media and the education system is vital in order to create empathy for their protection. This will not be an easy task, as coral fisheries

For more info on the topic:
www.tooprecioustowear.org
www.seaweb.org
www.traffic.org
www.assocoral.it ■

Edited by
Peter & Gunild Symes



FILEPHOTO: MARK WEBSTER

Tagged basking shark swam 6000 miles—across the Atlantic and back

Where do Britain's basking sharks go in the winter? Canada it seems. For the first time, satellites have tracked tagged sharks travelling for thousands of miles from waters southwest of the Isle of Man to New Foundland.

Until now little was known about endangered basking sharks (*Cetorhinus maximus*) when they moved outside British waters. Then two sharks got tagged off the Isle of Man and were tracked by satellite for 100 days. One shark got no farther than the west coast of Scotland; the other stayed near Cornwall for a short time, then went across the Atlantic, travelling 9,589 km to the waters off the Newfoundland shelf. On her journey across the ocean, she reached a maximum depth of 1,264 metres. This is the first conclusive evidence for basking sharks' use of the deep mid-ocean, a

record dive depth for tagged sharks, and perhaps more importantly the first evidence that the species migrates across oceans or between hemispheres.

Research scientists are not sure why the 26ft-long female made the incredible trip, speculating she could have been looking for a mate, for a better food supply, or returning 'home' after a summer in British waters. Another option is that she was on a previously undiscovered migration route, prompting debate among some experts that basking sharks in Britain, North America, southern Africa and as far afield as New Zealand could be part of one big family.

Little is known about this gentle giant, whose humble diet consists of the microscopic organism plankton, and until now, it was thought in Europe to migrate north in the

Basking sharks in Britain, North America, southern Africa and as far afield as New Zealand could be part of one big family.

spring to England and up to Scotland, before returning south in the autumn.

Where exactly south they moved was until now a mystery. Dr Mauvis Gore, a marine biologist with the Save Our Seas Foundation, who has been studying these animals for

the past five years has shed new light on their movement patterns. With her discovery comes the realisation that, since this endangered species is not protected outside Europe, it might be more vulnerable than previously thought.

"These results give the first link between the European and American basking shark populations, and what was once thought to be two discrete populations is very likely to be effectively a single one unit." Dr Gore told the Times. ■

SOURCES: SAVE OUR SEAS FOUNDATION, THE GUARDIAN UK, THE TIMES

AWI post lists over U.S. restaurants selling shark fin soup

The Animal Welfare Institute is leading a nationwide effort to contact restaurants in the US that currently serve the highly controversial shark fin soup, asking that they consider the precarious status of many of the targeted species and stop selling the dish immediately. ■

Weddings boost consumption of shark fin in Singapore

Shark's fin consumption more than doubled in Singapore last year from 2006, with demand driven by an economic boom and an increase in wedding celebrations, AFP reports. Singapore consumed more than 470 tonnes in 2007, up from 182 tonnes the previous year and reversing a four-year decline, the Straits Times reported. ■

Warnings sought for shark fin dishes

Taiwanese legislators urged the Department of Health (DOH) to require that restaurants serving dishes with shark fins provide warnings cautioning pregnant women not to eat the prized ingredient, which can contain dangerous levels of mercury. ■

Sharks are now 'functionally extinct' in the Mediterranean

Researchers going through two centuries worth of data have documented that shark numbers have declined by as much as 99 percent in the last two hundred years. The scientists who conducted the study said that many of the 47 species of sharks that live in the Mediterranean have not been seen for decades.

To be "functionally extinct" means that there are so few individuals left that the species have ceased

to play a significant role in the ecosystem.

"The loss of sharks in the Atlantic has resulted in unpredictable changes to the ecosystem. Given the decline in the Mediterranean, there is cause to be seriously concerned about the effect that this could have," said Francesco Ferretti, the head of the research team who published their findings in the journal Conservation Biology. They added that other predators, such as whales, turtles

and large fish such as tuna, "had declined similarly" and that the entire ecosystem of the Mediterranean was at risk. Sharks help control the populations of various fish and keep the food chain balanced.

Many of the 47 species of sharks that live in the Mediterranean have not been seen for decades.

The team looked at the populations of hammerheads, blue sharks, thresher sharks and mackerel shark. "Many historical records show the Mediterranean had an abundance of large sharks, which were considered a pest by fishermen," it says in the report. "Hammerhead sharks declined the fastest. In the early 1900s, catches and sightings were regular, although not common. After 1963, no hammerheads were caught or seen in coastal

areas. After 1995, we found no more records," it added.

The authors concluded that sharks have been either legally or illegally fished to extinction, as fishermen sought to get rid of them. Sharks are particularly vulnerable to fishing because they breed rarely and take a long time to grow to maturity. ■

Mexico to tag sharks following a string of deadly attacks

Researchers are trying to understand why sharks near the southwestern resort of Ixtapa-Zihuatanejo killed two surfers and maimed another in the first fatal shark attacks along Mexico's Pacific coast in 30 years.

Biologists in Mexico plan to tag hundreds of sharks off the Pacific Coast and ask fisherman to look out for them and report back on their movements. A smaller group of sharks will be tagged with electronic devices that would transmit data on their behavior and locations to biologists via radio frequencies.

"We need to get to the 'why' these animals are coming so close to Guerrero's shores, which is so unusual," Guerrero state Environment Secretary Sabas Arturo de la Rosa told Reuters.

Could La Nina Be to Blame?

Shark experts believe unusually cool sea-surface temperatures could be partly responsible for the attacks, but they also note that a dearth of data about sharks in the region makes it difficult to reach conclusions.

According to George Burgess, director of the Florida Program for Shark Research, La Nina usually results in cooler than normal waters in the Pacific, and may have moved the boundary between cold and warm water closer to the shore, taking fish and their shark predators along with it.

"One of the factors we're investigating is if there are special oceanographic conditions that might have contributed to the attacks," Burgess told Reuters. ■

Opposition to shark fishing in the Great Barrier Reef grows

Shark Savers has launched a petition to harness growing international opposition against new proposals of the Queensland, Australia government to license shark fishing in the Great Barrier Reef World Heritage Area.

Shark Savers goal is to draw international attention to the proposal, spurning a public outcry and motivating other government agencies within Australia to get involved. "Australia stands to lose its precious shark population, jeopardize its lucrative tourism industry and forever tarnish its reputation as an environmental leader," said Julie Andersen, director of Shark Savers. "We cannot afford to lose one of the world's most treasured ecosystems and one of the key species that keeps it healthy."



Shark Savers has launched a petition to harness growing international opposition against new proposals of the Queensland, Australia government to license shark fishing in the Great Barrier Reef World Heritage Area.

An historical first, the Queensland, Australia government is creating a dedicated shark fishery. The measures would establish formal shark fishing in critically vital and currently protected shark habitats including the Great Barrier Reef. Additionally, the proposal offers no firm catch limit to the number of sharks that can be fished.

Shark Savers, an organization dedicated to the grassroots conservation of sharks, is calling for international pressure to immediately stop these measures. The organization notes that shark populations around the world are plummeting due to relentless over fishing for sharks, primarily to satisfy demand for shark fin soup in



Asia. Shark Savers believes a moratorium should be established on shark fishing, rather than create new fishing rights in delicate marine protected areas such as the Great Barrier Reef.

"The Great Barrier Reef should be a refuge for sharks. Developing countries such as Ecuador and Costa Rica have declared all sharks to be off-limits to fishing in their marine protected areas, Galapagos and Cocos. Certainly Australia can, as well," said Michael Skoletsky, director of Shark Savers. "The shark fishermen are getting new protections—but it's the sharks that need protection the most."

"Research has repeatedly shown that sharks play an especially vital role for ocean ecosystems. When sharks are eliminated or decimated, severe problems are created down the food chain," said Ellen Pikitch, Executive Director of the Pew Institute for Ocean Science. "As a consequence of losing sharks, other species might be eliminated that are either important foods for humans or upon which the health of the reefs themselves is dependent."

Shark Savers (www.sharksavers.org) is a non-profit membership organization dedicated to saving the sharks through building awareness, education, and grassroots action. Shark Savers enables people to learn, take action, share information, and find each other around the mission of saving sharks.

CONTACT:
Michael Skoletsky
michael.skoletsky@sharksavers.org

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Brazil's Ilha Grande

Laid back & lazy

There are a few places on this planet where things seem to fall into place without any hesitation. Ilha Grande, Brazil, is one of these places. Even on busy weekends, there is a no-stress atmosphere. On the beach, in the garden hammock, or at 20 metres depth—it's all laid back and lazy.

A couple of editions back, our magazine adopted the sub-heading "International lifestyle magazine for divers". Well, spending some days on Ilha Grande definitely felt more like a lifestyle than work. All things connected—the lush green forrests, tiny quiet villages on the water's edge, deserted beaches, wooden schooners anchored in the bays, and the attractions of the deep azur ocean. Arriving on the island—after you have just transferred from either busy Rio de Janeiro or São Paulo—is like stepping onto another planet as soon as you step off the boat.

No diving

Diving is important. Otherwise, I would have written this story for a food magazine. When I am on a dive trip, I want to dive! But this time, it was different.

As usual, I headed for the dive centers shortly after checking in at the hotel, in order to set up things. The conversation I had with a guy from one of the dive centers was short. It went like this: "No diving today because the visibility is too bad."

"OK, what do you mean by bad?"

"10-12 metres! Better wait for another day!"

I know quite a few people who would love to dive with 10-12 meters of visibility—anyday, any where! This time, I didn't really get upset for a cancelled dive trip. I just went back to our hotel, surprising my wife with my sudden return.

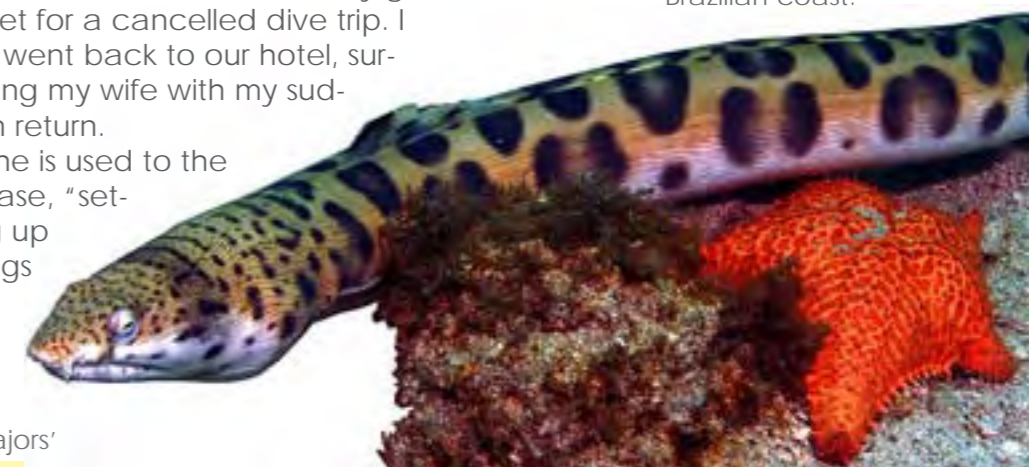
She is used to the phrase, "setting up things for

diving", meaning hours of yadda yadda, and wasn't expecting me so soon. So, we picked up our beach stuff, my camera and found a lonely part of a nearby beach and enjoyed a heavenly afternoon of tranquility.

Beach combing

The next day, we stopped by the dive center, but the owner had left for business on the main land. This meant we could spend a whole day exploring the island. You basically have two choices: either going by foot on some of the dirt trails that criss-cross the rugged island, or taking a much more relaxed tour on a so-called schooner.

You often encounter the dark spotted snake eel along the Brazilian coast.



A piece of fruit in the water quickly attracts both Dog's Tooth Snapper and Sergeant Majors'

Text by Arnold Weisz
Topside photos by Arnold Weisz
Underwater photos by Alcides Falanghe

We chose the latter option. These locally made wooden motor yachts, whose riggings are fake, are pleasant ways of visiting other villages and beaches.

There is a wide choice of trips. They all basically stop at a few different beaches and serve warm

The underwater scenery around Ilha Grande is fantastic with its variety. Boulders, canyons, walls and swim through are perfect for both divers and the marine life.

food and drinks on board. Most of them make a snorkeling and bathing stop as well. Sailing around the island gives you some spectacular views of it and the mainland.

Finally diving

After a couple of days beach combing, it was good to be back in the rumble and bumble on board a dive boat. With a mixed crowd of Scandinavians, Germans and Brits, we steamed out of the Bay of Abrão, heading for the

windward side of the island.

Open to the ocean, this area offers the best diving, although there are many dive sites in the strait between the island and the main land as well. Having some newbies on board we opted for quieter water in a bay. Anchoring up in a secluded bay at little São Jorge Island, we found some nice spots for diving.

The coast of Rio de Janeiro isn't tropical, so don't expect vast colourful coral reefs. That being said,

the marine life is abundant. At any dive site around Ilha Grande, there are some hefty rock formations. The rocks and crevices are hide-outs for a multitude of marine life. There are many swim throughs, but stay away from the black sea urchins, which can give you a few hours of pain.

