

*Holiday Shopping & Stocking Stuffers for Divers*

*Equipment: Lamps*



GLOBAL EDITION  
Dec :: Jan 2008  
Number 20

# Pearls of the Mediterranean

Russia

## White Sea

Science

## Osmosis

Portfolio

## Micheline Hadjis

Conservation

## Bali Sea Turtles

Norway

## Lyngstølsvattnet

# INDONESIA Raja Ampat

COVER PHOTO BY ANDREA FERRARI



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## COVER PHOTO

*Sweetlips in the Current, Raja Ampat*, by Andrea Ferrari  
(CONTINUED ON PAGE 4)



## Holiday Shopping & Stocking Stuffers For Divers... page 63

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Anemone. Photo by Peter Sutter



**25**  
RAJA AMPAT  
INDONESIA  
BY ANDY FERRARI

**37**  
WHITE SEA  
RUSSIA  
BY PETER SYMES

**47**  
EQUIPMENT:  
LAMPS  
BY HARALD APELT

**57**  
SCIENCE  
OSMOSIS  
BY MICHAEL SYMES

**60**  
PEARLS OF THE  
MEDITERRANEAN: *INTRO*  
BY HARALD APELT

**plus...**  
EDITORIAL 3  
NEWS 4  
DEMA REPORT 11  
EQUIPMENT 13  
MORE NEWS 15  
WHALES&DOLPHINS 55  
BOOKS & MEDIA 72  
BUSINESS DIRECTORY 91

**63**  
HOLIDAY SHOPPING  
& STOCKING STUFFERS  
EDITED BY GUNILD SYMES

**67**  
CONSERVATION:  
BALI SEA TURTLES  
BY KURT AMSLER

**77**  
REPORT: WORLD FESTIVAL  
OF UNDERWATER IMAGES  
BY HARALD APELT

**92**  
PORTFOLIO:  
MICHELINE HADJIS  
EDITED BY GUNILD SYMES

## columns...

**65**  
SHARK TALES:  
BITS & BITES  
EDITED BY EDWIN MARCOW

**74**  
TECH TALK:  
REBREATHER RESCUE  
BY CEDRIC VERDIER

**80**  
UW PHOTO & VIDEO:  
MODELS  
BY KURT AMSLER

**86**  
UNIQUE DIVE SITE:  
LYNGSTØLSVATTNET, NORWAY  
BY INGER LISE

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Editorial statement regarding News from NAUI in X-RAY MAG:

This issue of X-RAY MAG and others includes news and press releases from NAUI in sections designated by the NAUI logo. While the page design is done by X-RAY MAG as an integrated part of the magazine, these news stories are brought to you by NAUI at NAUI's discretion.

Wow, another year has already gone by and what a year!

We would like to thank all of you for remaining true to X-Ray-Magazine. And, as a very personal gift to all of our readers, we decided to increase our efforts to present in 2008 more interesting stories, new and brilliant pictures and the "crème de la crème" of underwater photographers from all over the world. And, the most important information: we are planning to publish next year eight instead of six issues of X-Ray Magazine. For your entertainment and joy and still free of charge!

The X-Ray-team has worked quite a lot during the last weeks to fulfil this important step to more quality and professionalism. We will keep you well informed and we hope to welcome you next year again as readers and members in the continuously growing community of X-Ray Mag fans. We would like to thank all our supporters and contributors whose work and engagement makes X-Ray become reality. You can look forward to the upcoming issues, because we are proud to present some new first-class-photographers and their amazing stories in next year's magazines.

We welcome in our publishing-team Wolfgang Pölzer from Austria, Darek Sepiolo from Poland, Noam Kortler from Israel, Ralf Kiefner and Andrea Ramalho-Kiefner from Germany/Brasil, Steve Jones from Great Britain and Jeff Yonover from USA.

We wish all our friends from all over the world a Merry Christmas and a successful and Happy New Year 2008.

Harald Apelt  
Publisher

# Are orcas able to cry?

Editorial

It may sound like a dumb question. But is it now? It has come to haunt me since I recently went on a trip to southern France.

I don't have the answer. I have been diving since 1982, but it took me 25 years before I came to see a small group of orcas. However, I didn't see them in the wild, as I would have wished for, but in "Marineland", some kilometres outside of Antibes, on the French Cote d'Azur. I was there to participate in the traditional "Festival Mondial de l'image sous-marine" – the world festival of underwater pictures. For 34 years, the international "crème de la crème" of underwater photographers and filmmakers has gathered to watch or participate in the international contest for the "Palme d'Or". And for the first time, the festival was held in this marine park. (Find a report on the festival on page 78)

The "Marineland" has a large saltwater-aquarium with a huge oval tribune. In the five segments of this basin, four Orcas are cavorting for the amusement of the visitors. It is quite a show with a lot of stunts they and their trainers put on. At first, I was fascinated, because I have never seen any of these fantastic animals in reality. For some moments, I came to think of Porter Ricks, Sandy and Bud and of course Flipper! When I was a child, I loved to see the adventures of Flipper on TV and was amazed by its intelligence.

But then, and all of a sudden, this deep sadness crept over me, making me leave the show after 15 minutes.

I came to ask myself if there was really any animal on the planet, which fancied playing the clown in front of an astonished audience scooting across an aquarium carrying a neoprene coated coach on the back. I don't think any animal will find a deep fulfilment doing things like that. A glance into the bright and happy eyes of the children in "Marineland" showed me that the kids weren't troubled by any such reflections. But is this enough justification to sanction what in my opinion is a shady form of entertainment?

Also, is such a location the right place to hold a festival for divers? One cynical point of view was proudly presented by a quite well known photographer: "Well, let's see it this way," he said, "This quartet should be happy being here in Marineland. Out in the wild they would have to take care each second not to end up in the holds of a Japanese whaling trawler." No comment!

It is my belief that if these orcas were given a choice, they would have moved to Norway for mating, to meet their peers or to have a pork fest in the tremendous herring schools. From this point of view, I do believe that orcas are able to cry—perhaps very quietly and below the surface, so that we won't see their tears!



JAIME RAMOS U.S. ANTARCTIC PROGRAM





News edited  
by Peter Symes &  
Catherine GS IIm

# NEWS



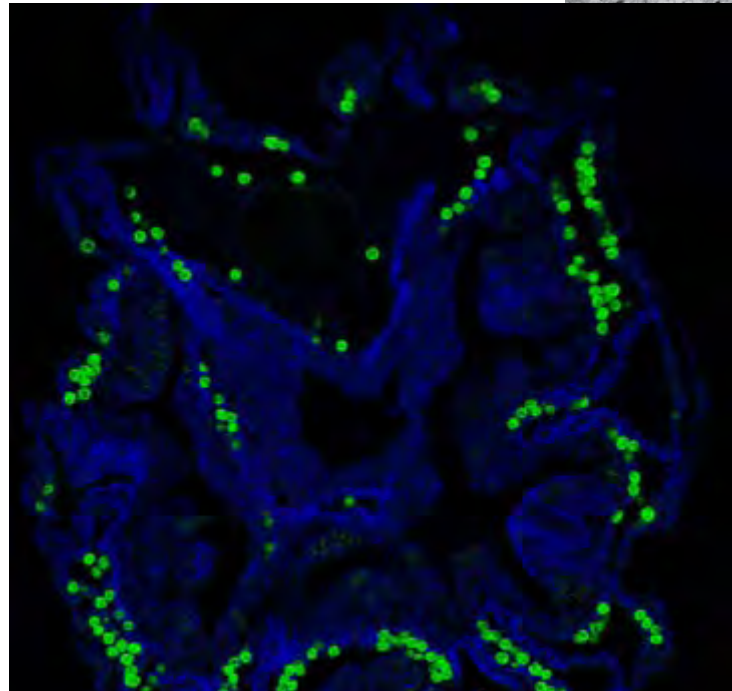
**An Australian team of coral researchers has taken a major step towards understanding the inner workings of the mechanisms that drive coral reefs.**

It is a tiny symbiotic algae *Symbiodinium* that feeds the corals, which means that it is the primary energy source for the whole reef ecosystem.

This organism not only dictates the fate of the world's coral reefs, it also plays a significant role in soaking up carbon dioxide from the atmosphere in turning it into nourishment for the corals and powering calcification.

*Symbiodinium* is part of a larger group of organisms called dinoflagellates which together process about one third of all CO<sub>2</sub> entering the oceans, and are thus vital players in helping to remove CO<sub>2</sub> from the atmosphere. Its decline would not only kill the reefs but accelerate CO<sub>2</sub> buildup.

Understanding how they function will help fill in one of the critical gaps in our understanding of climate change—how much CO<sub>2</sub> the oceans can trap and how this will ultimately affect climate change.



A view of a coral polyp using fluorescence show the *Symbiodinium* algae (green)

### Unlike any other life form

Like other plants, *Symbiodinium* uses sunlight to convert CO<sub>2</sub> into carbohydrates upon which the corals feed.

"But these microscopic algae are quite weird and unlike any other life form. They have different photosynthetic machinery from all other light harvesting organisms", explains professor David Yellowlees, ARC Centre of Excellence for Coral Reef Studies. "They have 100 times more DNA

*They have different photosynthetic machinery from all other light harvesting organisms. They have 100 times more DNA than we do*

than we do, and we have no idea why such a small organism needs so much. They really are like no other living creature we know."

### Stressed out

The researchers have focused particularly on understanding the biochemical relationship between *Symbiodinium* and corals when they are stressed by heat, light, increased CO<sub>2</sub> levels and pollutants from land run-off.

These stressful conditions cause corals to "bleach" by expelling the *Symbiodinium* and—if they do not recover them within a few days—the corals die. Large-scale bleaching struck half of the Great Barrier Reef in

*There is also evidence the corals control the algae's output, suggesting that the corals are farming their captive plants.*

2002, and eight major bleaching episodes have been reported worldwide in the last 30 years due to warming sea water.

"Our aim is to identify the genes that make the symbiotic plants susceptible to these stresses, and lead to the coral expelling them," Dr Leggat says.

In experiments at Heron Island Research Station, they exposed corals to various stresses associated with climate change and then analysed the gene composition in the symbiotic algae. Another team analysed the effects in corals.

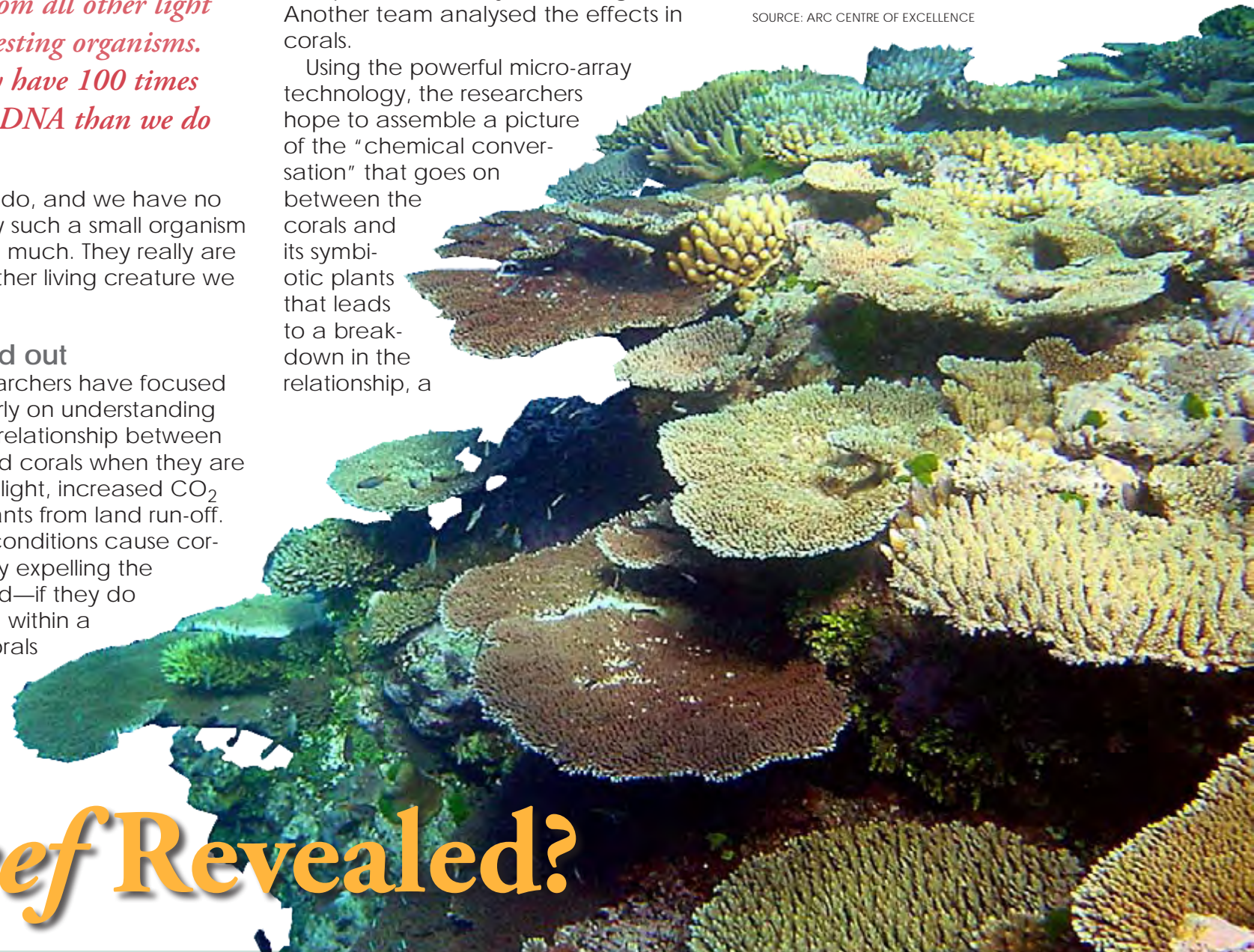
Using the powerful micro-array technology, the researchers hope to assemble a picture of the "chemical conversation" that goes on between the corals and its symbiotic plants that leads to a breakdown in the relationship, a

divorce, and the corals starving themselves to death.