Even though the dark grottos are attractive, don't forget the blue water or the sandy bottom. There are plenty of sea turtles around, and small groups of batfishes travel by. The wet desert isn't really as deserted as one would think. Bottom dwellers use the sand to hide and wait for a suitable prey to swim by.

As an ocean current passes the island, the water is nutrient rich. The outer rocks are often covered with corals. What sometimes lacks in visibility, is well made up for by the divers marine life.

For those interested in wrecks, yes there are some good wreck dives to be made here as well, but we have to get back to you on this, for the next feature.

Nature

You can certainly find more beautiful beaches somewhere else on the planet, and you can find more picturesque villages on other islands. But these 193 km² of paradise-on-earth aren't weeks away on a sailboat, or hours in a plane away from civilization. It's just a mere two hours south of Rio de Janeiro, or seven hours on the road from São Paulo. Whatever you do on this island, it's very much connected to nature.

Ilha Grande



Ocean currents makes the waters around Ilha Grande much clearer than for example than other islands a long this coast, like Ilhabela, further south

Ilha Grande



Most of the dive sites offer a diversity that satisfy everyone, from the UW-macro photographer to sea turtle lovers

Even rowdy Scandinavians seem to notch down their cheerfulness after a few beers in one of the many bars and eateries here. Then you will hear the sound of the nature. Like birds and crickets. Accompanied by waves washing up onto the beach and the wind sweeping through the vegetation... and sometimes, even a sigh of happiness can be heard.

Car free

We opted to stay in the main village on the island of Abraõ. Here, you will find most of the tourist infrastructure, shops and accomodations. It is still a very low key setting. For those who want even more tranquility, there are a few other options around the island with lone resorts, or tiny villages with a pousada or two.

One of the most enjoyable things on Ilha Grande was the lack of cars. The only things that ran on petrol on land here were the mayor's car and a couple of dirt bikes used by the local police. Even the local police car was an electric golf car. Just be aware of bikers and dogs, which are plentyful here.

Ocean, beach, diving and food!
What more you you need?

Diving Services

The diving services on this trip were provided by Elite Dive Center in Vila Abrão, Ilha Grande. They run a 40-foot custom built dive boat, driven by a 2x300 hp Mercedes Benz.

There is a small cabin and a toilet available. Maximum capacity is 16 divers, but the owner Daniel Gouvêa says that they seldom go out with more than 12 divers. He speaks fluently English. So does his father who functions as a dive guide on board.

The boat usually departs around 9:00 am and comes back around 4:00 pm. All divers get a lunch package and water or softdrinks between the dives. Rental equipment and Nitrox are available.

For more information, please visit:
www.elitedivecenter.com.br ■

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How many razorfish can you spot?

Is it mimicry, mimesis or camouflage?

Find Wally

Text: Peter Symes
Photo: Michael Arvedlund

Mimicry is one of several anti-predatory devices found in nature. Specifically it is a situation in which one species called the mimic resembles in colour, form, and/or behaviour another species called the model. In so doing, the *mimic* acquires some survival advantage such as pro-

tection from predation. Usually mimicry refers to the similarities between animal species whereas **camouflage** usually refers to an animal species resembling an inanimate object. The lack of a

Shrimpfish, also called razorfish, are five small species of tropical marine fish in the subfamily Centriscinae of the family Centriscidae. They are found in the Indian and Pacific Oceans. Shrimpfish are nearly transparent and flattened from side to side with long snouts and a sharp-edged belly. A thin, dark stripe runs along its body. It is from this and their shrimp-like appearance that their name is derived. They swim in a synchronized manner with their heads pointing downwards but swim horizontally when they are hunting

true distinction between the two phenomena can be seen in animals that resemble twigs, bark, leaves or flowers, in that they are often classified as camouflaged (a plant constitutes its "surroundings"), but are sometimes classified as mimics (a plant is also an organism)

In between camouflage and mimicry is **mimesis**, in which the mimicking organism takes on the properties of a specific object or organism, but one to which the *dupe* is indifferent. (The dupe is the 'observing' organism ie the predator from which the mimics are trying to hide.)

Though mimicry is most obvious to humans in visual mimics, others senses such as olfaction (smell) or hearing may be involved, and more than one type of signal may be employed. Mimicry may involve morphology, behavior, and other properties. In any case, the signal always functions to deceive the receiver by preventing it from correctly identifying the mimic.

Batesian mimicry refers to two or more species that are similar in appearance, but only one

of which is armed with spines, stingers, or toxic chemistry, while its apparent double lacks these traits. The second species has no defense other than resembling the unpalatable species and is afforded protection from certain predators by its resemblance to the unpalatable species, which the predator associates with a certain appearance and a bad experience.

Muellerian mimicry refers to two unpalatable species that are mimics of each other with conspicuous warning coloration (also known as *aposematic coloration*). Thus all mimics share the benefits of the coloration since the predator will recognize the coloration of an unpalatable group after a few bad experiences.

These fish swim horizontally when they are hunting. At other times they can be seen swimming vertically with their heads down, although they are also capable of swimming with their heads up. ■



pearls of the
mediterranean



From high speed to slow down

RUTGER GEERLING

Kas, Turkey

Text by Harald Apelt
Photos by Harald Apelt
and Rutger Geerling

Upon leaving the modern Antalya airport in Turkey, my Turkish adventure began immediately. I was awaited by a taxi driver—let's call him Mehmet—who was hired for my transfer from the big metropolis of Antalya to my final destination, Kas. I met this guy, Mehmet, who bravely held the sign board for identification into the air, "Mr. Apelt for Kas Diving", and our welcome was spartan and friendly. But there was one problem: Mehmet didn't speak a word of English, or any other language, but Turkish. This is why I didn't get his name. So, I call him "Mehmet", a very respectable Turkish name.

During the 210-kilometer taxi transfer from the airport to Kas, there was no conversation with Mehmet—not a word—but I learned a lot about life here on the goose chase through Antalya's metropolis of around 700,000 inhabitants.

What traffic! I've been a pretty keen driver for more than 30 years, and I am used to driving in big cities such as Barcelona, Milano, London and Paris, but the traffic in Turkey is something different. Mehmet just about flew me through the city. Only if absolutely necessary, did he drive less than 100km per hour, and red traffic lights seemed to be only a recommendation—a useless illumination for him.

To cut a long story short, the transfer was an adrenalin rush into a new and interesting and different world that exists so close to Europe. McDonalds, shopping malls, big city architecture are nearly the same here as in any other European city. On the other hand, the culture and atmosphere here makes the place seem so far away from European



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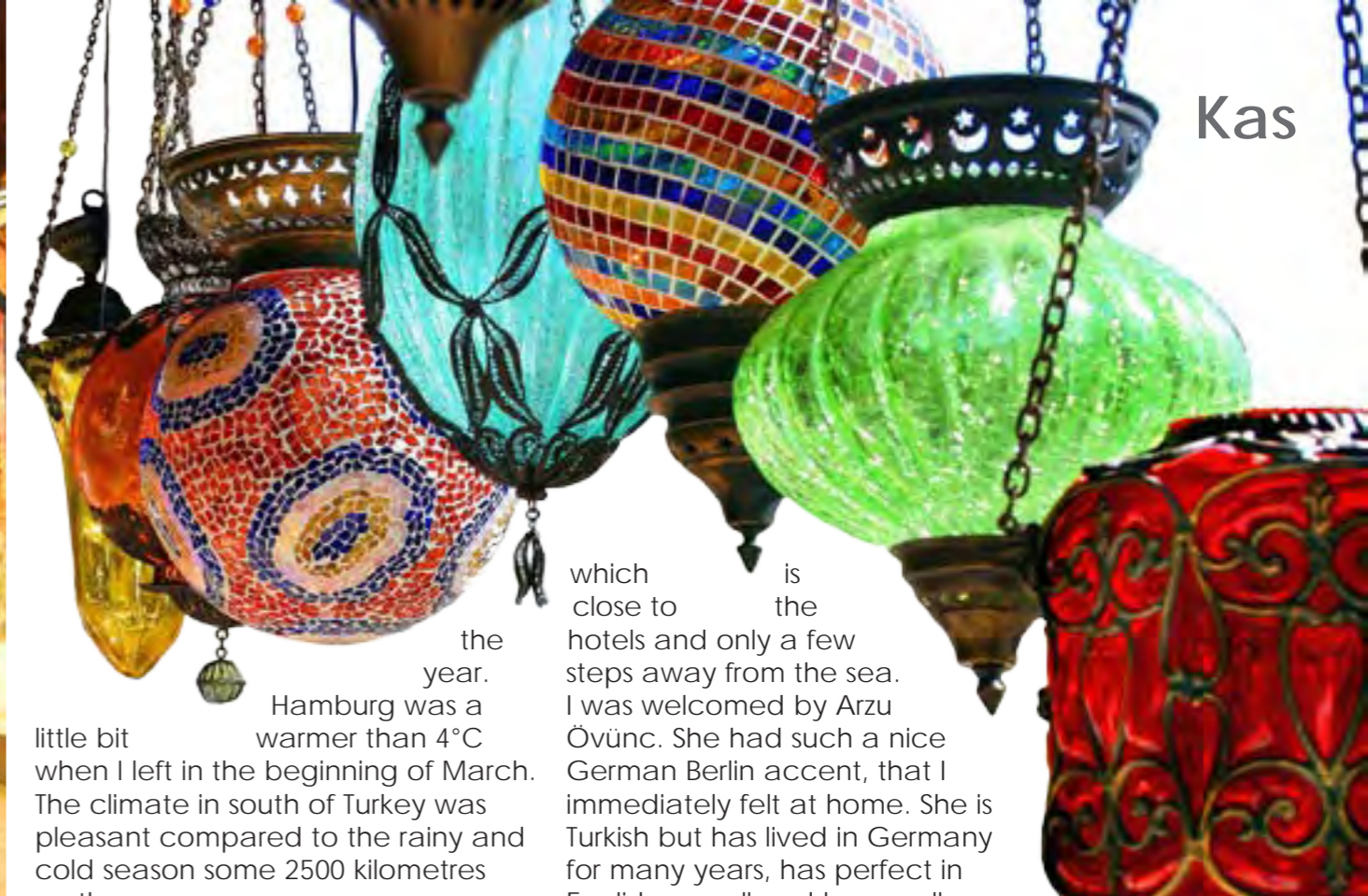
RUTGER GEERLING

Spectacular caverns, interesting wrecks and colourful marine life can be discovered on the diving trips with the comfortable diving ship *Abyss* (above right whilst leaving Kas harbour)

RUTGER GEERLING

pearls of the mediterranean

Kas



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Colourful night life in the small alleys of Kas: Modern lifestyle in shops and restaurants right next to the mosque

life. To be honest, the mixture of East and West in Turkey is like an amazing spice on a good meal.

Outside Antalya, we drove endless kilometers along the coastal line. My nerves calmed down. The road slid along the hills of the Taurus Mountains. Little villages and picturesque port towns bordered vast forests. The fantastic view over the Lycia coast, the smooth light of the nearby sunset and the amazing colours of the sea, which I would soon be exploring, inspired a wonderful holiday feeling.

It was shortly after sunset when Mehmet suddenly left the road and drove onto a small path into the forest. "What's going on now?" I wondered and started getting a bit irritated when we suddenly stopped in front of a small restaurant.

Bringing three fingers into his mouth, Mehmet made me understand that this would be our dinner pause.

We entered the restaurant where

Mehmet was well known. We were welcomed and served at once, and I ate one of the best trout dinners I have ever had in my life, plus an amazing fresh salad and a Turkish "meze" antipasti plate. The compulsory deep black Turkish coffee completed the perfect transfer break.

Astonishingly, for this opulent meal, I paid an amount that one would pay, in Germany, for a little more than a few French fries and a beer.

We finally reached Kas close to midnight, and the beauty of this small historic port town was already blanketed by the night.

The resort

The next day, bright sunshine awoke me with deep blue skies and temperatures of more than 25°C, which is not high for Turkey, but hot for this time of

which is the year. Hamburg was a little bit warmer than 4°C when I left in the beginning of March. The climate in south of Turkey was pleasant compared to the rainy and cold season some 2500 kilometres north.

is the hotels and only a few steps away from the sea. I was welcomed by Arzu Övünc. She had such a nice German Berlin accent, that I immediately felt at home. She is Turkish but has lived in Germany for many years, has perfect in English as well and knows all about everything. She manages Kas Diving, the client relations, bookings and accommodations, and she is

It is like early summertime in central Europe, and that's why Turkey is a very popular travel destination in the early part of the season during March and April.

I stepped into Kas Diving,



pearls of the mediterranean



Kas



a very professional guide for guests who wish to discover the endless historical and tourist highlights on the Lycia coastline, and she is, of course, a keen diver, too. Sometimes she is bothered a little by her position and not having enough time to accompany Levent, the owner of Kas Diving, and his two instructors, Murat and Jeff, on their daily trips along the Kas coastline.

After one week of diving, I understood Arzu's feelings, because my prejudices against eastern Mediterranean diving were blown away. There are about 30 dive spots that are used for diving here. All the trips start from the little harbour of Kas. Kas Diving has an own space at harbour with an exclusive place for the dive boat. Right next to the pier, there is a compressor station, which Levent installed.

Clients of Kas Diving enjoy the

comfortable way of diving. Nobody has to take care of equipment. That job is done by the crew during your entire stay on board the dive boat. Nobody has to carry tanks or weight belts—everything is perfectly organised by Levent and his crew.

Kas diving

So again, the question is, "What makes a 'pearl', a 'pearl', as we define it"? Well, Kas is a good example of how a holiday destination can be perfect in so many different ways.

It was not much more than 30 years ago, that Kas could only be reached by a narrow, impassable goat path. That's why nowadays Kas is far from the disastrous tourist development of many other Mediterranean destinations. There are no hotel bunkers, no classical signs of mass tourism to be found



No mass tourism will be found here: The picturesque harbour of Kas (left). Divers having lunch on the *Abyss* while anchored in a small bay outside Kas (above)

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pearls of the mediterranean



here. And Kas is still an attractive port town with many historic buildings and traces of more than 20 centuries all around. This nice little port town has exciting aspects as well, which each tourist might hardly be looking for such as small, narrow alleys with a lot of little shops, bars and restaurants, a port region where fishing boats land their fresh catch and palm garden cafés where one can drink a refreshing tea (or even a more refreshing Efes-Pilsen) and watch the life around the central port square with its impressive monument showing Kemal Atatür—the beloved and adored founder of the Turkish nation. Guests will meet some of the 8000 inhabitants of Kas who are absolutely relaxed, attentive and have such an amazing kindness that questions about the speed of life in modern civi-

lization crawl into one's head without fail.

Being relaxed seems to be one of the most positive characteristics the owner of a diving center could have. And Levent has it. Although he grew up in a busy atmosphere in southwest Germany, he celebrates his days in an absolutely unusual manner in diving business. Maybe it is the mixture of German correctness and reliability and the easy going relaxed Turkish way that makes the special atmosphere in diving with Kas Diving. As everyone knows, dive boats can be a story in themselves. I cannot remember many boats that have been so well organised, offered so much space, were so clean and showed so many nice details of perfect planning and good craftsmanship like the *Abyss!* A visit to the boat's restrooms, for instance,

Diving at its best: Highlights are the wrecks outside Kas, the historical sites with amphora's, and the rare meetings with Hawksbill sea turtles

Kas



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Kas

Historical artefacts are protected by law: Just look, don't touch! Octopus, nudibranch, hermit crab and scorpion fish can be found easily

will surprise anyone with their inspiring, artful flagging work.

The Kas flagship dive boat, *Abyss*, is 19 meters long and six meters wide. The second ship, *Barakuda*, is 16 by 5 meters. The daily dive trips are made with the *Abyss*, which can transport up to 35 equipped divers. During the main season, Kas Diving offers two excursions per day and day trips, with two dives and a common meal at lunch time, three or four times per week.

Compared to other Mediterranean regions, diving at Kas has perfect visibility. The water is mostly crystal clear and bearable in temperature. In March, the water is already 17°C, which quick-



ly rises up to 24°C in June, and in August and September reaches a peak of 29°C.

by Kas Diving, and there are two you should absolutely see at "Olu Burun", which means "holy nose" and describes the small peninsula west of Kas. Here you can dive the replica of a historic shipwreck, which was discovered by some fishermen in the early '80s.

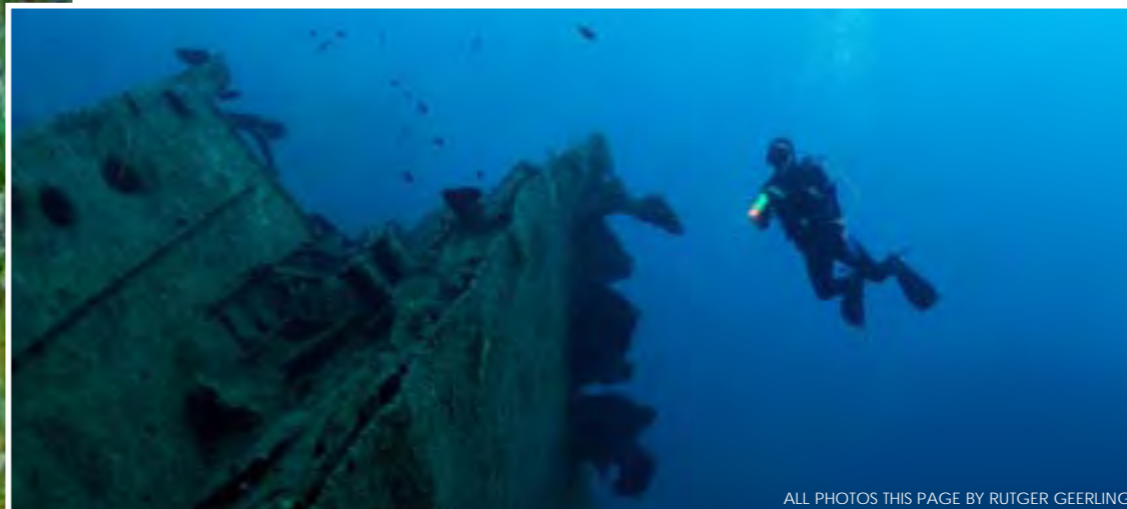
The original wreck was 15 metres long and transported amphoras and bronze. It was in a good state and declared to be older than 3300 years. It was discovered in a depth of 60 meters. It took ten years and more than 22,000 dives to register all the ship's details, section by section, and recover the numerous artifacts. The ship found its final home in the Museum of Bodrum.

Diving

There are about 30 dive spots used

In 2007, the local underwater archaeology club decided to build and countersink a replica of this famous wreck at Olu Burun and reconstruct the recovered amphora field with replicas for divers to enjoy.

Within two months, the replica wreck was built and plunged to a depth that was good for sport diving activities. Later, heavy storms moved the wreck from 15 meters down to 30 meters. Now, it is tied with a sturdy rope to a rock, and the rope leads divers down from the coastline from six meters direct-



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Common life at Kas: The Turkish people are very friendly and hospitable to foreigners. The pide baker made a perfect 'Lahmacun' and 'Pide'.

ly down to the wreck and the amphora field.

The second spot you should dive is the wreck of the Greek freight ship, *Dimitrij*. It sank in the early '60s carrying cotton. It was hardly damaged by numerous heavy winterstorms.

The dive of the wreck starts unexpectacularly at six meters and leads one over a flat region where divers come up against the first metal leftovers of the *Dimitrij*. But suddenly, it gets more exciting because a deep canyon at 25 to 40 meter appears next to the hull of the *Dimitrij*.

And finally, when you get back to the dive boat, the relaxing atmosphere topside goes on as usual. The



team gives you a hand wherever you need it. There is no hurry and a good pot of tea is ready for you after the good dive you had.

Topside excursions

If the historic "Olu Burun" wreck has inspired you to see more historic places and explore the beautiful landscape around Kas, you should tour the region by car. There is a nice day trip recommended by Arzu, which will show visitors a lot of what makes the Kas region a real pearl of the Mediterranean.

About 40 kilometers west of Kas, one should see the ruins of Patara, the birth place of the god, Apollo. During the reign of the Roman Empire, Patara was the capital of Lycia. Many ruins of this important city can be seen here. The amphitheatre is especially worth a visit. (See more

information at: www.allaboutturkey.com/patara.htm

Only a few minutes away towards the seaside, travelers will reach the Patara beach. It is one of the most famous and longest beaches of Turkey. It's more than 18 kilometers long and is still the home of one of the last Mediterranean populations of hawksbill turtles, which come here to lay their eggs.

Leaving the seaside heading north on the road to Fethiye, one will reach Xanthos. It was



The Kas team: Captain Sadik, Arzu Övünc, Jeff Dobson, Murat Ayildiz and owner Levent Aydogmus

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pearls of the mediterranean



What you should see when visiting Kas: The market place at Kas, the quiet atmosphere at the harbour, the canyon of Saklikent, the historical ruins at Patara and Xanthos, and the nice hilly alleys at Kas

only to be smashed again. Grave sites, sarcophagus, monuments, ruins of ancient palaces and the former amphitheatre are witnesses to the long history of this place.

Leaving the main road northeast into the hills, you'll reach the canyon of Saklikent. The river Akdagi makes its way through this canyon, which is 18 kilometers long. From the visitors point, you can explore 16 grottos and the deep canyon that is bordered on both sides by the 600-meter high Akdag Mountains.

And if you want another great day trip, just visit Greece. Not much more than two kilometers outside Kas is the most eastern Greek island of Kastelorizo, which is called "Meis" in Greek. It's a small island, which occasionally has flights to its small regional airport. But the picturesque little port town of Kastelorizo is absolutely beautiful and worth visiting.

It's just a 20-minute ferry ride from Kas, but it's not like crossing the river Thames. Although it's only a day trip of a few hours, you will need an official visa for your re-entry into EC from Turkish Kas. The visa must be applied for at least one day before the trip. This can be taken care of by Arzu from Kas Diving.

The whole immigration system is performed very seriously and even customs control looks like it would appear if you were visiting the Soviet Union in former years. Having an his-

toric enemy, Greece, right in front of the Turkish door seems to make everybody a little bit nervous. That's why it is not surprising, that the Turkish Navy has a station in the harbor of Kas. That of course, has been matched by the presence of a Greek frigate in the port of Kastelorizo.

As you can see, there are quite a lot of exciting activities to be done during a holiday in Kas besides diving. And the very last adventure of the holiday was—yep, that's right—the taxi transfer back to Antalya airport. Another driver,



another car and a new fastest lap of 2:40 hours.

When I got to the airplane, I was vividly day dreaming of my own car and being my own driver in my own slow-paced city. But overall, the journey to Turkey was a really great adventure, and the mad taxi rides were just minor irritations to endure on the trip. ■



the capital of ancient Lycia, and the first federal republic in the world. During its long history and many occupations, Xanthos experienced several wars and catastrophes. Wars destroyed and burnt down the city, which ten was reconstructed and grew up to a metropolis again

fact file



Turkey



SOURCE: HARALD APELT, CIA WORLD FACT BOOK AND SCUBA-DOC.COM

History Under the authoritarian leadership of national hero Mustafa Kemal, "Father of the Turks", modern Turkey was founded in 1923 from the surviving Anatolian vestiges of the defeated Ottoman Empire. Under Kemal's rule, the country adopted wide-ranging political, social, and legal reforms. An experiment with multi-party politics followed a period of one-party rule. In 1950, the Democratic Party won a victory and a peaceful transfer of power. Political parties in Turkey have multiplied since then, but periods of instability and occasional military coups in 1960, 1971 and

1980, have fractured democracy in the country. After each coup, power was eventually returned to civilians. The military assisted in a coup which ousted the then Islamic-oriented government in 1997. In 1974, Turkey's military intervened on Cyprus to prevent the takeover of the island by Greece. Turkey acts as the patron state to the island which is now dubbed the Turkish Republic of Northern Cyprus, recognized only by Turkey. In 1984, a separatist insurgency began by the Kurdistan Workers' Party (PKK) known today as the People's Congress of Kurdistan or Kongra-Gel (KKG). The conflict has taken all the Turkish military's attention and led to the deaths of more than 30,000 people. In 1999, the group's leader was captured which led to the retreat of the insurgents to northern Iraq. The year 2004 saw an end to the KKG's ceasefire and an increase in attacks attributed to the KKG. In 1945, Turkey joined the UN and became a member of NATO in 1952. Turkey became an associate member of the European Community in 1964. Within the last ten years, the country has undertaken several reforms to strength-



tion and strong economic gains from 2002-07, high external debt and current account deficit still thwarts the economy.

In 2006, oil began to flow through the Baku-Tblisi-Ceyhan pipeline, leading to 1 million barrels per day from the Caspian entering the market.

Decompression chambers

Dept of Underwater and Hyperbaric Medicine, Istanbul Medical Faculty, Istanbul University, 34390 Çapa, Istanbul. Tel. +90 1 212 531 3544

Dept of Underwater and Hyperbaric Medicine, GMMA Haydarpasa Teaching Hospital, Uskudar 81010 Kadimathköy, Istanbul Tel.: +90 216 345 02 95

GATA Haydarpasa Military Hospital, 81327 Kadikoy, Istanbul Tel.: +90 216 3462453

Websites

Turkey Tourism www.turkeytourism.com
Ankara University Medical Faculty Underwater Research and Diving Club, Ankara. English webpage: www.geocities.com/Colosseum/Loge/5795/englishversion.html ■

en its economy and democracy in order to qualify to begin accession membership talks with the European Union. Government: republican parliamentary democracy. Capital: Ankara

Geography Turkey is located in Southeastern Europe and Southwestern Asia (the Turkish region west of the Bosphorus is geographically part of Europe). The country borders the Black Sea between Bulgaria and Georgia. It borders the Aegean Sea and the Mediterranean Sea between Greece and Syria. Coastline: 7,200 km. Terrain: high central plateau in Anatolia; several mountain ranges and narrow coastal plain. Lowest point: Mediterranean Sea 0 m. Highest point: Mount Ararat 5,166 m. Natural hazards: in northern Turkey along an arc extending from the Sea of Marmara to Lake Van, there are severe earthquakes. Note: Turkey holds a strategic location controlling the Turkish Straits (Bosphorus, Sea of Marmara, Dardanelles) which links the Black and Aegean Seas. The legen-

dary landing place of Noah's ark, Mount Ararat, is located in the far eastern region of the country.