"An example of the challenge we face is the gene which is expressed the most when *Symbiodinium* is stressed. It's obviously important, but at this stage we have no idea what it does. It is even stranger when you consider that this gene was originally acquired from a bacterium," Prof Yellowlees said.

So far, the team has identified about 4500 genes in *Symbiodinium*, compiling them into the world's first gene expression library for this symbiotic organism. It is hoped this will have value for understanding other symbiotic relationships in nature. ■

SOURCE: ARC CENTRE OF EXCELLENCE



## Weird Engine of the Reef Revealed?



# Deep Sea Discoveries Off Canada's East Coast

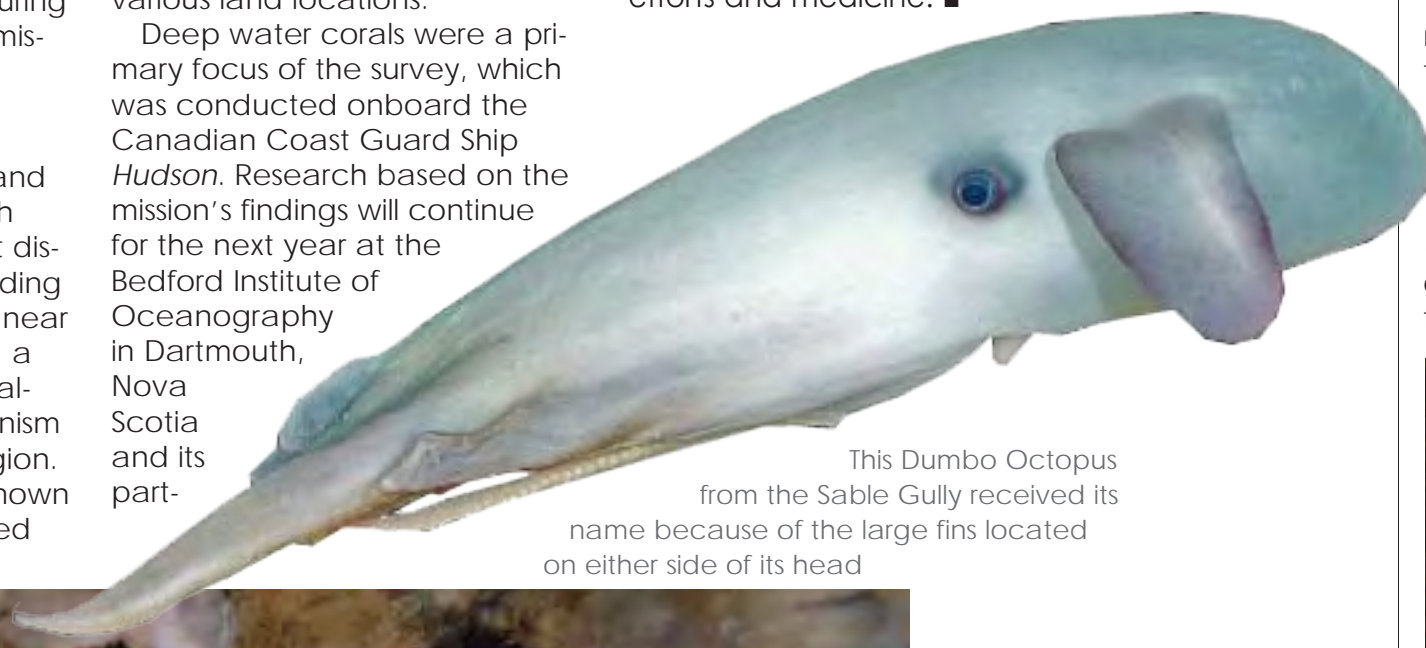


A survey of unexplored depths of Nova Scotia and Newfoundland has revealed that life in these waters is much more diverse than previously realized. During a recent three week mission, researchers from Fisheries and Oceans Canada and Memorial University of Newfoundland captured over 3,000 high quality photographs that displayed this diversity, including an octopus with large fins near its eyes, known as "Dumbo," a potentially new species of scallop, and a single-celled organism previously unknown in this region. Using an underwater robot known as ROPOS (Remotely Operated

Platform for Ocean Science), they collected samples and images at depths of 2,500 metres and transmitted live underwater video footage to researchers at various land locations.

Deep water corals were a primary focus of the survey, which was conducted onboard the Canadian Coast Guard Ship *Hudson*. Research based on the mission's findings will continue for the next year at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia and its part-

ner universities. The role of the newly discovered species in the marine food chain will be one of the prime areas of study; findings could also have implications for conservation efforts and medicine. ■



This Dumbo Octopus from the Sable Gully received its name because of the large fins located on either side of its head

## Divers Find New Species in Aleutians

Two of the species are sea anemones, the kind of sea anemones that drift across the seafloor as they feed. They range from the size of a softball to the size of a basketball.

The third one is a kelp or brown algae, dubbed "Golden V Kelp". Measuring up to ten feet long, the kelp may represent a new genus or even a new family of the seaweed. It was discovered near thermal vents.

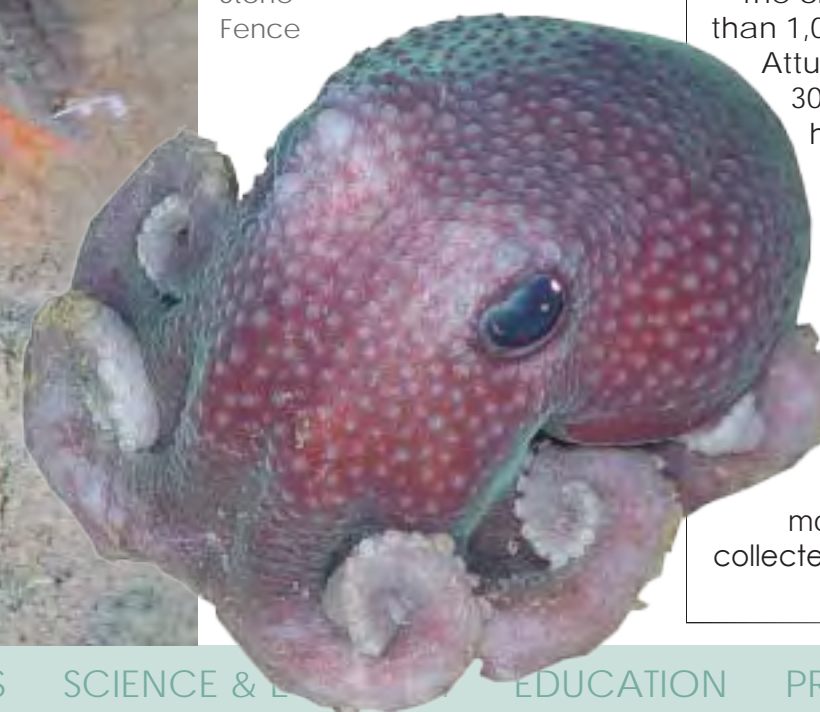
The three species were discovered by a team of scientific divers from the University of Alaska Fairbanks. According to Stephen Jewett, a professor of marine biology and the dive leader, the scientists are reasonably sure that the kelp is a new species, while more work needs to be done to confirm that the sea anemone species are completely new



One of the newly discovered sea anemones. Photo courtesy of Stephen Jewett



An octopus from the Stone Fence



to science.

The organisms were found while surveying more than 1,000 miles of rarely-explored coastline, from Attu to the Tigalda Islands. Logging more than 300 hours underwater, the divers collected hundreds of water, biological and chemical samples over 440 dives.

Armed with underwater cameras and video cameras, they took hundreds of photographs and dozens of short movies of the creatures that inhabit the coast of the Aleutians.

"Since the underwater world of the Aleutian Islands has been studied so little, new species are being discovered, even today," said Jewett. He adds that even more new species may be revealed as samples collected during the dives continue to be analyzed. ■



Edited by  
Peter Symes

## More underwater sanctuaries to come in California

In a drive to expand a California state law to create more underwater sanctuaries, environmentalists are pushing hard for the next northern phase of California's Marine Fisheries Protection Act. This phase will include the Farallons, Point Reyes Headlands, areas along Mendocino and the Sonoma coast. These protection areas up and down the coast would form a chain of safe havens where marine wildlife thrive and multiply. Scientific studies show some benefits to such zones, at least for fish that do not migrate. ■

SOURCE: ABC7

SE Farallon Island



NOAA / JAN ROLETTIC

## New Species Found in Philippines

U.S. and Philippine scientists may have discovered new marine species in the world's most biologically diverse region.

Dr. Larry Madin, who led the Inner Space Speciation Project in the Celebes Sea south of the Philippines, said that scientists went to one of the world's deep ocean basins in search of organisms that may have been isolated there for millions of years. The deepest part of the Celebes Sea is 5,000 meters. The team was able to explore to a depth of 2,800 meters using a remotely operated camera.

Madin said they collected about 100 different specimens, including several possibly newly discovered species. One was a sea cucumber that was nearly transparent, which could swim by bending its elongated body. Another was an unusually black jellyfish that was found near the bottom of the sea. But the most striking creature they found was a spiny orange-colored worm that had 10 tentacles like a squid, he said. ■

### Philippines ban fishing to revive biggest reef

The Philippines have tightened laws banning fishing and collecting of species on the country's largest coral reef in order to help it recover from near destruction. The 27,400 hectare Apo Reef off the coast of Mindoro island was almost drained of life by heavy fishing, including by dynamite and cyanide, which left only a third of coral cover by the early 1990s. ■

SOURCE: REUTERS

## 57 New freshwater fish species found in Europe

Europe's rivers and lakes boast at least 57 more freshwater fish species than previously thought, scientists have announced.

The new species were discovered during a seven-year assessment of the conservation status of freshwater fish in Europe that was conducted in collaboration with IUCN, the World Conservation Union.

The findings lengthen Europe's list of freshwater fish to 522 species, and the study authors say many more undescribed fish have been found or are suspected to exist, potentially taking the total number of confirmed species to 600 or higher. ■

SOURCE: NATIONAL GEOGRAPHIC NEWS

## New species of sea slug found off Taiwan

A stunning new species of sea slug has been discovered off the coast of Green Island by Taiwanese marine biologist Chen Ming-huei. It has been temporarily nicknamed "little strawberry" until an official name can be determined. Richard Willan, the curator of molluscs at the Northern

The new species of slug has been temporarily nicknamed "little strawberry" until an official name can be determined

Territories Museum in Darwin, Australia, and expert on sea slugs has confirmed that

"little strawberry," was a new discovery and a species belonging to the Tritoniidae.

Chen and his team were commissioned by the Taiwanese Coral Reef Society to investigate the marine life in the area to determine whether Green Island should be included in the Construction and Planning Agency's plan to establish a marine park along the Dong Sha Atoll.