Climate temperate with hot, dry summers and mild, wet winters; harsher climate is found in the interior

Environment issues The dumping of chemicals and detergents has led to water pollution. Urban areas experience air pollution. Deforestation and oil spills from increasing Bosphorus ship traffic challenge the country. Turkey is party to agreements: Air Pollution, Antarctic Treaty, Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Ozone Layer Protection, Ship Pollution, Wetlands. Turkey has signed, but not ratified Environmental Modification.

Population 71,892,807 (July 2008 est.) Ethnic groups: Turkish 80%, Kurdish 20% (estimated). Religions: Muslim 99.8% (mostly Sunni), other religions 0.2% (mostly Christians and Jews). Internet users:

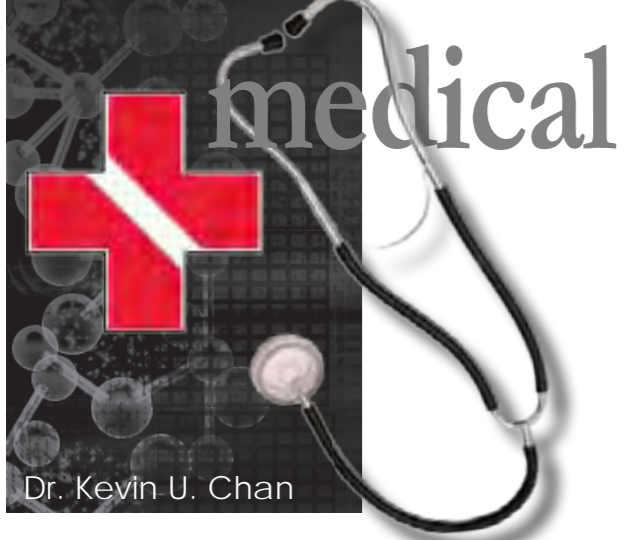
12.284 million (2006)

Language Turkish (official), Kurdish, Dimli (or Zaza), Azeri, Kabardian. There is also a large Gagauz population in the European part of Turkey.

Economy Modern industry and commerce coincides with a traditional agriculture sector that provides more than 35 percent of employment. Strong and rapidly growing private sector, is tempered by the state still playing a large role in basic industry, banking, transport, and communication. Textile and clothing production accounts for 33 percent of industrial employment and faces stiff competition in international markets. Automotive and electronics industries are rising. Real GNP growth has exceeded 6 percent in recent years, undermined by sharp declines in output in 1994, 1999, and 2001. Implementation of economic reforms has turned the economy around leading to a peak GDP growth rate of 9 percent in 2004. Despite falling infla-



HARALD APELT



Dr. Kevin U. Chan

Asthma *Understanding*

Asthma is a respiratory condition that affects 3-8% of the general population, thus also divers or would-be divers. It is defined as an increased responsiveness to the lower airways to multiple stimuli. This increased responsiveness may be episodic and during such asthma attacks the bronchi and bronchioles will become inflamed and constrict and lined with mucus. This airway narrowing causes symptoms such as wheezing, shortness of breath, chest tightness, and coughing. The effects may range from mild without limitations of the patients' activity to severe and life threatening. At times this obstruction may persist for days or weeks and it is called status asthmaticus.

Text by
Dr Kevin U. Chan

Two types

There are two types of asthma: *Extrinsic* asthma and *intrinsic* asthma. Extrinsic asthma is when the asthmatic attack is triggered by an external cause. This form of asthma occurs in individuals who are termed as *atopic*. They also have associated eczema and hay fever. Intrinsic asthma is when no precipitating agents can be identified to bring on the attack. This form of asthma often occurs in middle age and patients may have negative allergic histories but develop bronchospasm after a respiratory tract infection. However, at times, there may be a history of childhood asthma in these individuals.

Attacks

Asthma may be triggered by a whole range of different factors. An

asthma attack is based on non-specific hyperirritability of the Tracheobronchial tree but the mechanisms are not entirely clear. It has been postulated that the initiating stimuli activates a variety of chemicals that takes effect on the airway smooth muscle and blood vessel (capillary) permeability resulting in an intense local reaction. This may then be followed by a delayed (chronic) reaction. This latter response results in recruitment of more "inflammatory cells" to the site of injury. These then liberate a variety of chemicals compounds at the injured site which then result in more damage to the tissues.

All of which produce a wide spread effect within the tracheobronchial tree resulting in *bronchoconstriction* - constriction of the airways.

This bronchoconstriction results in the patient's entire pulmonary function being compromised. Such that the rate of forced exhalation being lesser than the predicted level. Furthermore there will be an increased air trapped within the lung and this further compromises lung function. Besides, in asthmatics there may be other associated changes like heart (right

ventricular hypertrophy) and lung (pulmonary hypertension) problems

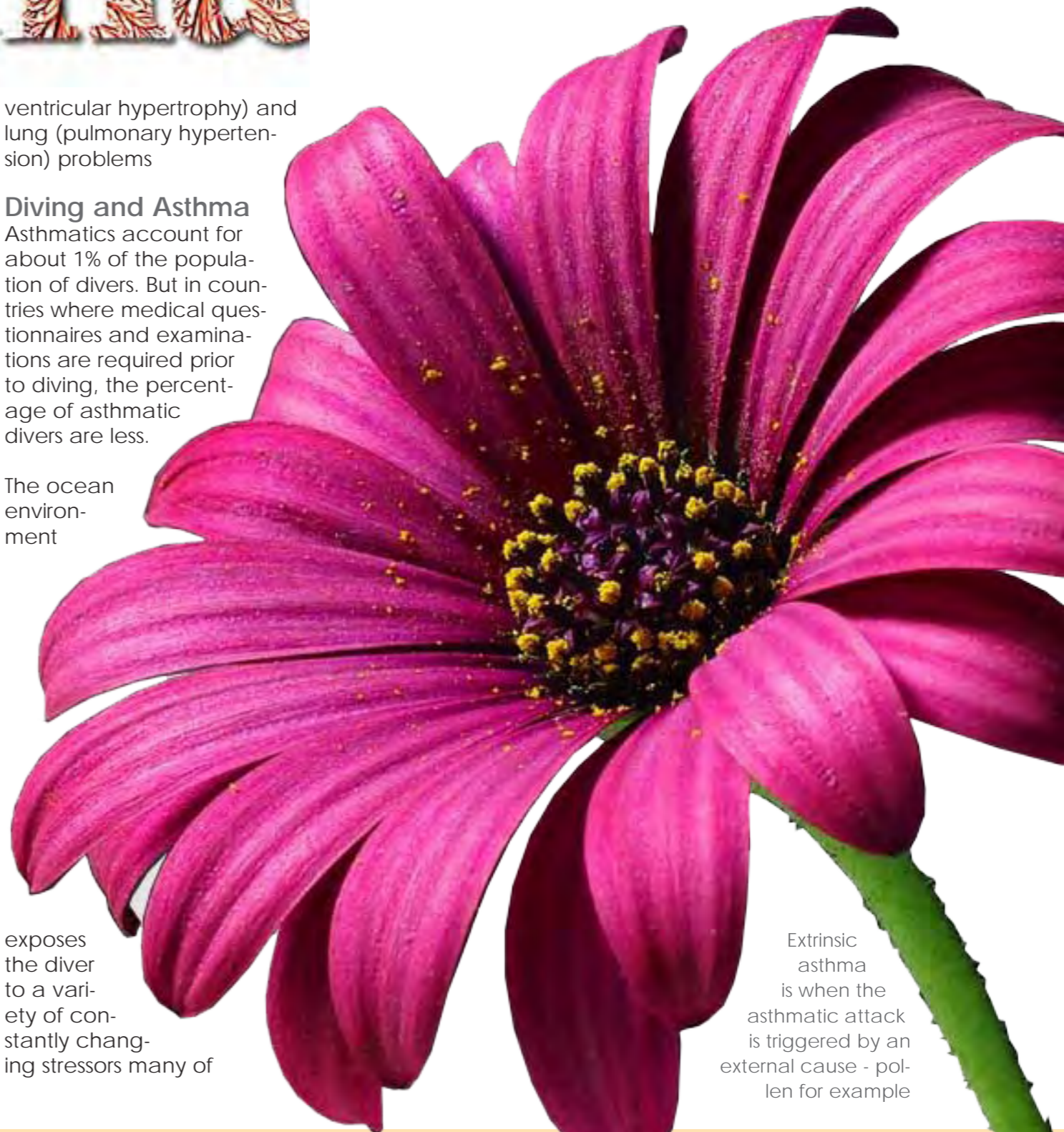
Diving and Asthma

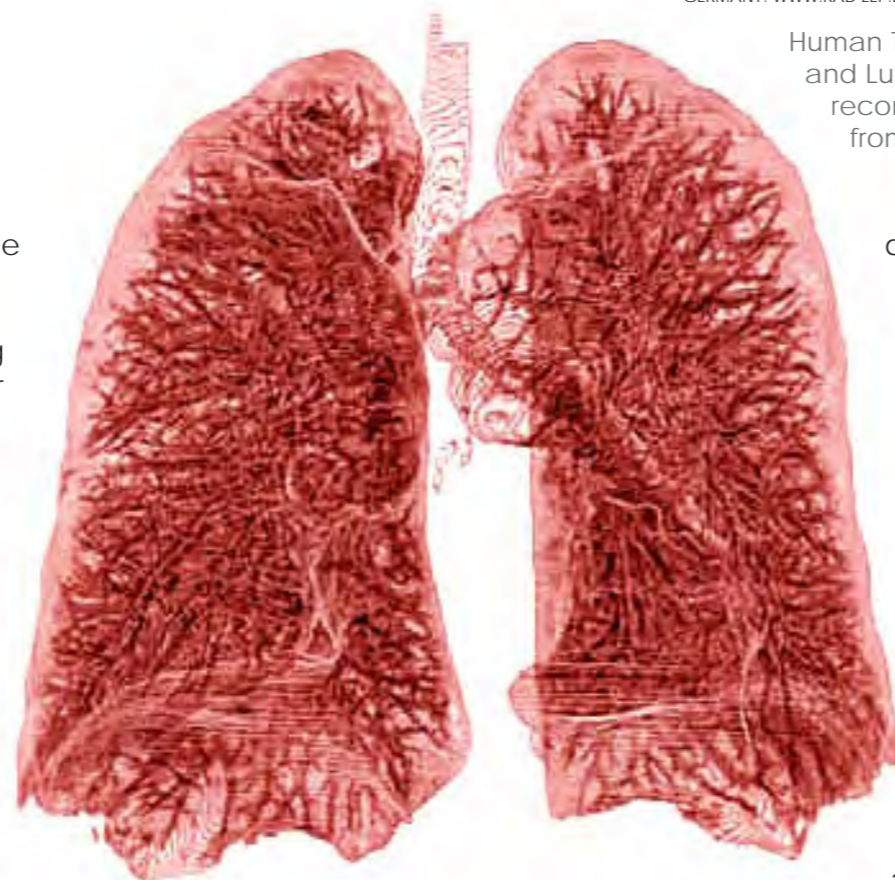
Asthmatics account for about 1% of the population of divers. But in countries where medical questionnaires and examinations are required prior to diving, the percentage of asthmatic divers are less.

The ocean environment

exposes the diver to a variety of constantly changing stressors many of

Extrinsic asthma is when the asthmatic attack is triggered by an external cause - pollen for example





Human Thorax
and Lung, 3D
reconstruction
from CT-scans

Possible causes

1. Allergens
2. Pharmacological stimuli
3. Environment (eg: cold, salty water) and air pollution
4. Occupational factors (e.g.: vapours, smoke)
5. Infections
6. Exercise
7. Emotional stress

which may trigger asthma. The resulting bronchoconstriction and increase in airway resistance heightens the risk diving related disorders - in particular pulmonary barotraumas such as embolism. Also as asthmatics breathe with higher than average lung volumes (due to some degree of gas trapping), there is a theoretical increased risk of lung expansion injury during ascent. Most asthmatics are also under treatment with medication like bronchodilators. This provides relief to some but not effect the entire airway. Hence, they may enable the asthmatic diver to descend easily but are less effective towards the end of the dive and also when a rapid emergency ascend may be required. More importantly, bronchodilator medication has a potential of causing an arrhythmic effect on the heart and is a potentially hazardous medication in the undersea environment.

As diving takes place in a dynamic environment with changing weather, tides, currents etc all divers will inevitably encounter situations requiring strenuous exercise at some point. Should an asthmatic attack be precipitated at such a time it would be detrimental. Consequently it will be ill advised for those with exercise induced

asthma to enroll in or proceed with their diving course. Besides, in some asthmatics, seawater itself may also provoke an asthmatic attack. Thus the procedure of doing a

hypertonic saline challenge test on asthmatics is able to within reasonable doubt rule out this aspect of asthma provocation.

Trigger factors in diving:

1. Exertion – ie from swimming against current, equipment drag or being overweight
2. Breathing cold and dry hyperbaric air, which increases dehydration of the airways
3. Hypertonic Saline. Inhalation of sea-spray or water (bubbling or leaking regulator)
4. Breathing resistance (increased gas density , regulator problems, and low air supply
5. Hyper ventilation and hypercapnia

Can I dive or not?

A number of factors have to be weighed and that can only be done in consultancy with a doctor. While asthmatics with normal airway function have similar risk as non asthmatics, in general asthmatics do have a higher susceptibility to pulmonary barotrauma. A study done on

diving deaths showed that asthmatics accounted for 9% of diving deaths while asthma being a contributory factor to the death was seen in 8% of the deaths. Most of the deaths were in practically physically fit young men

Risk points:

1. Risk of air trapping predisposing to pulmonary barotrauma
2. Risk of an acute bronchospasm whilst diving and predisposing to pulmonary barotrauma and subsequent drowning.
3. Risk of acute bronchospasm whilst diving and reducing exercise tolerance while on the surface and underwater.
4. Risk of Decompression Illness in a diver who has recently taken a bronchodilator drug.

Can it be managed?

Asthma is managed through drugs and an asthma management plan. There are 2 types of medication in the treatment of asthma - relievers and preventers. As their name implies, relievers are used to treat the acute attack – so as to relax the smooth muscles. Some relievers also reduce the swelling and the mucous production. Preventers on the other hand help to prevent symptoms from arising thus stifling the degree of the allergic response to the precipitating agent.

Testing the severity of asthma and the likeliness of attacks includes a number of physical tests to see how the lungs react to a number of stressors. First of all the patient is put on an exercise bike for 5 mins at a load that corresponds to swimming 1 knots. The lung functions are measured before and after. It is also tested how the lungs reacts to inhaling saline and methacholine sprays. ■



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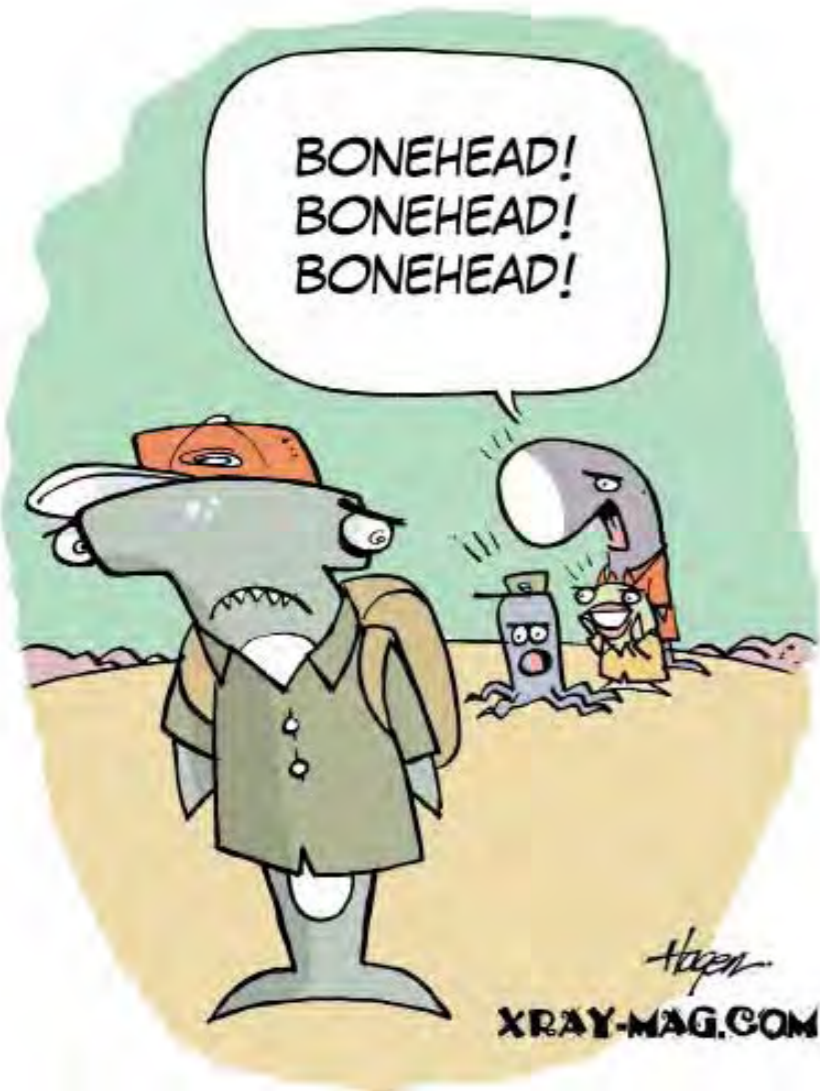
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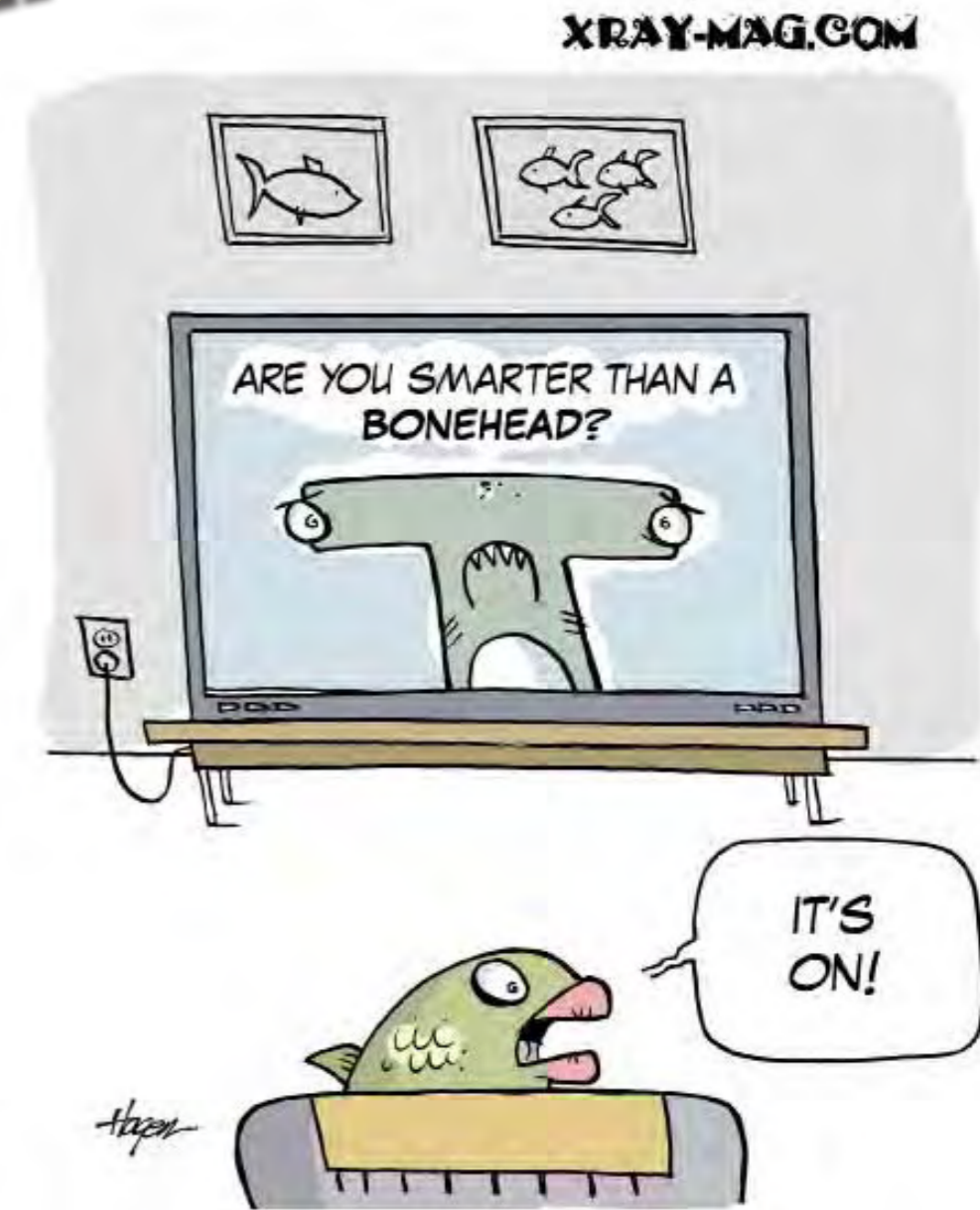
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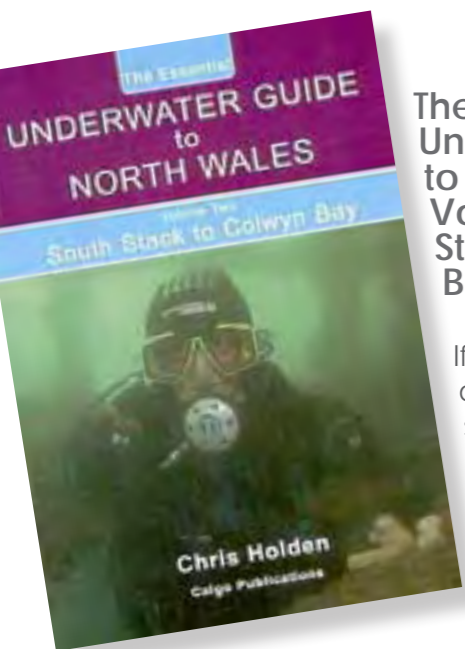




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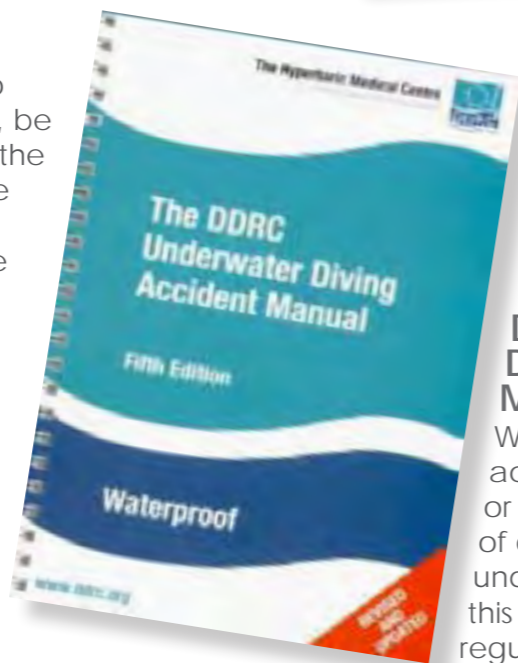


The Essential Underwater Guide to North Wales Volume 2: South Stack to Colwyn Bay

If you're planning to dive in North Wales, be sure to get hold of the second book in the series The Essential Underwater Guide to North Wales. If you've read the first book, which

covered the area from Barmouth to South Stack, you'd probably want to add to your knowledge with information about the areas from South Stack to Colwyn Bay. This information can be found in the second book, which continues to be jam-packed with the local knowledge you can't do without, from information about the marine life, wrecks, reefs, caves and rocks to statistical and geographical data about tides, legislations, GSP positions, cartographic locations and even Ordnance Survey references. In addition, it gives you the inside scoop on where to launch your boat, the possible dangers, air stations and of course the dive shops and services in the area. Every chapter focuses on a few specific locations.

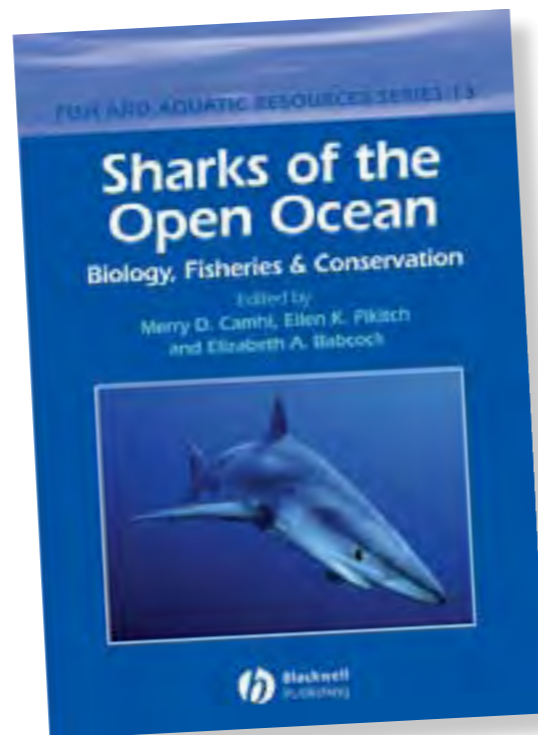
Published by Calgo Publications
Written by Chris Holden
Underwater photos by Paul Kay
ISBN: 9780954506612, softback



DDRC Underwater Diving Accident Manual

Whether you have just acquired your C-Card, or you have decades of diving experience under your weight belt, this guide should be a regular companion on your dive trips. Accidents, injuries and medical emergencies do occur when one dives, unfortunately, and it's the wiser diver who knows what to do when they happen. This book even has a worksheet at the back to aid medical technicians and doctors who are unfamiliar with dive medicine. This fifth edition has been fully revised and updated, and is sturdy enough (it's waterproof!) to stash together with your dive gear.