Chen reportedly set a new record by finding more than 30 species of sea slugs native to Green Island during his survey. ■

SOURCE: TAIPEI TIMES



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Enter the FishPhone. It is a new website and—in the US—also a text-messaging service, which enables restaurant patrons, supermarket shoppers and chefs to make healthy, informed and sustainable choices when deciding which fish to choose. According to Blue Ocean, the marine conservation organization behind the new initiative, information is available for over 90 species and includes an alternative choice for fish with significant environmental concerns.

American consumers can text 30644 with the message FISH and the name of the fish in question, and within seconds, FishPhone will text back with Blue Ocean's environmental assessment. Or, you can visit Fishphone.org, a mobile phone formatted web page where you can easily scroll through the color-coded info. [FISHPHONE.ORG](http://FISHPHONE.ORG) ■

PETER SYMIES



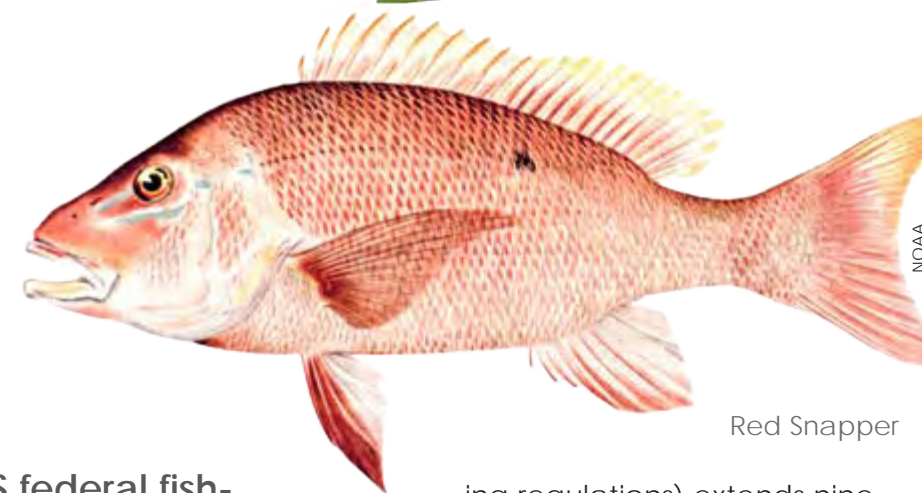
### Red Snapper Join NZ Unsustainable List

New Zealand—The red snapper is one of seven species added to the list of species considered environmentally unsustainable in the latest edition of Forest & Bird's Best Fish Guide. The other species are moonfish, striped marlin, blue shark, mako shark, porbeagle shark and lookdown dory.

Forest & Bird conservation advocate, Kirstie Knowles, said on a more positive note, kina, anchovy, pilchards, sprats and blue mackerel had come within 1-2 points of making it into the green list of fisheries, which are sustainable. "Again, no species are ranked as sustainable, but with improvements to fisheries management, we could potentially see some fisheries be ranked in the green list in future," she said. ■

SOURCE: NEW ZEALAND HERALD

Avoiding Mercury in your seafood. The Green List from Oceana is a list of which stores that hang signs to inform you about which species are safe to eat



Red Snapper

### US federal fisheries officials ask Texas fisheries managers to tighten limits on red snapper and sharks

Currently, Texas allows year-round harvest of red snapper caught from state waters, with a four-fish daily limit. Federal regulations, on the other hand, allow recreational anglers to take no more than two red snapper per day—and only during what has become an increasingly brief open season. This year, federal regulations allowed recreational harvest of red snapper from April 22 to Oct. 31.

Texas' jurisdiction (and its fish-

ing regulations) extends nine nautical miles into the Gulf of Mexico, with federal regulations in effect beyond that point.

The National Marine Fisheries Service has asked TPWD coastal fisheries officials to change its fishing regulations covering red snapper and sharks to mirror federal rules.

Current federal proposals are to cut the recreational season even further, with the 2008 recreational snapper season proposed to run only 122 days—June 1 to Sep. 30. The two-snapper limit would remain. Texas and Florida are the only Gulf states that don't set their red snapper regulations for state water to mirror those of federal water. ■ SOURCE: HOUSTON CHRONICLE

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## Sara Campbell set triple freediving record in Dahab

At the international competition in Dahab, Triple Depth, Sara Campbell accomplished three new world records. In Free Immersion the NEW record is 81 meters, the old record was 80 meters held by Natalia Molchanova. In Constant Weight the new record is 90 meters and the old record was 88 meters held by Mandy-Rae Krack (Cruikshank), and lastly, 56 meters in Constant Weight without fins.

Herbert Nitsch also accomplished a new world record in Constant Weight without fins, 83 meters is the new number. It is one meter more than the old record held by William Trubridge.

■ SOURCE: AIDA

## Christian Redl set another freediving record

Sixty meters in one minute 46 seconds is what it took Austrian freediver Christian Redl, 31, to reach the bottom of the cenote Angelita on Yucatán while holding his breath, a press release informs.

In September 2006, he set another world record in dynamic free diving through a cave when he reached 101 meters going through a cave in Mexico. "That dive was not easy," Christian Redl recalls, "not of the depth, but in this cenote you find at 30 meters a mystical hydrogen sulphate layer that looks like a huge cloud with trunks and branches reaching through it. The first 30 meters are clear fresh water, the last 30 meters are salt water and its dark there! The second problem was the last 30 meters, because the rope was not straight to the bottom but in a 30 degree angle to the bottom the total distance was not 60, but 70 meters one way." ■



JAROMIR FOUKAL

## 65-year old retired commando soldier swims underwater from the Black Sea to the Marmara

Namik Ekin, retired SAT commander at the age of 65, has broken a record by swimming from one sea to another. Ekin swam five and a half meters below the surface across the Bosphorus to reach the Marmara Sea. Due to the tide, the expected 18-hour journey only took 13 and a half hours, a record which previously belonged to a 28-year-old American swimmer. ■

## South African shark expert signs up with Discovery Channel

Craig Ferreira has landed the star role in a lucrative Discovery Channel documentary screened to a massive US TV audience last month. Now, the TV channel wants to immortalise Ferreira's bid to dive with all of the world's dangerous sharks in a multimillion-dollar 12-part series. ■

## New World Freediving Record

On Sunday 11th of November, Anders Larsson together with his team members of Freediving Team Åland, set a new world record in DNFNA (DNF No Arms). The new record is 120 meters, which is six meters longer than the previous record, performed by the well known freediver, William Winram of Canada. ■

SOURCE: WWW.FREEDIVINGTEAM.COM

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Edited by Peter Symes



Amos Nachoum at the recent DEMA show



## Amos Nachoum wins Wildlife Photographer of the Year contest

US-based photographer Amos Nachoum spent almost two years waiting for the perfect shot of a breaching great white shark. But his patience finally paid off when he captured this powerful image of the apex predator attacking a decoy that was being towed behind Nachoum's boat off the coast of South Africa.

The area is known as the Ring of Death and surrounds Seal Island in False Bay, South Africa. Great whites come here specifi-

cally to target seals, which the sharks ambush from below. These attacks are "always unexpected and over in less than a second," Nachoum said in a statement.

Competition judge, Rosamund Kidman Cox, praised the winning photo for displaying "the incredible power, size and streamlined efficiency of a top predator—and it's pin-sharp, too, which is amazing when you realize the speed at which the great white is exploding out of the water." ■

### Join Wetpixel at the Digital Shootout Bonaire 2008

Underwater photo and video workshop in Bonaire, June 7-14th, 2008

Join Eric Cheng (Wetpixel), Berkley White (Backscatter), Dan Baldocchi (Light & Motion), and Mary Lynn Price (DiveFilm) for the Bonaire Digital Shootout 2008! From 7-14 June 2008, we'll work with you to improve your underwater photo and video skills. Learn the latest digital imaging techniques from some of the industries top professionals while diving the rich waters of Bonaire. [www.wetpixel.com](http://www.wetpixel.com)



Cover image © Magnus Lundgren

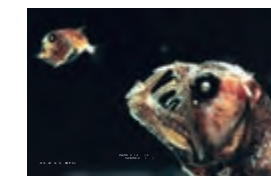
*The first edition of Wetpixel Quarterly is nothing less than stunning!*

Over the years I have concentrated on cine and video. Your remarkable — almost overwhelming — portfolio of still photography makes me realize what I have missed. The impact, range of subject, color saturation and virtually all other visual factors transcends any range I can now create with video. And the collection in one publication of World Class stills is unprecedented. Keep up the flow of pure gold. Your beautiful publication is an honored keeper in my library.

*P.S. And the above is no B.S.*

Stan Waterman

Pioneer underwater film producer and photographer



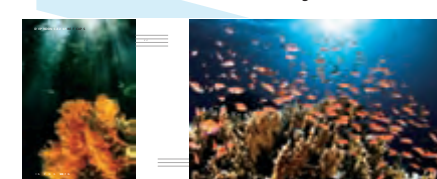
All images above ©Norbert Wu

JOIN US at *Wetpixel Quarterly*, the new print magazine devoted to high-quality underwater photography.

Each quarter, we pack the pages of our publication with brilliant underwater imagery from both professional and amateur photographers around the world.



Image above ©Carlos Villoch



Images above ©Gary Tan Yew Hin (left) and Giordano Cipriani (right)

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## News from NAUI

NAUI is excited to sponsor the Team Scuba's NASCAR Grand National Division racecar and host it's unveiling at the Dive Industry Bash this year. It was encouraging to see the grassroots industry-wide support build throughout the week. Along with NAUI, other initial car sponsors, Dive Training, DAN and Commercial Diving Academy, were delighted to see like-minded industry supporters who also want to bring diving to a whole new market. The interest in participating that we received from dive centers of every affiliation was overwhelming. Everyone wanted to be involved with this exciting and aggressive marketing project.

We also had a great time at the NAUI booth. Our members were there ordering new products, renewing their memberships and visiting with their representatives. There were daily drawings for pairs of Disney Dives at Epcot in The Seas, drawn by none other than our new Team SCUBA NASCAR driver, Ray Black, Jr. This made perfect sense because he is of course, a NAUI diver! NAUI also thanks all the people who stopped by our booth just to say hi.



The Industry Monster Bash was a complete success. Thanks to our co-sponsors, DAN, Dive Center Business Magazine and the Islands of the Bahamas! There was good food, good company, creative and scary costumes, plenty of libations and exciting prizes.

Team SCUBA was there

to unveil the new Industry NASCAR with photo opportunities and autographs. And a 3-D model of NAUI Worldwide's new headquarters buildings and its three acres of prime business park real estate were on display. ■

The NAUI booth at DEMA was busy at all hours



### Earth's water did not come from space

Prevailing theories on how oceans appeared after the Earth formed around 3.8 billion years ago suggests that millions of water-rich comets and asteroids bombarded our planet.

Most scientists used to think the water in the Earth's oceans came from water-rich asteroids and comets raining down on the planet in its youth.

But now planetary scientists in Japan suggest the oceans were actually created here on Earth. They may have formed because the young Earth had a thick blanket of hydrogen, which reacted with oxides in the Earth's mantle to form lakes and seas. ■



## Say 'Hi' to Robo Ray

Aqua Ray is a remote-controlled fish, the shape and movements of which have been based on the model of a manta ray. By imitating the way that fish fins are constructed, it has been possible to develop novel grippers and actuators, as well as working models of a wing-propelled, smart-structured airship and a novel underwater inspection vessel.

In fish, the double ribs that support fins are of very subtle construction, but in industrial developments, these can be constructed

either from two ribs connected by rigid links or by extruding profiles out of semi-rigid elastomer.

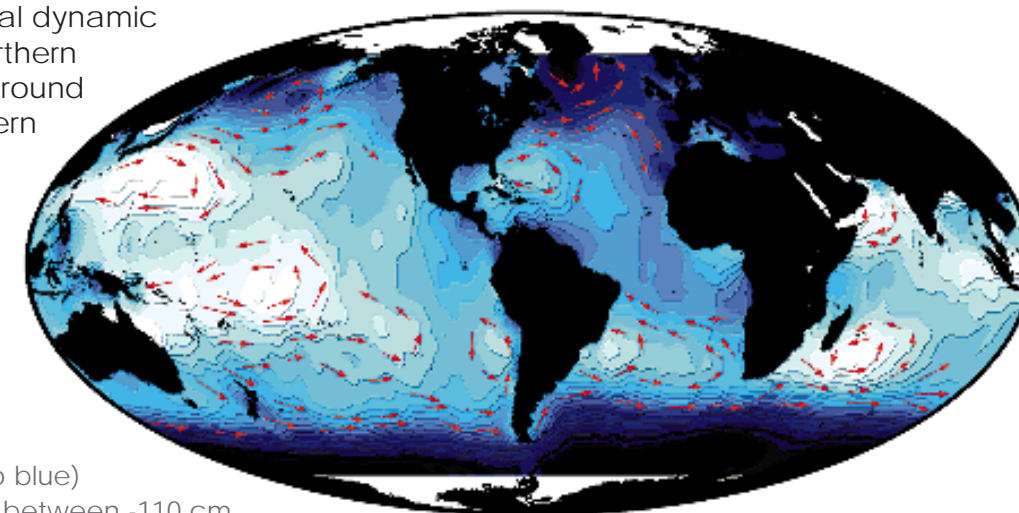
The basic idea has been given the name "Fin Ray Effect" and comes from Leif Kniese of EvoLogics, a Berlin-based company specialising in advanced technologies inspired by nature. The development into real world products that are suitable for factory automation has been led by Festo, the company behind Aqua Ray and experts in pneumatics and related technologies. ■

## The ocean is actually not (entirely) horizontal

The height of the sea surface, also called the dynamic topography, is directly related to large scale ocean currents.

These flow along the lines of equal dynamic topography (red arrows). In the northern hemisphere, the flow is clockwise around the topography highs. In the southern hemisphere, the flow is counter-clockwise. The map shows all the features of the general circulation.

The ocean gyres and associated western boundary currents appear clearly on this map generated by the Topex/Poseidon satellite. ■



Variations are between -110 cm (deep blue)  
Height variations are between -110 cm (deep blue) and 110 cm (light blue)





# What'sup?

Taking a look at what's trendy at this year's installment of the annual DEMA show, which was held in Orlando in October.

By Peter Symes



We can play the name dropping game, too—(from the left) Sea and Sea's Jon Davy, Australian liveaboard operator and legende, Mike Ball, and Andrey Bizyukin from X-RAY MAG's Moscow office. DEMA is the place to meet and mingle

DEMA. The biggest dive expo on the planet is still the biggest and most dominant event in the dive industry. For a second year in a row, the show, which otherwise alternates between locations, was held in Orlando. As always, dive professionals from all over

the globe congregate to display their wares and services, haggle and mingle and catch up with old acquaintances—or perhaps attend some of the many splendid seminars.

Having attended most DEMA shows since the early 1990's should enable

The Prism 2 rebreather from Oceanic owner Bob Hollis' new high end brand, Hollis Gear. It boasts being the only commercial CCR passing testing by the US Navy

It is a big venue. Big enough to have a tram route. PADI's village was right at the crossroads

A real crowd-gatherer, Poseidon's fully automatic closed circuit rebreather is being built for the sport diver, rather than for the technical diving community. Priced at only € 3900, it is destined to take a good chunk of the market shares. Also branded as the Cis-Lunar MK VI



me to gauge the evolution and state of the industry, but I am not sure whether this hindsight is of much use. Thinking back, there always seemed to be so many new exciting innovations, but we were probably just easier impressed—like thinking of your childhood's ice creams, which we remember as at least twice the size for a price of a few small coins. The industry has moved on and matured—and the cutting edge of invention has taken some significant steps forward.

Master class. Czek-born freediving champion, Martin Stepanek, demonstrates his amazing ability to breath-hold in the demonstration pool







## Save the day

The Rescue Tape bonds to itself when it is stretched and forced together. A leaking hose can be repaired in the matter of minutes, even without having to clean the surfaces. It's a quick fix that can save the day.

[www.rescuetape.com](http://www.rescuetape.com)



## Moving out

A lot of thinking has gone into the design of this dive center on wheels that comes complete down to the drainage holes. Get rid of the rent and get an ocean view instead. [www.atwaterconcepts.com](http://www.atwaterconcepts.com)

So, where did this frontier lie this year? Not surprisingly, mostly with all the high tech stuff: Cameras, lamps and rebreathers—with some new computers thrown in there—were pretty much the locomotives of novelty this year.

First of all, the digital revolution in cameras has led to a burst of new underwater housings being developed to keep up with the arms race of new camera models—as well as a long range of photo-related gadgets, buoyancy arms and counterweights being offered by several. Seacam, Subal, Sea & Sea, Fantasea, Ikelite, Aquatica, Nexus, Inon, Olympus, Gates, 10bar, Epoque, Olympus, Light & Motion, Sealife, Amphibico, Backscatter... They were all there.

For a more in-depth overview on photo-news, click on the excellent reports done by our friends at WetPixel.com and DivePhotoGuide.com. We also have a few highlights in the photo-section of this issue.

Lamps were also big and they were compact and powerful. NiteRider showed off their new 3x3 LED video lights, where as Swiss Keldan and American Sartek emphasised their powerful HID models.

DivePhotoGuide's Jason Heller trying to get an overview of all the new housings on offer at Sea & Sea's booth



## The Rebreather showdown

Closed circuits have been constantly lurking in the wings, and each year, they take another step closer to the mainstream market. The major breakthrough in bringing this technology from the realm of commercial, military and technical divers to the sport diver segment has, for a while, only been a matter of when, not if, it would happen.

This year, we possibly passed a milestone in that regard with Poseidon's introduction of the fully automatic and fully closed circuit Discovery aimed at sport divers. At half the weight and half the price of most other rebreathers on the market, this nifty lightweight unit attracted a lot of well deserved attention.

The ADV is built into the bail-out mouthpiece, the battery is rechargeable like that of a cell phone and there's clever lateral thinking around the sensors. There is only one main oxygen sensor that constantly gets calibrated, the second one is there to check for leaks in the system.

Hollis Gear presented the high end CCR Prism 2. Prism 2 is a development from Prism Topaz. One of the major changes in this regard is that the direction of the gas flow in the loop has been reversed. The diluent is now placed on the left and the O<sub>2</sub> on the right—a placement which was, for the most part, accepted as a standard. The Prism is equipped with a radial scrubber and comes with both a primary digital LED display and an analog backup display powered by sensors.

rEvo rebreathers showed an amazingly compact set in a little cabinbag-sized suitcase that I unfortunately didn't get the chance to take a closer look at.

Among the masks, fins, suits, etc... it was mostly elaborations on known models and variations on already seen themes, except for perhaps Canadian White's Fusion drysuit, which is finally on the market, and the sleek and stylish Proteus wetsuit from always innovative Fourth Element. Finnish computer giant, Suunto, displayed their new mid-range D4 computer and the D6 with a macho metal bracelet. ■



Suunto D6 now also comes with an option of a metal bracelet



The Suunto D4 is the new introductory model in the Suunto diving line. It features three modes and intelligent free diving features. It informs the diver of the safe dive time and any necessary deep stops. Constructed from lightweight, composite material, the Suunto D4's design is contemporary and sleek



Shining a light on matters. A lot of new lamps were on display. Carl Saieva demonstrates Sartek Industries' 150W HID video light



## Slingshot



[www.aqualung.com](http://www.aqualung.com)

The Slingshot features three innovations: Power Bands, the Gear Shift, and the Mid-foot Flex Joint. All are aimed at

taking the strain off the foot, and to increase speed without tiring the muscles. According to Aqualung, the Power Bands are silicone straps that capture the energy of the downstroke and then immediately snap back, creating powerful propulsion, which is much more efficient than other fins on the market. The diver can shift to one of three settings in order to choose the speed-to-effort ratio with the Gear Shift. And the last new feature is that the blade is attached to the foot further back on the foot pocket rather than at the toes. This reduces the pressure on the front of the foot and reducing strain on the ankle, while allowing all the power to transmit from the leg to the fin.

## UTC

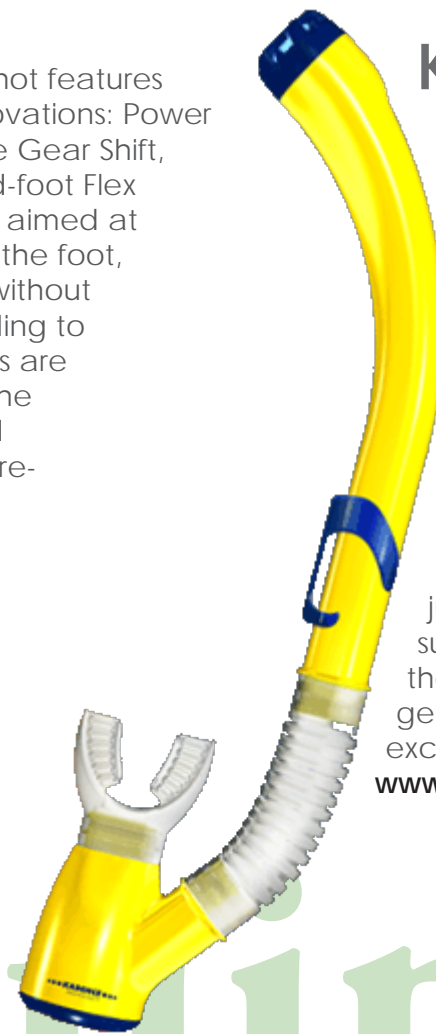


[www.utc-digital.com](http://www.utc-digital.com)

The UDI dive computer features a unique messaging feature enabling in-water communication. It also comes with a homing device that puts anyone who watched *Open Water* at ease. A diver in need of help simply pushes an SOS button, that immediately sends a signal to the other divers. Their UTC will in return, guide them to the diver in need of help. The UDI is of course also a normal dive computer where you find features as EAN mixtures, altitude corrections, multiple dives, deep stop options, etc. In addition to these features there is also a digital 3D compass.

[www.utc-digital.com](http://www.utc-digital.com)

## Kapitol Reef Snorkel



[www.kapitolreef.com](http://www.kapitolreef.com)

The world's first pressure-regulated snorkel adds a precise resistance to the exhalation flow in order to regulate exhalation pressure. Its implementation also separates inhaled air from exhaled carbon dioxide. The gentle exhalation pressure is crucial—it supports lungs, slows down breathing, and provides just enough back pressure down the airways in the lungs, to improve oxygen and carbon dioxide exchange.

[www.kapitolreef.com](http://www.kapitolreef.com)

## Proteus

An advanced 5mm wetsuit developed using a combination of superstretch and thermocore neoprene. Incorporating the unique hydrolock neck seal and long glide-skin seals at the wrists and ankles, the Proteus suit eliminates almost all water ingress and provides superior thermal protection with excellent ease of movement.

[www.fourthelement.com](http://www.fourthelement.com)



## Pearl i3



The Pearl i3 is a BC for women with some really nice features. Besides the most obvious; the built in sports bra for comfort it has an integrated controller for easier, single touch control for both inflation and deflation. On both sides, actually the insides of the BC you have small pockets to tuck away your octopus. This BC also comes with the flat E-Valves to reduce drag and keep the BC streamlined. [www.aqualung.com](http://www.aqualung.com)

## THE SCAP

Keep your head warm with a doo-rag like 1.5 mm neoprene hat. This head protection is created for scuba divers as well as surfers. It comes in

6 different

colours/  
styles and

the head-  
band has

a reflexive  
band on the

front. It is also  
form fitted with a

specially designed  
grip zone to stay put.

[www.thescap.com](http://www.thescap.com)



equipment



## Recalls product info

### Aqualung

Some S.O.S. units (PN 394157 and 394057) sold since Sept 2002 may have a faulty component. The component is known as an "elbow," and is used to transfer air from the BC to the safety tube. Some elbows have exhibited signs of degradation leading to cracking and/or breakage.

Check with your Aqualung dealer



## Industry News

**Diamond Brand Canvas Products**, a 126-year-old maker of outdoor gear, has acquired **Stahlsec Inc.**, of Weaverville, manufacturer of bags for scuba gear and aquatic sports.

**Omega Aquatics merges with RipTide Dive Group.** Dave Pollock, formerly President of RipTide will join Omega as Vice President of sales. Dave Pollock served as General Manager for Mares from 1989-1995, founded Riptide Dive Group and consulted for several companies such as Bare in launching product to the U.S. market.

**Underwater Kinetics** purchases **HangAir** product Line

**FitzWright Company Ltd** of Langley, B.C. acquires the Canadian distribution rights for **Atomic Aquatics**

## Mares Puck

This fockkeypuck like thing is Mares' new no-nonsense dive computer and quite possibly one of the easiest to run and operate. There are no fancy features, which nobody has any time and energy to learn and use anyway. It's down to the basic; you navigate with the push of one button. Large digits and backlight on demand makes for easy reading. Functions include a full decompression program, a programming mode and memory (capacity 38 hours), watch, calendar, and a setting for fresh or salt water.