54 pages, softback



Sharks of the Open Ocean

The world's sharks continue to be under serious threat, and this new book documents just how serious the population status of open-ocean sharks has become. Featuring the findings of more than 70 shark scientists and experts, it presents a comprehensive review of the biology, threats and management outlook of these 11 open-ocean sharks and one stingray. It shows how these sharks end up to be the predominant species caught by commercial fishing methods; how, being caught in international waters, there are no limits to their slaughter.

The book also discusses various conservation methods that have been adopted by experts, thus paving the way for others seeking effective management of these magnificent creatures.

Edited by Ellen K. Pikitch and Elizabeth A. Babcock, with lead editor Merry D. Camhi
Published by Blackwell Publishing

Reef Restoration Concepts and Guidelines: Making Sensible Management Choices in the Face of Uncertainty

This book is about new guidelines in reef restoration. An introduction to reefs starts off the book, and is followed by the various methods of restoration, including physical, biological and transplantation. The costs of reef restoration are also examined. In the later part of the book, five case studies involving restoration and transplantation are presented in detail, together with a description of the lessons gained from them. As an introduction, this book is comprehensive enough for coastal managers, technical advisors and those involved in reef restoration efforts; yet it is written simply, without too much technical terms, so that anyone with an interest in the topic would be happy to indulge his or her curiosity.

A soft copy of the book is available at <http://www.gefc-oral.org/>. Written by Alasdair Edwards and Edgardo Gomez
Published by Coral Reef Targeted Research & Capacity Building for Management Program
ISBN: 978-1-921317-00-2



Saving Luna

Should wild animals be encouraged to live among and interact solely with humans? Whatever your opinion is on this issue, we suggest that you temporarily cast them aside while watching this document-

tary. This film tells the story of Luna, a young killer whale who tried desperately (and succeeded in most cases) to befriend the residents of Nootka Sound (on the west coast of Vancouver Island), when he was separated from his pod in 2001.

Beneath this tale of inter-species interaction were people in the different camps, each hoping to get their way with the animal. The indigenous people of the Mowachaht/Muchalaht First Nation regarded Luna as a sacred animal and the representation of a deceased chief. The naturalists wanted Luna to be returned to his pod, though efforts to locate them were unsuccessful. Those charmed with his playful antics wanted him to stay on, while others threatened to harm him. And then there were those who wanted to put him in an aquarium.

And all Luna wanted was a pod to call his own, no matter that its members happened to live on land.

For filmmakers Michael Parfit and Suzanne Chisholm, what began as a routine assignment to cover the capture of the young orca in 2004 turned into a quest to document his story. The couple felt their journalistic objectivity melt and ended up producing Saving Luna, a documentary with stunning underwater photography that has been named the Best Picture at several film festivals around the world.

115 Minutes
Directed by Suzanne Chisholm and Michael Parfit
Written by Michael Parfit
Produced by Mountainside Films in association with CBC Newsworld



Edited by
Kurt Amsler
& Peter Symes



In contrast to color photography, black and white photography requires that you work primarily with natural light instead of flash

Text and photos by Kurt Amsler
Translation by Arnold Weisz

Even in the digital age, black and white photographs are still viewed as art. In this edition of my underwater photography series, I'll give you an introduction to contrast imaging.

All those fantastic colors you find underwater are still the main goal for underwater photographers. On other hand, the black and white medium gives you an great opportunity to get creative.

The black and white photographer has four different venues to explore. First of all there is, obviously, using black and white film. Secondly, you can use color slide film and convert the images into black and white after scanning. As a third option,

there is shooting in black and white mode using an underwater digital camera; and fourthly, changing your digital color images into black and white with your image processing software.

The difference between color and black and white photography lies less in what you are taking pictures of, and more in *how* you take the pictures. In contrast to color images where you always have to primarily consider how to use your flash in combination with the sunlight, black and white imagery requires that you work foremost with the natural light.

For example, if you have too much light, the foreground becomes too bright, the images too hard, and the faces of divers too pale. The keywords for good black and white photography are therefore: light and shadow.

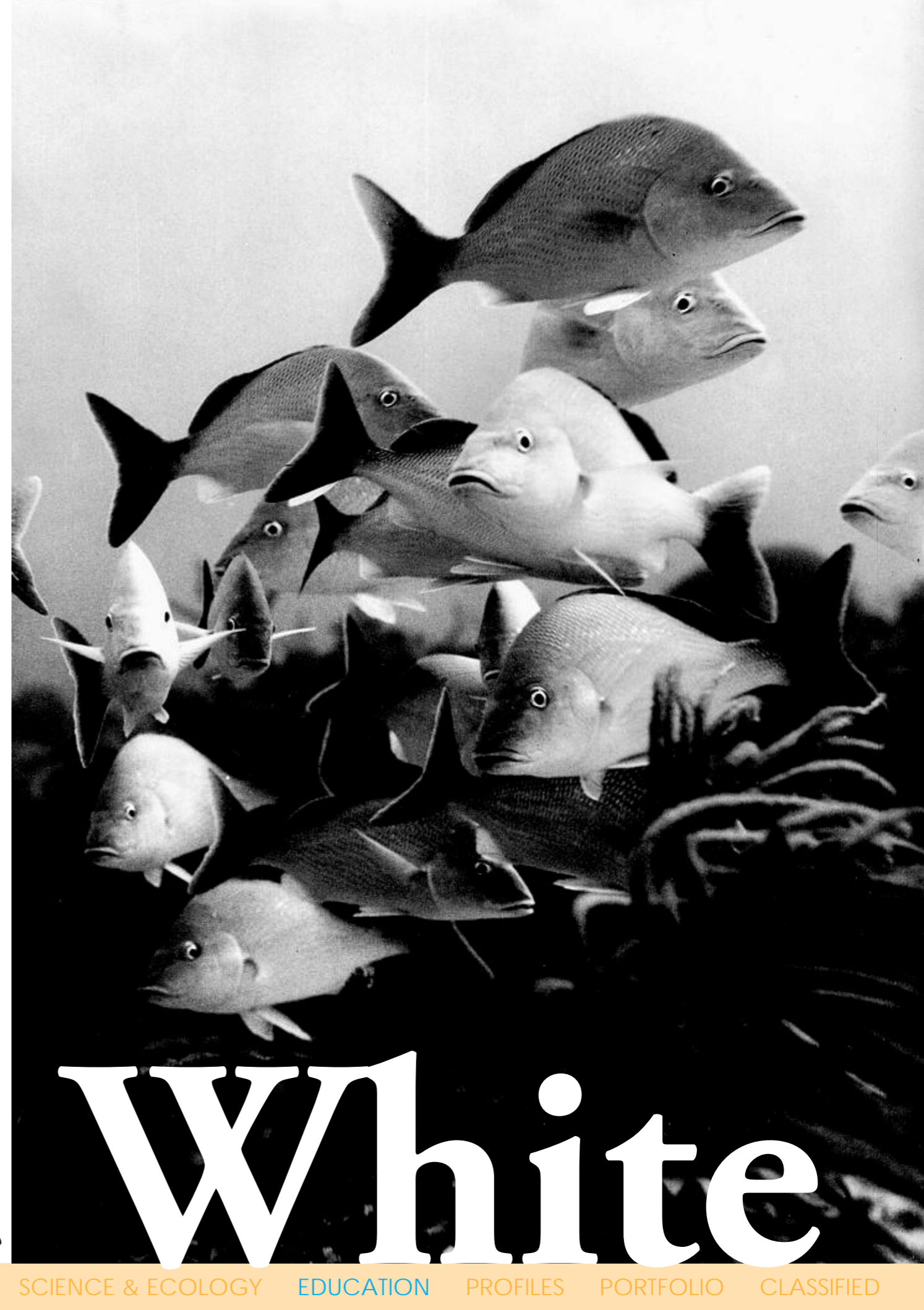
To be able to play with the light and shadow, you need to care-

fully observe your chosen subject from all sides and angles. Because different angles of incidence of a shadow in a photograph may have a completely different impact on the viewer.

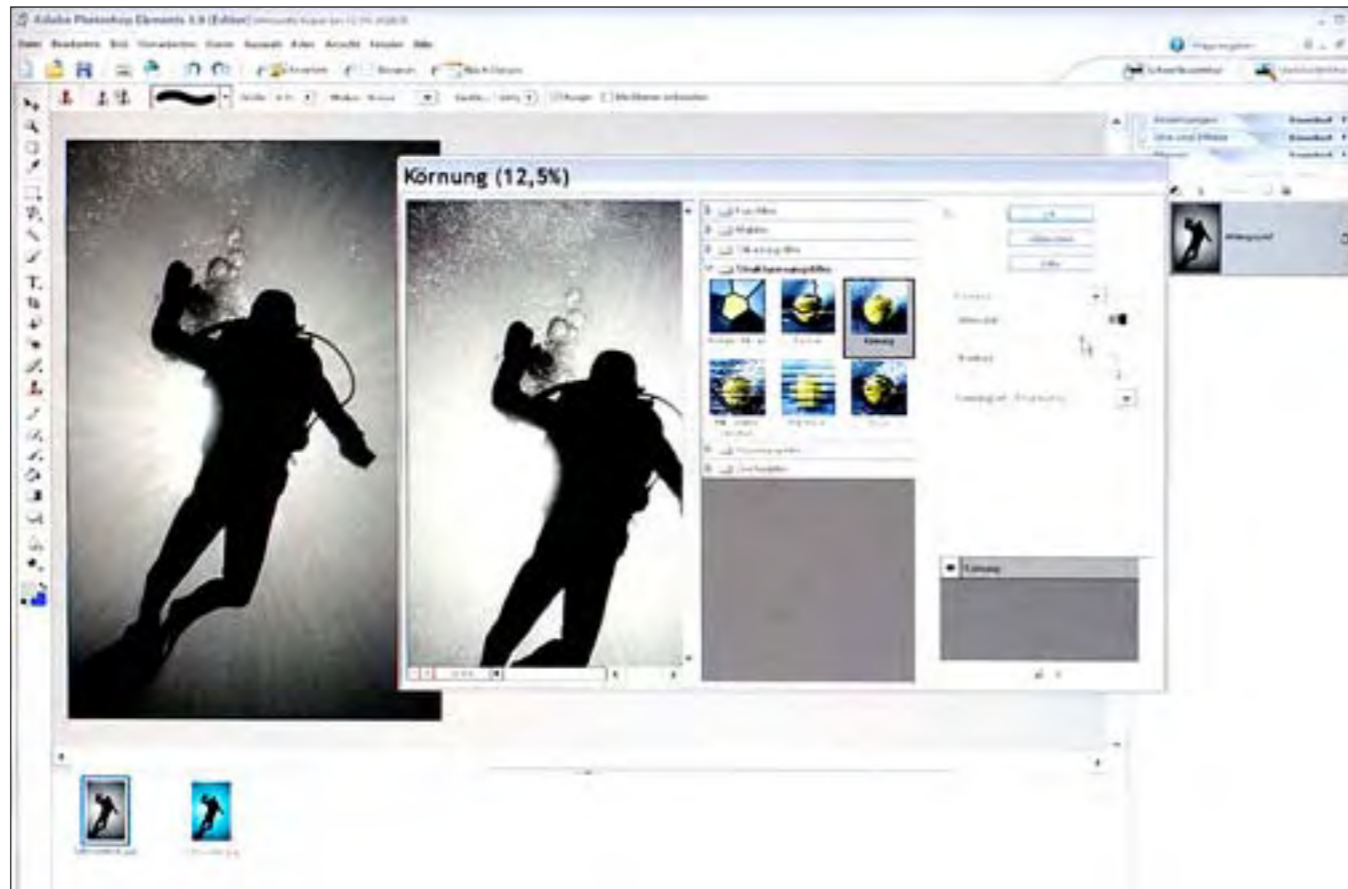
Also of importance is the choice of subject. Subdued color tones, which work beautifully in a colour image, will not have any effect in a black and white image. The keyword here is contrast. For a black and white image to work, you need sufficient contrast between the subject and the foreground or background.

In black and white photography, it is much easier to get the correct illumination by using the available exposure margins. For this reason, you can confidently work with the camera in auto mode.

Another tip is to set the shutter speed on automatic. The camera then chooses the correct speed according to the light conditions.



Black & White



Workflow

The result of your photography totally depends on how you process your negatives or digital images. The sensitivity of a black and white film is in the range of 100 and 200 ASA. A perfect negative is the basis for a good photographic enlargement. Therefore, you should always, if possible, develop your own images. The necessary technical equipment is not very expensive and can be easily obtained. To make your underwater black and whites better, try to underexpose by a third, and prolong the developing time by a third also.