[www.mares.com](http://www.mares.com)



## Dive Rite LED 300 corded flashlight

Turn the LED 300 Flashlight into a canister light with a standard 40-inch cord. As easy as changing batteries, simply screw the female attachment directly into the light head and the male attachment to the battery section. Twist the light head as normal to activate. Secure the light onto the waist belt or a backplate using the standard LED 300 pocket.

[www.diverite.com](http://www.diverite.com)



## Ocean Reef Full Face Masks

The Italians have presented another couple of out-of-this-world diving masks. The Raptor is a nitrox compatible mask. The o-rings are made by Viton, and the o-rings lubricant is a Christolube Oxygen Grease. This mask can also be used with conventional air as well. The Raptor (shown) distinguishes itself by the black Ixef® polyamide cover and the black orinasal mask. The Predator is constructed with parts made of Anticorodal®, a lightweight and durable aluminum compound used in aeronautics for applications requiring high mechanical resistance. This mask has a low internal volume, an improved visual field, and an integrated surface air valve. It can be used with a communication unit and many accessories.

[www.oceanreefgroup.com](http://www.oceanreefgroup.com)



# beAdiver.com

By Millis Keegan

It is time to bring new divers into the the world, says DEMA. It is not a minute to soon, the dive industry has come to a bit of a stand still over the past years. Now that the industry finally acknowledge that there is a problem, a media campaign to entice new divers to get into the water is underway, at least in the US. It will be a national advertising campaign called "Be A Diver", and it was launched at this year's DEMA Show.

They did so by giving a sneak preview of a 30 second television spot. The press release informs us that the TV spot is a part of a consumer campaign meant to bring new divers into the world. The campaign will include television, radio, newspapers, magazines, on-line advertising and a marketing guide comprised of professionally prepared promotional materials for use by members.

But is the campaign failing already? A search on the Internet to find any information about the Be-A-Diver campaign turns up nothing but a press release from DEMA on a couple of websites. As of now, only a few

weeks after the release of the campaign, the only information available for anyone who wants to follow up or join the program is that there will be "a comprehensive program to raise the awareness of diving and acquire new divers", and that we, the press, attending the press conference got a free breakfast at DEMA.

The beAdiver.com website is not nearly ready. When you log on, the only useful information is that it promises to come soon, in January 2008. We can't wait.

MEANWHILE, there are a few pieces of important information that could have been published on their site—their own press release for starters, and contact information for anyone who might want to check things out a bit further, or at least a link to [www.dema.org](http://www.dema.org), which actually has the campaign marketing plan in PDF-format ready for download.

So, while waiting for 2008, if you do want to know more about how to attract new divers, download the Be-A-Diver marketing plan from [www.dema.org](http://www.dema.org). ■



## Second Life

Since launching its Dive World on Second Life, the popular virtual world website, in October 2007, PADI's cybercenter continues to develop in ways that are out of this world. The latest addition to the underwater experience is an amazing cavern and cave system, ripe for exploration.

On December 1st, 2007, visitors to Dive World will be able to access a unique virtual cavern and cave environment, adding another element to the opportunities presently available in Second Life to learn about the underwater world in real life.

The caverns and caves are easily found on the northwest side of the virtual island and can be accessed via the beautiful new beach and its relaxing breaking waves. The virtual cave is accessible via seven entrances and weaves its way under the island in what appears to be a never-ending labyrinth of tunnels. ■

## DAN Technical Diving Conference 2008

DAN is to hold a conference in North Carolina, to discuss the the ever-increasing trend of technical diving. The conference will be held 18-19 Jan 2008, at the Sheraton Imperial Hotel & Convention Center on 4700 Emperor Blvd, Durham, North Carolina. Registration is limited to 150 persons, so early registration is encouraged. Contact DAN CME Phone: 800-446-2671 x610 Fax: 919-493-3456 Email: ceasterling@dan.duke.edu

## NAUI approves more rebreathers

NAUI has announced the addition of the Inspiration and Evolution Rebreathers manufactured by Ambient Pressure Diving Ltd. and distributed by Silent Diving Systems LLC to their list of approved rebreathers for NAUI training courses that can be found in the Technical Diving Section of their web-site at [www.nauai.org](http://www.nauai.org). In order for a rebreather to be added to the list it must be independently tested and pass within the testing criteria as set forth by the National Oceanic and Atmospheric Administration (NOAA).

All around the world, countless police, fire and rescue personnel, government officials, public and private security teams are NAUI trained and certified divers. In the United States, US Navy SEALs, Coast Guard rescue divers and other special military forces are trained to NAUI's high standards as part of their overall training with SCUBA and closed circuit rebreathers; the US National Parks Service and NOAA divers receive NAUI training and certifications.

NAUI Technical Diver Training Division was started over a decade ago to create a higher standard of training worldwide by codifying technical diving community training practices. They were the first major training organization to offer certifications at all levels of diving from traditional recreational training through technical training. For expert help, they asked the people who created the technology, protocols and training methods that produced a fledgling technical diving community to participate.

You can find information in the Technical Diving Division Section of their web-site at [www.nauai.org](http://www.nauai.org). ■



## TDI Launches Intro to Tech Course

TDI's new Intro to Tech course is intended to give experienced sport divers a simple, non-threatening glimpse at the techniques and skills used in technical diving. Participating in this course will give those divers a better understanding of the detailed planning and preparation required to make a successful and safe technical dive.

Intro to Tech is really a try-it-before-you-buy-it course for someone who has heard a lot about tech and is wondering what all the fuss is about. But Intro to Tech is also worthwhile for divers who have no real intentions to go on to take a full tech class because the skills it focuses on—gas management, superior buoyancy and trim, situational awareness, and equipment selection—are useful in any form of diving. Intro to tech is also the perfect course for those already certified tech divers that haven't been in the water for a while or just want a little help refining their skills.

To learn more about TDI Intro to Tech visit: [www.tdisdi.com](http://www.tdisdi.com) or email [worldhq@tdisdi.com](mailto:worldhq@tdisdi.com). ■

# Enter to win the "JUST DIVE®" photo contest!

## Photographers of all ages, skill levels and backgrounds are invited to participate.

### For complete contest rules and submission form, visit our website at [www.nauai.org](http://www.nauai.org).



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





Edited by  
Peter Symes

## 17th-century sailing ship found in perfect condition in the Baltic

An almost intact shipwreck, apparently from the 17th century, has been discovered in the Baltic Sea when a television crew was filming an underwater documentary series,

"The ship was located during the preparations for a television series, Vrakletarna (The Wreck Divers) and experts who have studied video of the ship conclude that it is possibly the best preserved ship ever seen from this period," Swedish Television said in a statement.

The Baltic is as an ideal environment for conserving ship-

wrecks, which can remain virtually unblemished for hundreds of years. Morten Manders, a marine archaeologist, said he was overwhelmed by the condition of the two or three-masted vessel. "You can hardly call this a shipwreck," he added.

The ship, which is 6.5m wide and 20m long, was already found in 2003 by an underwater robot near Gotska Sandon island, off the south-east coast of Sweden. But it was only in May this year, during the making of the documentary series, the wreck which lies in clear water and at a depth of 125m was fully explored with a remotely operated submarine and a video camera.

The underwater footage of the boat, which is believed to have been a Dutch trading ship, showed an almost intact hull and carved figureheads near the ship's wheel. Madeleine Sinding-Larsen, a spokeswoman for Swedish Television, said: "It was just standing there on the seabed, almost as if it has just dropped down from the surface." ■

*"It was just standing there on the seabed, almost as if it has just dropped down from the surface."*



As the *SS Excambion*, it carried cargo and passengers between New York City and the Mediterranean from the end World War II until 1958. Before that, as the *USS Queens*, it was among the Navy troop transports at the Battle of Iwo Jima. The ship was decommissioned in 1946



## Texas Clipper sunk but rolls onto its side

Texas State officials hoped the Clipper a World War II-era ship purposely sunk in the Gulf of Mexico to create an artificial reef would become a destination for divers and boost local tourism by an estimated \$30 million a year. It was meant to stand upright so divers and fish could explore the 80-foot-high, 473-foot-long ship by swimming through decks and cabins. But the wreck which was sent to the seabed on Nov. 17 has tipped onto its side, blocking access to the interior for fish and divers.

Artificial reefs provide a rich habitat and feeding ground for fish, soft corals and plant life, which in turn

attract fishermen and divers to the area.

Why the ship tipped over is unclear, said Aaron Reed, spokesman for the Texas Parks and Wildlife Department. He said the state might ask the company that prepared the ship for sinking to right it. The state has spent about \$4 million on the sinking.

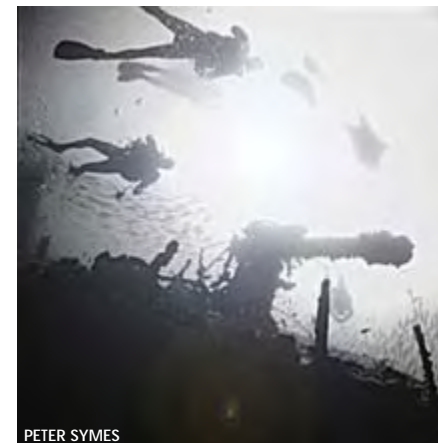
Tim O'Leary, owner of a dive shop on the coast, had expected the wreck to keep his business busy into December. But with the ship on its side, it's more suited for skilled cave divers than for novices, O'Leary said. ■ SOURCE: STAR-TELEGRAM

### Thistlegorm

—off-limits for one month

*Thistlegorm* will be closed to divers until 15 December 2007, to allow for conservation measures that will help to preserve this historical and legendary wreck for the future.

The closure is part of the new Saving The Red Sea Wrecks Campaign, launched by HEPCA (Hurgada Environment Protection and Conservation Association). ■



PETER SYMES

who said drysuit diving wasn't hot?



product shown:  
drybase: ultra fast  
wicking base layer

**fourth element**  
don't you deserve to dive warmer?  
[www.fourthelement.com](http://www.fourthelement.com)





RAF



On the 2nd of May, 1945, thirty-five Mosquitos 143, 235, 248, 333 and 404 squadrons from the Banff Strike Wing went into the Kattegat. With rockets they attacked and sank *U-2359*, which was en route to Norway. The entire crew of 12 were lost

# U-2359 has been found

The last of the remaining U-boat wrecks from WW2 in Kattegat, the *U-2359*, has been located near the island of Læsø by Danish wreck-hunter and adventurer, Allan Greisen. His team has searched for the *U-2359* for the last 12 years. It was the only of the uboats sunk in Danish waters that hadn't been accounted for.

Allan Greisen explains that the boat sits with its nose dug into the sea floor with the stern raised 30 degrees making it possible to dive under the stern itself. The uboat is, despite its 200 tons, in the lightweight class among uboats. It's only 34.28 meters long, built for attacking the enemy in shallow waters.

"Historically, it is interesting, and you have, in the past, raised uboats six times as big, so it should be easy to raise. Fifty to 60 of them were built, and this one was completed in January, 1945. But a big part of the German uboats was lost because the German scuttled them themselves at the end of the war," team member Flemming Hansen told the Danish daily newspaper, *Jyllands-Posten*.

The divers of the ship *Ternen* has found hundred of wrecks through the years, among them *U-534* that was raised in the summer of 1993 by tycoon Karsten Ree and put on display in the United Kingdom. ■



ALLAN GREISEN



File photo of a sister vessel, the *U-2363*



PETER SYMES

Allan Greisen, when he salvaged a rare WW2 German BV128 warplane in the sound off Copenhagen a couple of years ago

## In memoriam: Allan Greisen

Allan Greisen will never return to explore the *U-2359*, or locate another wreck for that matter. Only a few days prior to going to press, on Tuesday Nov 27, we learned of the tragic news that Allan had died while saving the life of a fellow diver during a rebreather course he conducted in the Red Sea.

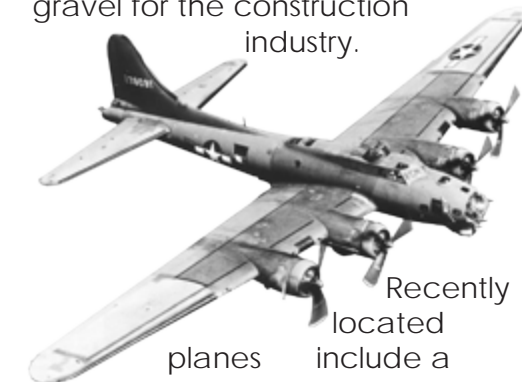
One of a rare breed, Allan just made the impossible happen and life entertaining and exciting. Boredom was not in his vocabulary. I can't help thinking that in another and bigger country, he and his antics might have ended up as another show on Discovery Channel. He pulled off some incredible stunts just for the hell of it. From driving across Greenland, driving *under* a Danish strait, to searching for and salvaging airplanes and boats, if possible, in Greenland, Russia and Denmark. And I still probably only know half of it. He was a true explorer and a multi-talented self-made man.

Allan was fun and pleasant too—and helpful. He had his heart in the right place. According to what is presently known, he rescued another diver during a 60m dive on the Rosalia Moller wreck bringing him to the surface. It would indeed have been in his nature to do everything possible to come to somebody else's rescue even at his own expense. The other diver survived, but was probably unconscious while Allan brought him up. He only recalls Allan taking care of him on the surface and they were both talking before Allan without no apparent reason lost consciousness never to regain it. Resuscitation attempts was in vain. Preliminary investigations showed no problems with the equipment and it is still a mystery what caused his death. It is incomprehensible that Allan and his bigger-than-life presence is not around any more. His untimely passing has made the world a great deal poorer and a duller place to be. Allan was a good friend and he will be greatly missed. Our thoughts go to his wife, Mette, and their two young children.

— Peter Symes

## Seabed to be mapped for lost war aircraft

Thousands of aircraft wrecks, most of them from planes that went down during the Second World War, lie scattered on the seabed off the English coast. Charts already pinpoint known shipwrecks. But for the first time, aircraft wrecks are to be mapped. This follows the discovery of a growing number of plane wrecks, some containing human remains, by crews of barges dredging for sand and gravel for the construction industry.



Recently located planes include a Supermarine Attacker, an early British jet fighter, off Worthing in West Sussex, and an American B-17 Flying Fortress bomber off Newhaven, East Sussex. Two wrecks off the Suffolk coast, a German bomber and a US bomber, had human remains on board.

The project, being co-ordinated by English Heritage, is to ensure their final resting places are protected. Veterans groups and the RAF Museum have been informed of the project and will be kept updated over any finds.

An estimated 11,000 RAF aircraft have been lost in the North Atlantic, North Sea, the Channel, Irish Sea and the Bay of Biscay since 1939. ■

SOURCE: TELEGRAPH



## Tracking a lost fleet from 1559

In 1559, a hurricane plunged as many as seven Spanish sailing vessels to the bottom of Pensacola Bay, hampering Spanish conquistador Tristán de Luna y Arellano's attempt to colonize this section of the Florida Panhandle.

Almost 450 years later and 15 years after the first ship was found, another wreck has been discovered helping archaeologists unlock secrets to Florida's Spanish past.

In August of 1559, Tristán de Luna y Arellano established an ephemeral colony at modern-day Pensacola, that became the first European settlement within the continental boundaries of the United States. The colony at the site of present-day Pensacola was abandoned in 1561, and no trace of it has been found on land.

### The wrecks

The first de Luna ship was found in 1992 in the same area, near what de Luna founded as Florida's initial European settlement.

The second was found last summer by archaeology students from University of West Florida. The shipwreck is, partially buried in sand about 12 feet below the water's surface. Test excavations suggest about 60 to 66 feet of preserved hull from a small- to medium-size vessel.

Researchers think as many as five other vessels were lost in the hurricane on Sept. 19th, 1559. The search for the others continues. Of the 11 ships that came from Veracruz, Mexico, on de Luna's expedition, seven ran aground in the water, one was blown onto shore and three survived the storm, said John Bratten, a

West Florida professor of maritime archaeology.

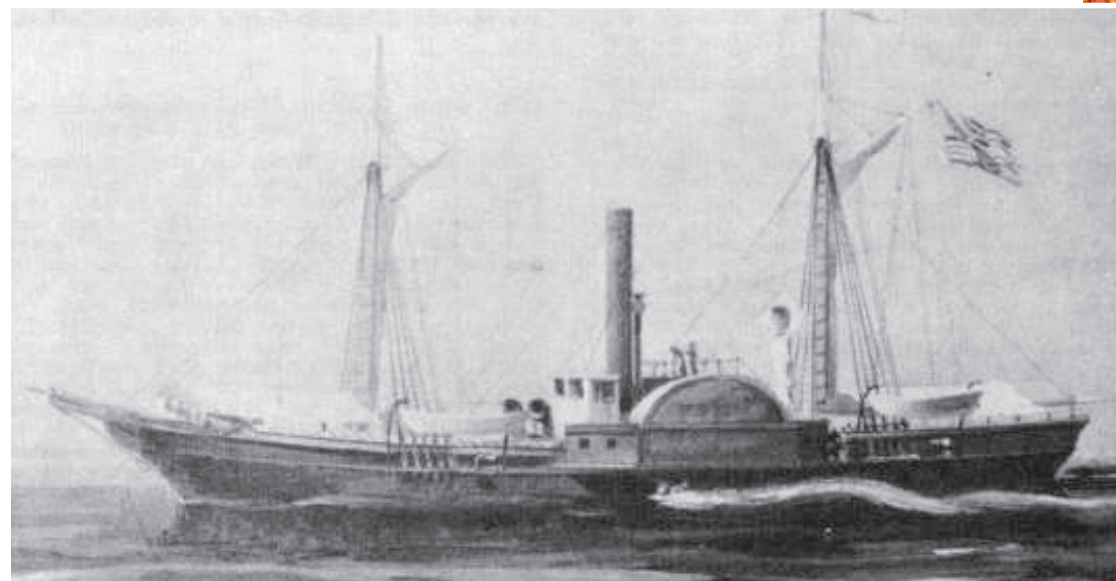
Although the Spanish kept detailed records of the ships and their contents, historians are uncertain which of the 11 ships the archaeologists have discovered.

### Cargo

The ship apparently held food stocks and other supplies for the colonization campaign, a carefully planned expedition financed by the Spanish crown. The West Florida archaeology team has brought more than 800 artifacts from the latest de Luna site to the surface, including pieces of olive jars used to transport food and wine, chunks of the ship's wood frame, cow bones, Spanish bricks and even tiny balls of mercury, used to extract gold from ore. ■



Spanish Galleon



USS *Water Witch* was a wooden-hulled, sidewheel gunboat in the United States Navy during the American Civil War. In 1864, she was captured by the Confederate States Navy, and subsequently was taken into that Navy as CSS *Water Witch*

### Civil War Shipwreck Located in River

Archaeologists report that they found strong evidence they've located the *Water Witch's* wreck—age buried under more than ten feet of mud in the Vernon River south of Savannah. Using a magnetometer surveyors detected large iron objects scattered beneath the river's surface in an area 200 feet long. It was the same location where an 1865 survey map showed Confederate sailors burned the ship to prevent Union General William T. Sherman's army from recapturing it.

Dave Crass, Georgia's state archaeologist says the *Water Witch* would be just the third Civil War shipwreck—along with the ironclad CSS *Georgia* and the blockade runner CSS *Nashville*—to be found out of dozens known to have been sunk in Georgia waters. The 160-foot, wooden-hulled *Water Witch* was built by the U.S. Navy in 1851 as a sort of hybrid of old and new seafaring technologies. Though outfitted with a steam engine and side-mounted paddle wheels, the ship also had 90-foot masts for sailing. ■

## Shipwreck Explorers Locate 1850's Canadian Schooner in Lake Ontario

Shipwreck enthusiasts Jim Kennard, Dan Scoville, and Chip Stevens found the old schooner with side scan sonar

### Collision at Night

The *Orcadian* collided with the schooner *Lucy J. Latham* in the very early morning hours of May 8, 1858. The *Orcadian* took on a great amount of water from the large gap in the side of her hull created by the collision and began to sink immediately. While going down, the main mast of the *Orcadian* caught on the jib boom of the *Latham*. The bow of the *Lucy J. Latham* was drawn under water, while her keel at the stern was raised 10 to 12 feet out of the water. For a short period of time, the *Latham* sustained the immense weight of the sinking schooner until finally, it was relieved by the giving way of her bowsprit, jib-boom, and fore top mast, all being carried under by the

The *Orcadian*, a mid 1800's schooner, has been located in deep water off the southern shore of Lake Ontario near Sodus Point, New York

*Orcadian*. Within less than 10 minutes the *Orcadian* sank in deep water, with its cargo of wheat. Captain James Corrigan, his wife, their two children and the crew took to their yawl boat and were taken safely aboard the *Latham*.

### The Discovery

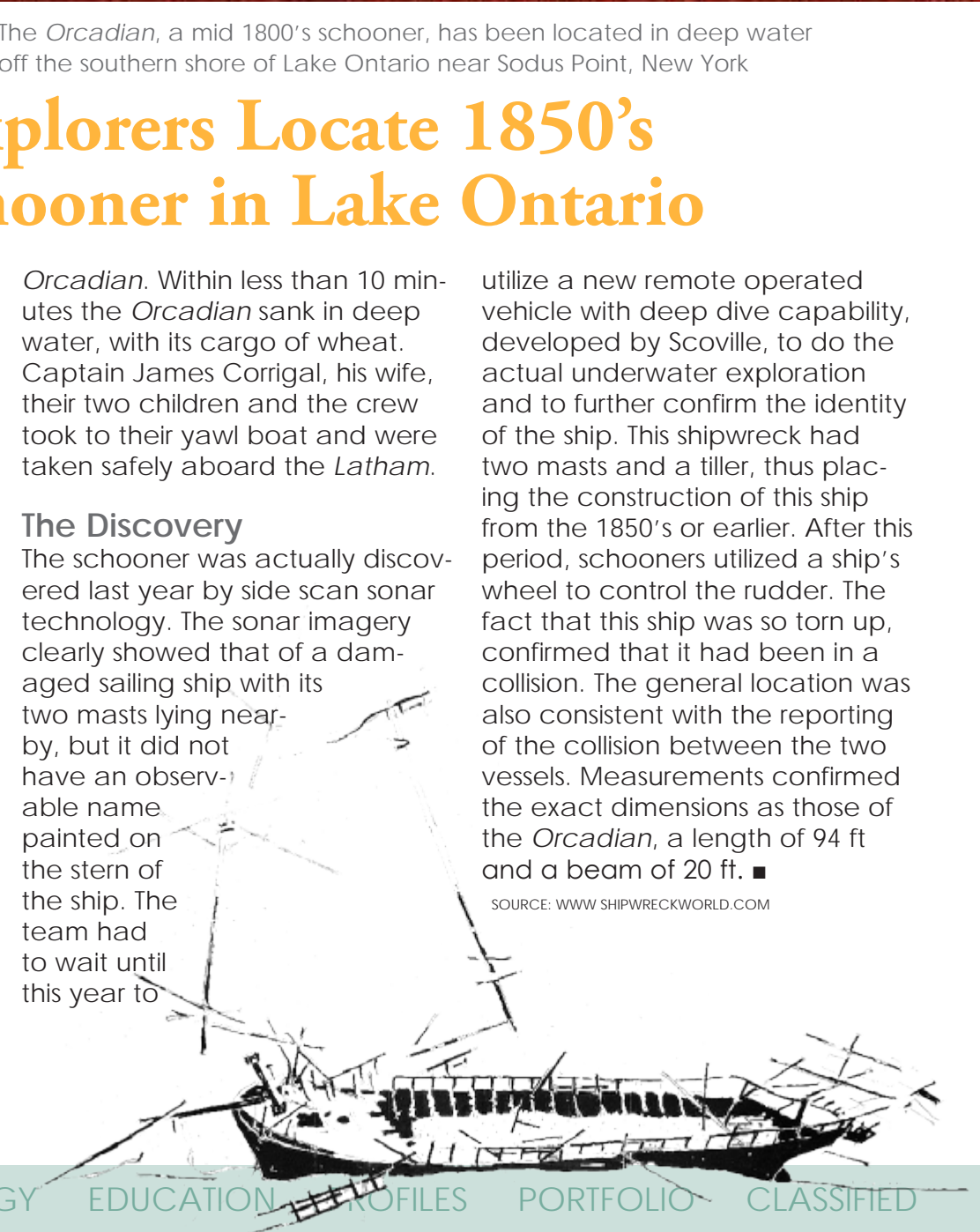
The schooner was actually discovered last year by side scan sonar technology. The sonar imagery clearly showed that of a damaged sailing ship with its two masts lying nearby, but it did not have an observable name painted on the stern of the ship. The team had to wait until this year to

utilize a new remote operated vehicle with deep dive capability, developed by Scoville, to do the actual underwater exploration and to further confirm the identity of the ship. This shipwreck had two masts and a tiller, thus placing the construction of this ship from the 1850's or earlier. After this period, schooners utilized a ship's wheel to control the rudder. The fact that this ship was so torn up, confirmed that it had been in a collision. The general location was also consistent with the reporting of the collision between the two vessels. Measurements confirmed the exact dimensions as those of the *Orcadian*, a length of 94 ft and a beam of 20 ft. ■

SOURCE: WWW.SHIPWRECKWORLD.COM



JIM KENNARD, DAN SCOVILLE, AND CHIP STEVENS







WOODS HOLE OCEANOGRAPHIC INSTITUTION - HELLENIC MINISTRY OF CULTURE EPHORATE OF UNDERWATER ANTIQUITIES  
HELLENIC CENTRE FOR MARINE RESEARCH

## DNA-techniques used to probe shipwrecks

During antiquity, amphoras were the standard containers for transporting goods on ships. But what was in them? Scientists have found that by analysing the DNA of remains inside, it is now possible to learn about the original contents of jars sunken for over 2,000 years.