The digital photographer doesn't need a photo print shop. Just preset your camera to black and white mode or take the pictures in RGB. In contrast to color images, you can now set the sensitivity to 400 ASA without any problems. The grains that often appear in color images with this setting doesn't affect the black and white images in a negative way.

To process your images, you should get software like Photoshop. Then, you can apply a huge range of effects,



Underexposing by a third and prolonging the developing time by a third helps make your underwater black and whites better. LEFT COLUMN: Digital photographers can preset cameras to black and white mode or take images in RGB to be processed later using software like Photoshop

PRACTICAL TIPS FOR BLACK & WHITE PHOTOGRAPHY

Black and white photography demands that you are very precise in the relationship between light and shadow.

Even though we see everything in color, you need to think black and white. Choose subjects that offer good contrast between the dark and the light.

A subject with a well defined structure and intense side light, like a wreck, offers good contrast and makes a dramatic impression.

Depending on how you angle the shot, the effect from the light and shadows will also change.

In black and white photography, flash is redundant. It will certainly always affect the natural light and make the subjects appear too strong. If the contrast is too strong, then you don't have any leeway when digitally processing your images.

The wide range of natural light available combined with the lack of flash, allows you to work with different aperture settings.

In contrast to flash photography, the shutter speed decides if your subject is not sharp. I therefore recommend that you don't go below 1/125 in shutter speed.

In a low light environment, you should set the camera at 300 ASA for 200 ASA film. Don't forget to apply this when developing the film. On digital cameras, set the ASA to 300 or 400. The better the camera, the higher you can go, e.g. 800 ASA.

Working with black and white digital files demands the same as colour files (jpg). Change as little as possible in the image. Because every time you change a pixel, the new data will diminish the quality.

If you don't like black and white, you can always use sepia toning to change the image into a classic brownish color.

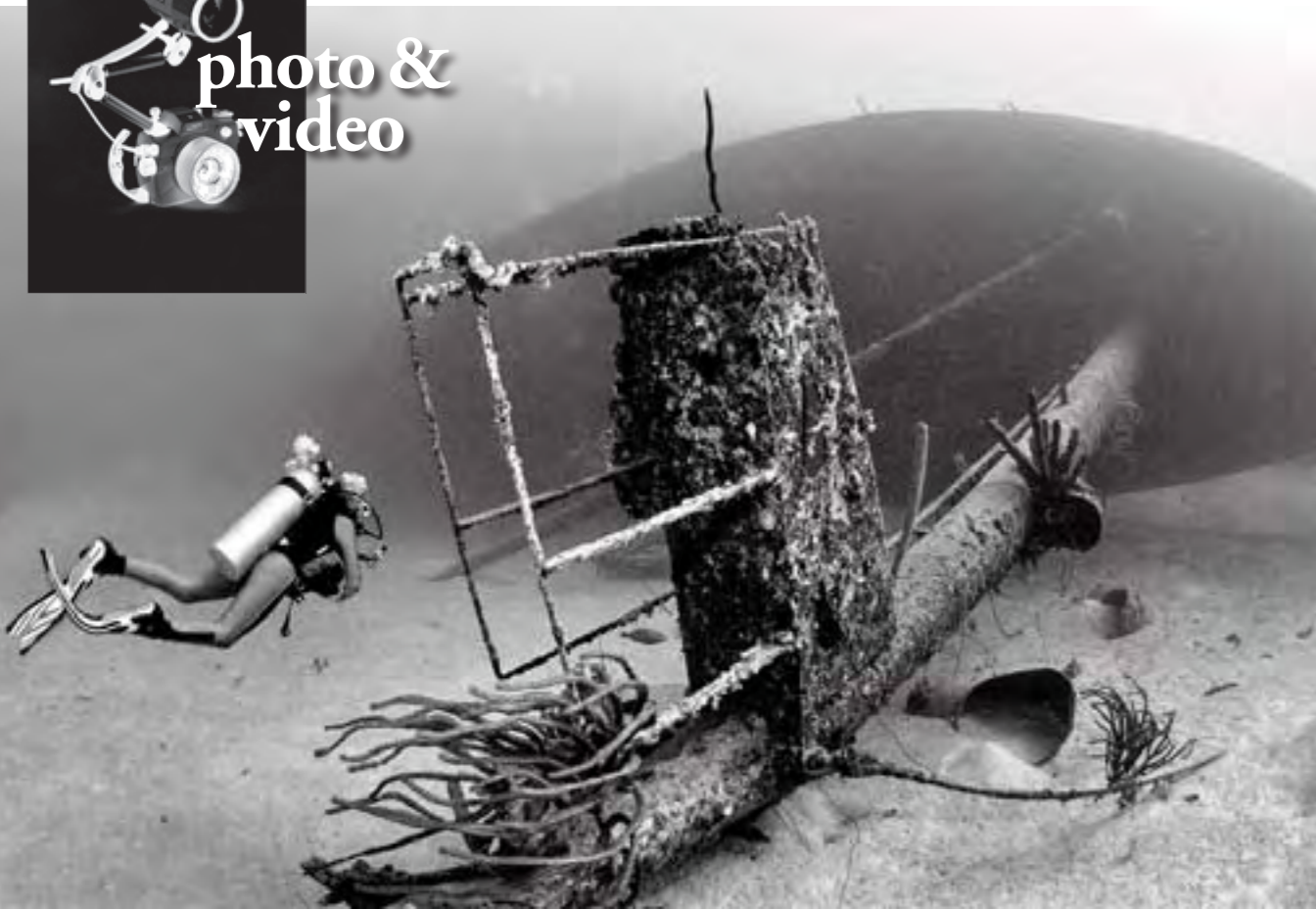
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Black & White

comes from the name of an artists' pigment made from the Sepia cuttlefish. Toning can be simulated digitally, either in-camera or in a later post-process. The in-camera effect, as well as beginner tutorials given for software like Photoshop or The GIMP, use a simple tint, which is usually a poor imitation. More sophisticated software tends to implement sepia tones using the duotone feature. Especially wreck images are nice when sepia toned.

For more information on Kurt Amsler and his photo workshops, please visit: www.photosub.com ■

which you can apply to your images such as grain size, contrast and resolution.

Try out different settings and combinations for the best result. Always work with copies and keep the original image untouched. Make notes of the settings you apply, for later use. When you have found your style, you then have all the necessary tools available and ready for other images.

Sepia toning

For those who like the old classic look on their images, there is the possibility of applying sepia toning. The term *sepia*



Special effects such as Sepia toning can be accomplished in-camera or post process using computer software like Photoshop or GIMP

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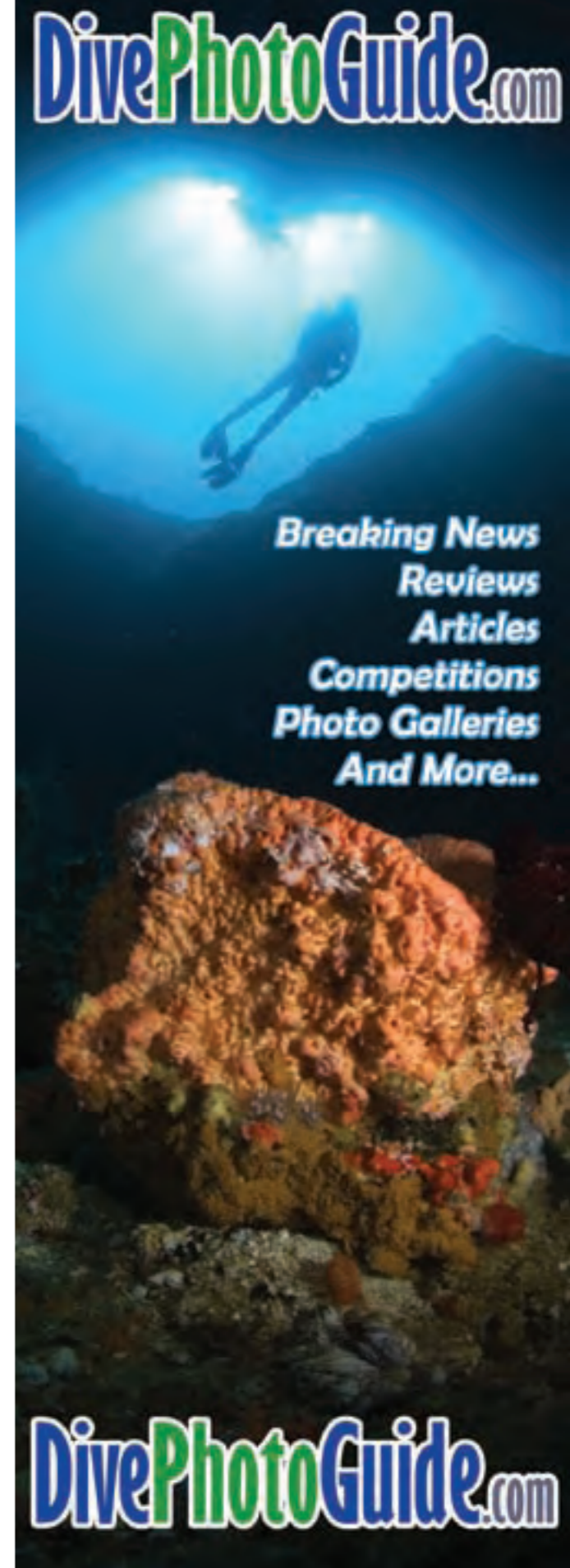


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INON S-2000

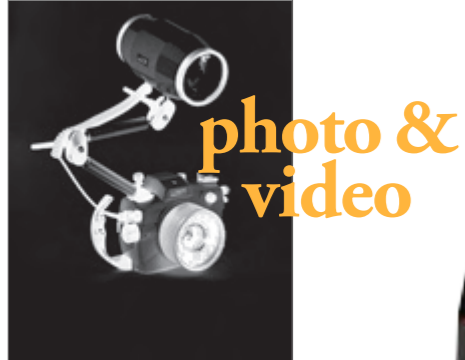
Inon INC has announced the release of its newest strobe, the S-2000. Billed as the world's smallest, the compact size utilizes four AA size batteries and is an ideal match for compact digital cameras and SLR's alike. The ultra sensitive slave sensor enables highly accurate wireless operation as well as wired capabilities using existing Inon optical cable connections. For further information, contact Inon America or an Inon America Authorized Dealer. INON America, Inc.
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Hugyfot have announced their upcoming housing for the Canon EOS 450D / Digital Rebel XSi. Hugyfot housings are milled out of solid aluminum blocks and can be used to depths of 100 meters. The lightweight construction allows easy one-hand operation. Available in July 2008, the HFC 450D underwater housing without port will be priced around 2000 euro.



PT-E05 housing for E-520

Customized for its new E-520 camera, the new Olympus PT-E05 housing is constructed from durable high quality polycarbonate and able to withstand depths of up to 40m. Underwater photographers will especially like the camera's Live View function, utilizing a large 2.7"/6.9cm LCD. Flash connectors allow the use of two UFL-2 underwater flash units. Five interchangeable lens ports are available including 8mm Fisheye and 50mm Macro. The E-520 and PT-E05 and will be available in summer 2008. Email info@olympus.uk.com

Sealife DC800

SeaLife's new DC800 8-megapixel camera comes with five new dive-specific color correction modes, the DC800 makes it easier than ever to take sharp, colorful underwater pictures. Set the camera to Sea mode to restore lost colors typical for underwater pictures. www.sealife-cameras.com



Amphibico Phenom Z7LE housing for Sony HVR-Z7U

The new Phenom Z7LE underwater video housing for the Sony HVR-Z7U HDV camcorder is now available from Amphibico. This electronic and mechanical combined housing allows complete camcorder control. Three port options are available, including a standard dome, flat port, and 94° wide-angle port. The introductory price, including a 2-year Amphibico warranty, is CAN\$ 4795. Ports are not included. www.amphibico.com



Sea & Sea YS-17

The YS-17 strobe is the smallest of the YS-series of strobes. With the unique TTL circuitry, you can shoot TTL images without complicated operations. Your compact digital camera meters the brightness of your subject and the strobe, through the TTL function, automatically controls the amount of light emitted for the correct exposure. In addition, the strobe can be switched from TTL to manual modes (full/half) and vice versa. Guide Number (land, ISO 100/m): 14. Beam Angle: 70°x 53° www.seaandsea.com

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Iceland's
Thingvellir

Text and photos by Peter Symes

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Where the world cracks open

As I slide out of the shallow basin and drag myself past the top edge of the drop-off, I find myself hovering in an empty void. Between me and the rock plateau far beneath me, I seem to have nothing but a clear space. It is almost disturbing. Aside from the feeling of drag when moving, it is almost impossible to detect the water we are in. Only the rising stream of bubbles from the air we exhale, gives any indication that we are indeed well submerged in some of the clearest water on the planet, if not *the* clearest. Visibility just seems endless, almost like air, making long distances difficult to judge.