Piles of the ceramic amphorae are often all that remains after ancient shipwrecks, whereas the ships themselves have been long since decayed. Researchers trying to learn the jars' original contents usually come up dry because the amphorae only infrequently contain visible clues, such as olive pits.

Studying an ancient Greek shipwreck, an international team of scientists has found that analysing ancient DNA, though degraded with time, could supply some of the needed evidence. The researchers scraped ceramic from inside two amphorae from a 4th-century B.C. shipwreck found near the Greek island of Chios in 2004.

Hansson and Foley of the Woods Hole Oceanographic Institution in Massachusetts, have been able to determine that one vessel probably contained olive oil flavored with oregano, a surprise because historians have believed that amphorae of that style from Chios usually carried wine. Chios was known for "fine and distinctive vintages", but the find suggests Chian agricultural exports might have been more diverse than gen-

Ceramic jars onboard a 2,400-year-old shipwreck, with starfish and sponges growing on them. DNA analysis shows these jars held olive oil flavored with oregano and possibly wine

erally assumed.

The other jar contained DNA of mastic—a shrub cultivated on Chios—or of pistachio, a related plant. Scholars have hypothesized that ancient Chians used mastic resin as a wine preservative and flavoring

Some ancient foods are more likely than others to leave genetic calling cards behind. For instance, because the second jar was thought to have likely contained wine, they checked for grape DNA, but found none. It may have washed away because wine dissolves in water better than oil or resin, Hansson and Foley observed. But overall, they wrote, the findings "contribute definite evidence for Classical Greek commodity exchange and open new vistas for molecular archaeological analyses."

It's a feat "no one thought was even possible," wrote Maria Hansson of Lund University in Sweden and one of the researchers, in an email. The discovery "opens up a whole new field of molecular archaeology," she added.

The findings appear in the online edition of *The Journal of Archaeological Science*. ■



"Salad dressing" has been found in 2,400-year-old shipwreck



The Turkish frigate *Ertuğrul*, sank during a severe storm off the coast of Japan in 1890

## Turkish frigate *Ertuğrul* to be salvaged in Japan

The Turkish Ministry of Culture and Tourism will support a project aimed at bringing the Turkish frigate *Ertuğrul*, which sank off the coast of Japan in 1890 in a severe typhoon, to the surface.

The frigate *Ertuğrul* was sent by Sultan Abdülhamit II to the emperor of Japan on a goodwill visit. The frigate set sail on July 14, 1889, and, after sailing for more than a year, arrived in Japan in June 1890. On the return voyage, the Ottoman frigate sank

on the 16th day on the rocks of Kashinozaki off the coast of Ooshima Island because of a severe typhoon. A total of 533 sailors died in the accident. Only six officers and 63 sailors survived.

An international team of marine archaeologists from Turkey, Spain, Japan and the United States will carry out the underwater excavation as part of the second phase of the project during which the ship will be brought to the surface and exhibited in the museum next to the *Ertuğrul* Monument erected on the coast. ■ SOURCE: TURKISH DAILY NEWS

## Mary Rose 'at risk of being lost'

The Mary Rose Trust, which conserves and displays the famous Tudor warship that has been kept in "cocoon" and sprayed with conserving chemicals since it was raised from the Solent 25 years ago, is running out of funds, admiral John Lippiett, chief executive of the trust has warned. The *Mary Rose* was Henry VIII's flagship and the wreck is considered a national treasure in the UK.

The Mary Rose Trust needs £35m to complete conservation work and to house the vessel in a new, permanent museum, but it can only raise £14m by itself. "If there is no funding, then there will be no *Mary Rose*. It is as stark as that," Lippiett said. ■





Zzzzz zzz zzzzz

## Fish get a good night's sleep even with their eyes open

Most fish do not have eyelids, so how do you know if they are asleep when inactive or merely resting? Researchers working with zebrafish, a popular aquarium species, have now been able to show, not only that the fish do indeed sleep, but that they can suffer from sleep deprivation and insomnia.

By repeatedly disturbing the fish using mild electric shocks, researchers were able to keep the fish awake at night. Those fish that had suffered a disturbed night, were found to catch up on their sleep as soon as the opportunity arose.

Fish monitored by the research team were observed to have a drooping tail fin and stayed at the surface or bottom of the tank when asleep.

The study has given researchers insights into the function of molecules that regulate sleep, and they hope further research into zebrafish, which were selected because they have a similar central nervous system to mammals, will help them to understand sleep disorders in human beings. ■

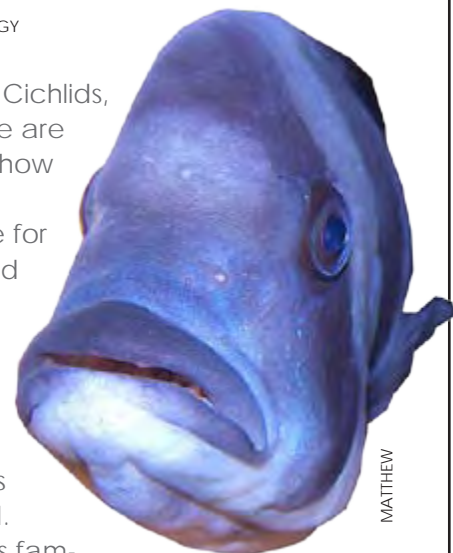
## Cichlid fish resort to oral sex

A species of cichlid fish have been found to exhibit a bizarre mating ritual that involves males discharging their sperm into a female's mouth. The sight of a brightly coloured male somehow triggers females with ripe eggs to start releasing them. But in cichlids, there is an added twist. As soon as a female has spawned her eggs, she collects them up in her mouth. Normally, sperm released into the water by a male nearby will then fertilise the eggs. Females hold their eggs in their mouths and incubate them there after fertilisation—a behaviour that is thought to have evolved to protect the eggs from predators.

Researchers have pinpointed a gene that makes females suck up sperm through their mouths. The gene was found in the cichlid fish, where the males have also evolved a way to lure females close so that they can squirt sperm into their mouths. Oval yellow markings resembling the eggs are found on the anal or pelvic fins. When a female approaches the male, she thinks she sees an egg on its fin, so tries to vacuum it up in her mouth—and get a mouthful of sperm from the canny male in the process. ■

SOURCE: BMC BIOLOGY

All species of Cichlids, of which there are about 2000, show some form of parental care for both eggs and larvae, often extended to free-swimming young until they are several weeks or months old. Species of this family have highly organized breeding activities. Ovophile mouth-brooders, like this female *Cyphotilapia frontosa*, incubate their eggs in their mouths as soon as they are laid



MATTHEW

# Japanese tuna scandal deepens

An official investigation by the Australian government has found that over 20 years, Japanese fishers hid an AUS 8 billion overcatch of the highly prized sashimi fish that migrates around southern Australia.

In what Australian officials called an outrageous fraud, Japanese fishers probably used a series of disguises for the overcatch and international investigations has found. The fishers described southern bluefin tuna as a different species and evaded any inspection on shore, underreported the amount of the fish they caught, and imported it as different tuna either transhipped at sea from foreign vessels or in containers. In a review that the Japanese government has vetoed from public release, investigators found the fraud extended to consumer markets.

While diplomats meeting in Canberra in October heard that Japan's figures still do not add up and that the estimated the total overcatch is probably at 10 percent more, Tokyo keeps stonewalling attempts to regulate fishing of the critically endangered species. Attempts to introduce a catch documentation scheme—a binding international paper trail to track all catches—has made very little progress at the conservation commission. No agreement could be reached on a satellite tracking system for southern bluefin boats or on having independent observers on board. ■

SOURCE: THE AGE AU

## US wants freeze on tuna fishing

The US has called for a ban on the fishing of bluefin tuna in the eastern Atlantic and Mediterranean Sea, the BBC reports.

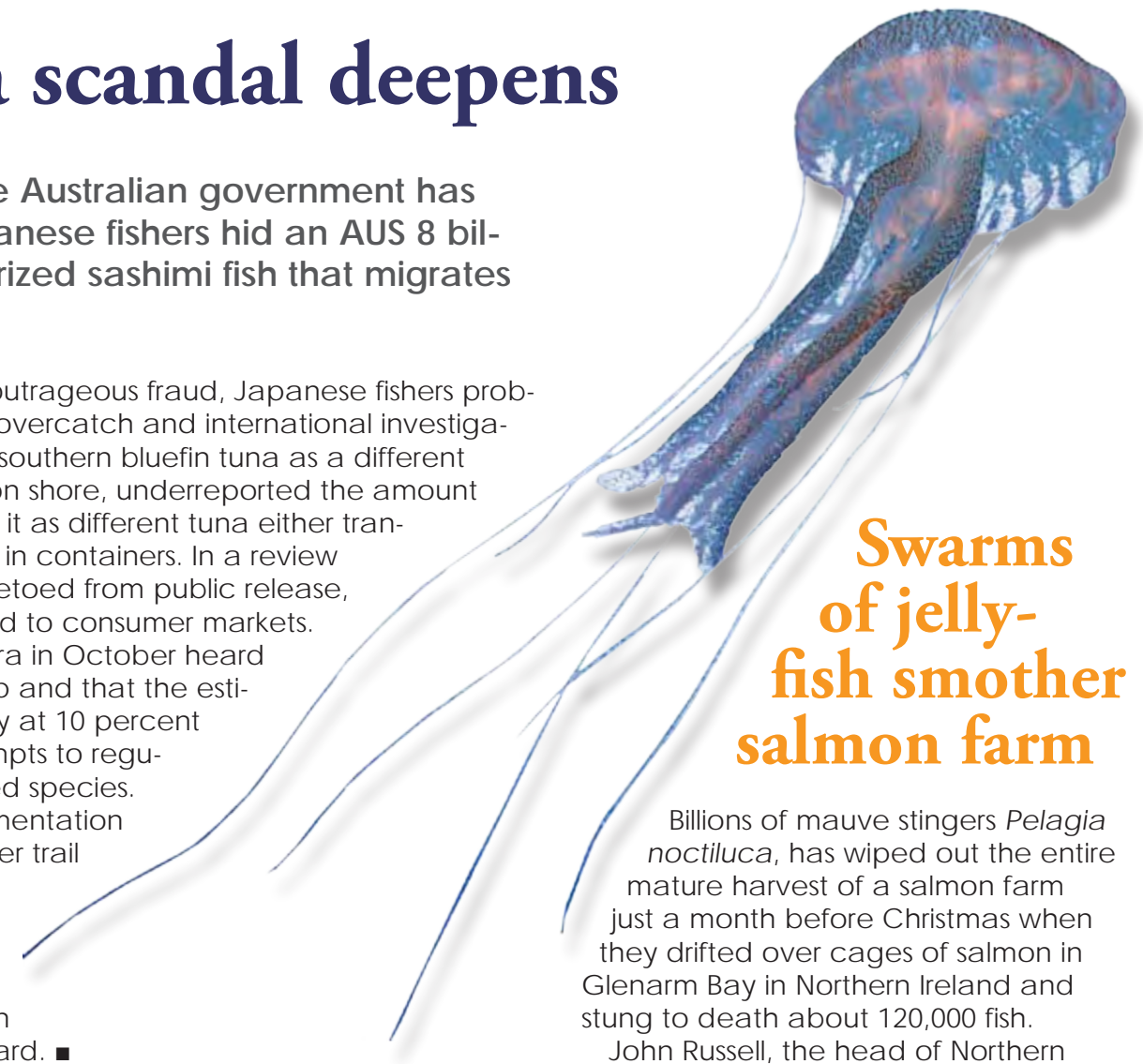
A three- to five-year ban is being proposed to the International Commission for the Conservation of Atlantic Tunas. The call comes amid deep concerns that the stock may collapse if the level of overfishing continues. The European Commission recently closed its bluefin tuna fishery for this year after quota limits had been exceeded. ■

## Tags reveal tuna migration routes

Two separate populations of the fish—East and West Atlantic tuna—share feeding sites in the Atlantic before heading to opposite sides of the ocean to breed, one of the most comprehensive studies of the giant fish has revealed.