We are in Lake Thingvellavatn on Iceland. In more than one sense this place is wondrous and mystic. Geologically, the Thingvellir area is part of a fissure zone running through Iceland, being situated on the tectonic plate boundaries of the Mid-Atlantic Ridge. The faults and fissures of the area make evident the rifting of the earth's crust. In essence, we are diving in the part of the crack that opens up between America and Europe as the continents drifts apart. The cracks and adjoining lake are filled by meltwater from glaciers some distance away, which passes through the porous underground and gets further micro-filtrated in the process. Apparently, there is nothing left in the water, but water. There is an almost magical blue hue over the scenery that could be taken out of science fiction movie. It looks like we are on some foreign moon. In our drysuits, our similarity with astronauts is not too far off either.

Cracks, crevices and holes are here and there—all





over the place.

Historically, this place has special significance. Major events in the history of Iceland have taken place here. It was at Thingvellir—which literally means “Parliament Plains”—that the Icelandic general assembly was established around 930 and continued to convene there until 1798. Today, Thingvellir is a protected national shrine. According to the law, passed in 1928, the protected area shall always be the property of the Icelandic nation, under the preservation of the Althing, the Icelandic parliament.

Thingvellir was declared a national park in 1930. Preservation measures at Thingvellir were modelled on the national parks that had been established somewhat earlier in the United

States to stem changes to the natural environment there resulting from encroachment by settlers. Iceland identified a similar need to preserve certain natural and historical sites for future generations to enjoy them in their original state.

In the last few decades, research has made it clear that Thingvellir is a natural wonder with the geological history and the biosystem of Lake Thingvallavatn forming a unique entity. Being able to witness the evolution and formation of new species in a place like Lake Thingvallavatn is of immense value.

The cracks and canyons in which we are diving, seem devoid of life almost sterile, though the lake body that they lead into seems different. It is not the

lake but these amazing canyons that are the points of attraction for divers who come to Iceland. Why? I guess the images give the best answer.

The first time I saw an image from Thingvellir was when I was a young diver in the 1980s and saw a promotional poster from *Waterproof* by Göran Ehlme, which featured Thingvellir. It was a classic dive poster that adorned walls in many dive clubs around the country at that time, but it made a lasting impression.

In my case, it took me about 15 years. It was worth the wait. No diving career will be complete without at least one visit to this magic place midway between Europe and America. ■

Jens Poulsen



P O R T F O L I O





Untitled #2, Oil on canvas, 60 x 80. Original sold.



Untitled #3, Oil on canvas, 195 x 195cm. Original sold.

Text edited by Gunild Symes. All paintings by Jens Poulsen. Photos of paintings courtesy of Jens Poulsen

PREVIOUS PAGE:
Untitled #1, Oil on canvas
180 x 180cm. Original sold

All paintings were created in 2007-2008

Since Danish painter, Jens Poulsen was voted Artist of the Year in Helsingør, Denmark, in 2003, he has been active in the Danish and international art scene, showing his fish paintings “to all who dare to jump into the deep and explore”. Poulsen says

that he is an autodidact, or mostly self-taught, and primarily works with oil on canvas. “I am attempting to capture a coherence with my surroundings—a gathering of information and environment—simplified in composition,” states Poulsen on

his website. **X-RAY MAG caught up with Poulsen for an interview and some insights into his work.**

What made you go into art?
I’ve always been fascinated by forms and colors and the power of art, from as early as I can remember. So, I would say it’s a natural path for my life here on

Earth to explore, ponder and resonate in this field of work.

Is art your main occupation or do you have another specialty?
Yes. Art, specifically oil painting, is my main occupation, and has been so for the last ten years or so. In the last few years, I have become a good technical painter by studying Leonardo da Vinci, Vermeer, Van Delft, and

Rembrandt. I found out a lot of secrets and hidden knowledge about what oil painting can be.

Why did you choose the medium you use?
Well, the oil based colors are good to work with because I don’t have to hurry. I decide the length of drying and thickness of the medium. But I must say, nowadays, with the advance of



Untitled #4, Oil on canvas, 40 x 40cm. Original sold.



Untitled #5, Oil on canvas, 155x 155cm. Original sold.



Untitled #6, Oil on canvas, 140 x 140cm. Price: DKK16.000,- / US\$ 3320

acrylics, I would think the same effects and finish are possible. But I'll stick with the oil colors of old Holland and Rembrandt. These colors are made for artists, and that means a lot.

What is your creative process?

To boil it down, I use a stick with animal hairs on it to transfer the color from the palette to the canvas. I must say, my process is constantly ongoing, whether I'm behind a canvas or not. I feel a great deal of my artistic expression is about being open-minded, daring to think uncommon thoughts, live an uncommon life, not letting others

dictate my mood or thinking, and last but not least, seeing the positive in life, acknowledgement of love and the grander things in life.

Tell us about your artistic statement, or mission...

Well, wouldn't it be nice if I could help humanity—people—to look inwards once in a while? And no, I don't mean that everybody should meditate everyday, but maybe just think situations through and put oneself in another person's place. Let's build up a higher moral together, and not lie and cheat each other for paper that symbolizes value.

Why did you choose fish as a subject matter?

Oh, the fish...oh, the fish... When I was a child, I learned that fish could detect each other's movement with their sidelines, and this is how they school together and swim as one. Wow, fascinating stuff! What makes people flock together, I wondered. As I studied fish more and more, I found out that, yes, different fish do have different personalities. I did find this hard to believe, but what I saw was what I saw, and after this, the similarities between humans and fish seemed broad and plentiful. Could this be because we all live on this Earth,

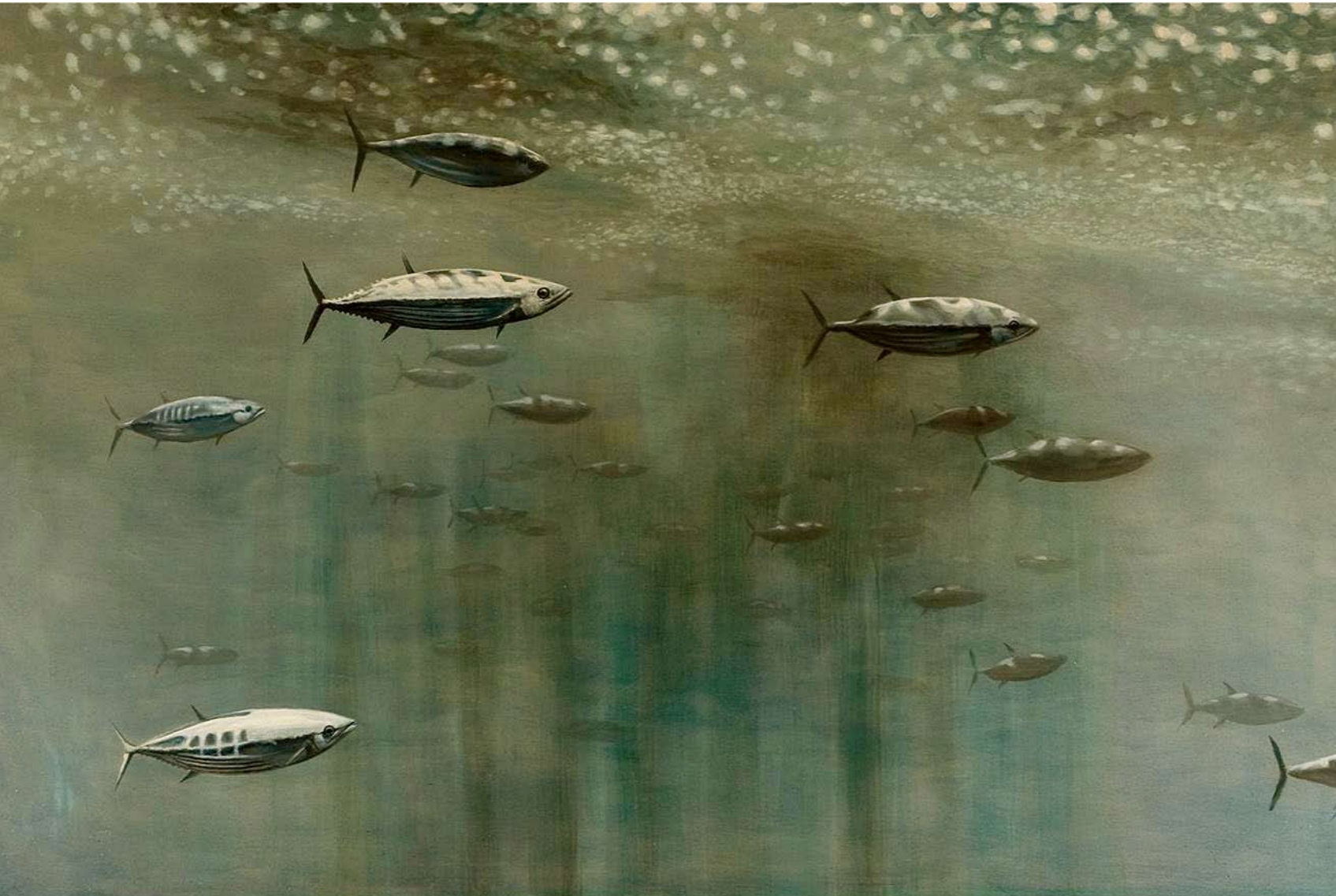
and thus, we all can go under the name "Earthlings"?

I feel we are all connected—whether it be bird and dog or human and tadpole. We all breathe the same air, and drink the same water. But somehow, it has become a norm to exploit and jade the animal kingdom just as much as humans have exploited and jaded themselves. This need not be so anymore!

Once, one cold late summer day, I decided to buy a mask and snorkel and see what was under the surface of Øresund—the sound that separates Denmark from Sweden.

I had just gotten in the water and swam only about ten meters from the coast of a little town called Snekkersten, and here—well hidden from the land dwellers—I saw jewels before me. I went into some trance-like state and just floated on the surface while thousands upon thousands of small herring made a four to five meter solid wall right in front of me.

Sparkling like diamonds and very vibrant, they just never seemed to stop swimming by—only about one meter from my joyful eyes, watching their every move. They swam and swam, and sparkled and sparkled.



LEFT TO RIGHT:
Untitled #7
 Oil on canvas
 120 x 180cm.
 Price: DKK 29.000,- / US\$ 6018.
 Also available as
 a signed fine art print.
 Price: DKK 450,- / US\$ 95

Untitled #9
 Oil on canvas
 140 x 140cm
 Original sold

Untitled #8
 Oil on canvas
 210 x 220cm
 Price: DKK 39.000,- / US\$ 8094
 Also available as
 a signed fine art print.
 Price: DKK 450,- / US\$ 95

Untitled #10
 Oil on canvas
 80 x 80cm
 Original sold

After this, I was reborn, mentally... and if I just could pass on a slight bit of my experience to others, maybe, just maybe, they could start thinking more about how things work together and not just how they work for their money and themselves to gather more and more material wealth. Let's start gathering moral and mental wealth also! Thank God, the tide turns every once in a while...

Since my younger years, I've gone snorkeling whenever I've gotten the chance. Unfortunately, the waters of Denmark are quite cold most of the year, and as a snorkel diver with minimum equipment, it's only pos-

sible for me to take a dip during two to three summer months. I have flown off to Thailand, Australia and Turkey to snorkel, but I must admit, not enough at all. I guess diving, whether it be scuba or snorkeling, is addictive—very, very addictive. So, can one ever get enough, I ask myself.

Any future projects?

I've just gathered ten young women who are to pose in swirling dresses underwater for me. A photographer will collaborate on this, and the final paintings will be made from the photos and the personalities of the women involved. This project is to start



Jens Poulsen



Detail of *Untitled #11*
Oil on canvas
160 x 160cm
Original sold

The artist, Jens Poulsen

in September, and these ten paintings will be viewable by the public in February 2009 in Copenhagen, Denmark, at the Copenhagen Art Fair 2009. Link: www.kunstmesse.dk

So, why women and not fish underwater? Well, maybe someday I'll also paint fish on land... surviving but not fully living.

Signed fine art prints are available. They are personally printed by the artist on an Epson printer with Epson paper and color for maximum quality. Print dimensions: 64 x 94cm.

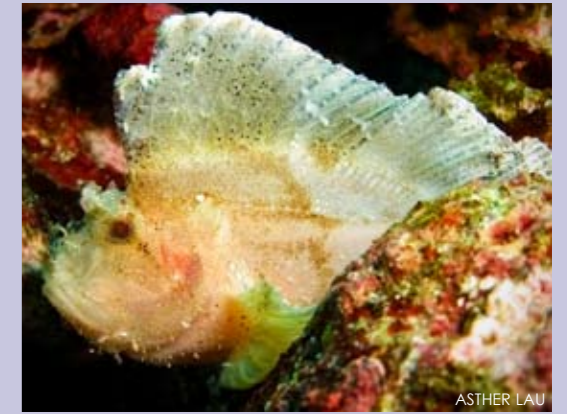
For more information or to order originals or fine art prints, call the artist's gallery in Denmark at: (+45)40 96 17 34, or visit the artist's website at www.poulsen-arts.dk ■



Seabass
Oil on canvas
270 x 160cm
Original sold

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