The foraging areas included waters off the eastern shores of Canada and the US, and off the coasts of Spain, Portugal and Ireland. But when it is time for these fish to go back to their spawning grounds, they separate out,

The findings form part of the global 10-year Census of Marine Life. ■



## Swarms of jellyfish smother salmon farm

Billions of mauve stingers *Pelagia noctiluca*, has wiped out the entire mature harvest of a salmon farm just a month before Christmas when they drifted over cages of salmon in Glenarm Bay in Northern Ireland and stung to death about 120,000 fish.

John Russell, the head of Northern Salmon, told the Associated Press that he hadn't experienced anything like it in 30 years. "It was unprecedented -- absolutely amazing," he said. "The sea was red with these jellyfish, and there was nothing we could do."

Marine biologists are struggling to explain the repeated occurrence of massive swarms of jellyfish in Northern Ireland.

Until now, experts had thought of the waters off Ireland and Britain as too cold to make a home for these particular jellyfish, which typically bother swimmers in the Mediterranean. The summer of 2007 saw swarms of them off Spain and southern France, and in 2006 they plagued swimmers in Italy. However, the poison doesn't kill humans; it just leaves painful burns on the skin. ■

SOURCES: BBC SPIEGEL ONLINE AP



Edited by  
Scott Bennett



## Peter Hughes Diving Introduces Flex Charters

Flex Charters represent an entirely new approach to group liveaboard reservations. "We spent a lot of time talking to dive retailers and group leaders," said Larry Speaker of Peter Hughes Diving. "We listened to them tell us what they wanted in a liveaboard group program and our new Flex Charter program incorporates what we heard."

Deposits range from \$750 for a half boat reservation to \$1500 for a full boat reservation, an 85 percent reduction in the deposit amount compared to other programs. In addition, easy Interim Payments are designed to optimize the group planner's cash flow.

The maximum payment would only be equal to the individual deposit required to hold each space. Additional spaces can be sold with all of the benefits, allowing groups to earn commission on every space sold while minimizing the risks of incurring penalties for space reductions. Flex Charters are available on all Dancer Fleet vessels with the exception of *Sky Dancer* in the *Galapagos*. ■

## Carbon offset dive trips

**Beautiful Oceans offers first dive vacations and eco-courses that address global warming—a new standard for sustainable eco-tourism**

Beautiful Oceans, a progressive eco-dive tour operator and coral reef education organization, announced it would address the impact of global warming from all its eco-dive vacations by carbon offsetting customer flights and dives.

A first for the dive industry, this revolutionary step is made possible by the "carbon calculator". Adapted for the diving industry by Ocean Frontiers in Grand Cayman, the dive carbon calculator determines carbon emission costs incurred from air travel and diving activities.

Beautiful Oceans then compensates for these emissions on behalf of each guest by funding carbon-offset projects shown to verifiably reduce greenhouse gas emissions in accordance with the Kyoto Protocol. As a result, a more climate-friendly—and consequently ocean-friendly—diving vacation is made possible.

"The idea of offsetting carbon emissions generated during a diving vacation represents a first important step towards the realization of sustainable eco-

tourism," says Ian Popple, Vice President of Science and co-founder of Beautiful Oceans.

"Guests on our eco-dive trips will now know that while they learn about marine biology and conservation with our marine biology instructors they are also helping to curb the effect of global warming and preserve the coral reef ecosystem they have come to explore."

"Carbon emissions generated through the burning of fossil fuels are largely responsible for the increase of greenhouse gases in our atmosphere," says Stephan Becker, CEO and founder of Beautiful Oceans.

"The resulting worldwide temperature increase represents a major threat to all ecosystems in the world, including coral reefs. For an eco-dive tour operator and coral reef education organization like Beautiful Oceans, it is imperative that we ensure that the carbon emissions generated during our dive trips will not contribute to the further loss of coral reefs." ■

## Bikini Atoll Dive Operations Hit Hard By Airline Woes

A series of domestic air service woes have beset Bikini Atoll's scuba diving business, resulting in \$100,000 in losses, nearly 20 percent of the annual total. One of the 29 atolls and five islands that comprise the Marshall Islands, Bikini is a high-profile dive site famous for its fleet of World War II-era American and Japanese naval vessels resting on the lagoon floor. A major attraction is the *USS Saratoga*, believed to be the world's only aircraft carrier in waters shallow enough for diving. The fleet was sunk by the second post-World War II nuclear test conducted at Bikini in 1946.



The national airline has been struggling since early August, when pilot error resulted in an engine being overheated prior to take off, causing one of its two planes to be out of commission for nearly a month. Two weeks later, the airline's only other plane was grounded with an engine problem. A group of

divers comprised of Europeans, Australians and Americans had to be evacuated by the country's marine patrol vessel. Although air service resumed in September, Bikini suffered numerous dive cancellations when news of the stranded divers spread. "We were completely sold out from August to November," Bikini Atoll Dive official Jack Niedenthal told *Pacific Magazine*.

As a majority of the divers pay for their packages well in advance, it was difficult filling the 27 openings quickly, particularly with the news of the ongoing AMI plane service problems, Niedenthal said. Since the August stranding, Bikini has refunded about \$40,000 to divers who flew to the Marshall Islands but could not get to Bikini to dive during August and September because of airline's woes.

In October, further problems

with the airline caused a two-day delay in transporting divers to and from the dive locations, resulting in further losses.



Air Marshall Islands Dash-8

A group of Czechoslovakian and Dutch divers, stranded due to the cancellations, were compensated with a week's free diving. "We want to keep everyone happy," Niedenthal said, "The cancellations and delays really damage our reputation even though it is not our fault." Reservations are now being taken for 2009. ■

## Cayman Brac gets recompression chamber

By early 2008, diving-related illnesses in Cayman Brac will be quicker and easier to treat when the island's first recompression chamber becomes fully operational. "We hope that by the time we've commissioned it and trained the team, that we can take patients there by January 1st," Mr. Elliott said of the Cayman Brac chamber. A two-lock multi-place model, it is a smaller version of the one currently operating at the George Town Hospital on Grand Cayman. Initially brought to Cayman Brac by Cayman Hyperbaric Services in November 2006, it has taken until now for the company to build a facility to house the chamber and prepare it for commission. ■



Decompression chamber  
File photo: U.S. Dept. of Energy



Edited by  
Scott Bennett

## Lebanese beaches 'still very toxic' after oil spill

More than a year after the disastrous Jiyeh oil spill, environmental groups have challenged previous claims of progress in the clean-up effort. According to two environmental non-governmental organizations (NGOs), the Lebanese coastline remains badly polluted and clean-up efforts have not achieved the desired results. These conclusions contrast sharply with previous reports by other NGO's and the United Nations Environmental Program. ■



Lebanese coastline. File photo courtesy of Xtreme Divecenter in Lebanon

## 747 on biofuel

**Air New Zealand plans to mount the first test flight of a commercial airliner partially powered by biofuel.**

The 747 flight is one part of a deal signed by the airline, engine producer Rolls-Royce and aircraft manufacturer Boeing to research "greener" flying. Set for late 2008 or early 2009, one of the plane's four engines will run

on a mixture of kerosene and a biofuel. No details were given regarding the type of biofuel to be used, but the test flight will not carry passengers.

The New Zealand government recently declared the objective of becoming carbon neutral, and climate change and energy minister David Parker said the national airline's initiative would help achieve that goal.

"I'm delighted that Air New Zealand

has taken the lead by signing up for the first commercial trial of a biofuelled aircraft," he said.

While technological advances have made biofuels a viable possibility for use in aviation much sooner than anticipated, the technology is in its infancy, and widespread commercial use probably a decade away. ■



## A380 Superjumbo takes off

On October 25th, hundreds of onlookers watched as the Airbus A380, the world's largest passenger aircraft, finally took off on its first commercial flight. Despite nearly two years of delays due to construction problems, the aircraft, capable of carrying 850 passengers, departed on time from Singapore's Changi airport and landed in Sydney after a seven-hour journey.

With a wingspan almost the size of a football pitch, Sydney

airport spent millions to accommodate the new plane according to BBC News. To cope with the two decks of seating, it had to construct new aero bridges. It also had to realign one of the taxiways and strengthen a tunnel, which runs underneath the main runway.

Singapore Airlines took delivery of the aircraft just over a week earlier. Delivered 18 months behind schedule, the construction of the A380 has been besieged by persistent and costly delays. The super-jumbo's advent ends a reign of nearly four decades of the Boeing 747 as the world's largest airliner. Airbus is battling with long-time rival Boeing for supremacy in the civil aviation manufacturing market.

Boeing recently revealed that production of its new 787 aircraft—known as the Dreamliner—has also been hit by production delays, with the first deliveries now not due until the end of next year, six months behind schedule. ■

## Travelling with Dive Equipment

In these days of increased air security and more stringent rules regarding baggage and carry-on luggage, it's becoming a greater challenge for divers to reach their destinations.

In regards to dive equipment as checked or carry-on baggage, there are a few important points to note. Knives, spear-guns and other objects that can be used as weapons must, obviously, be checked. Any sharp objects packed in checked luggage should be securely wrapped to prevent injury to security screeners.



COPENHAGEN AIRPORT / ARNE V. PETERSEN

Compressed air cylinders are only allowed in carry-on or checked baggage provided that the valve has been removed enabling inspectors to perform a visual inspection to ensure that the cylinder is completely empty, and that there are no prohibited items inside. It no longer suffices to have a tank empty and the valve left open. If the cylinder still has the regulator valve attached, the cylinder will not be permitted through the security checkpoint.

Secondly, airline regulations now stipulate that dive lamps and strobes must travel with their bulbs physically disconnected from their accumulators, which should also be discharged. (See lamp article, in this issue). The issue at hand being the risk of lamps switching on in flight—or short-circuiting—causing them to get hot and possibly start a fire. However, in some cases, camera strobes are sealed units that cannot be taken apart, which can pose a bit of a problem with over-zealous screeners. To this effect, some strobe manufacturers have issued a statement regarding the safety of bringing their units on planes. Print this statement out and bring it. It will save you a headache sooner or later.

A friend of mine simply attaches the printout to the strobe where it pokes right into the face of any security screener about to make an issue of it. Make sure that the unit is discharged, too. If you are concerned about weight limitations, you might consider carrying your u/w housing setup. Where the one piece of carry-on luggage policies are enforced, the carry-on regulations do say that you can also bring a camera. Fold the flash arms across to create a carrying handle. Attach a little piece of bubble wrap with a couple of rubber bands, and you have a soft and comfy grip. ■



PETER SYMES



Edited by  
Willy Volk

## A Great White in the Red Sea

The first underwater monument in the world, against the destruction of the seas and the conservation of the shark population, was installed in Egypt outside Hurghada by the German "Shark Project", an organisation that is mainly fighting against shark finning and longline fishing.

It only took nine months of preparation to fix a nearly four-metre long Great white shark with a mooring on the bottom of Hurghada divesite "Gota Abu Ramada West". The new attraction for divers is fixed five metres above bottom, and it needs a second view to recognize that the shark is pierced on a big knife. On a big acrylic pyramide, divers can read the following text:

Dear Diver,

You are looking at one of the most majestic animals of the world, a great white shark. Experts say, that this species is already ecologically extinct. It is an example for many other species, erased by the human influence on the oceans of the world. The marine ecosystem is going to collapse. Make up your mind! Do we, the human species need the oceans to survive? Take a moment at this point, then return to the surface as an ambassador, as a defender of our oceans.

This memorial site could be established due to the support of Hepca, sharkproject, Lufthansa, Mares, Citizen Eco Drive, Scubapro, Sea&Sea, Seemann and SSI.

The dive spot "Gota Abu Ramada" is one of the most frequented dive sites at Hurghada and mainly used for check dives. Thousands of divers start their diving holidays in Egypt with their first check dive at this spot.

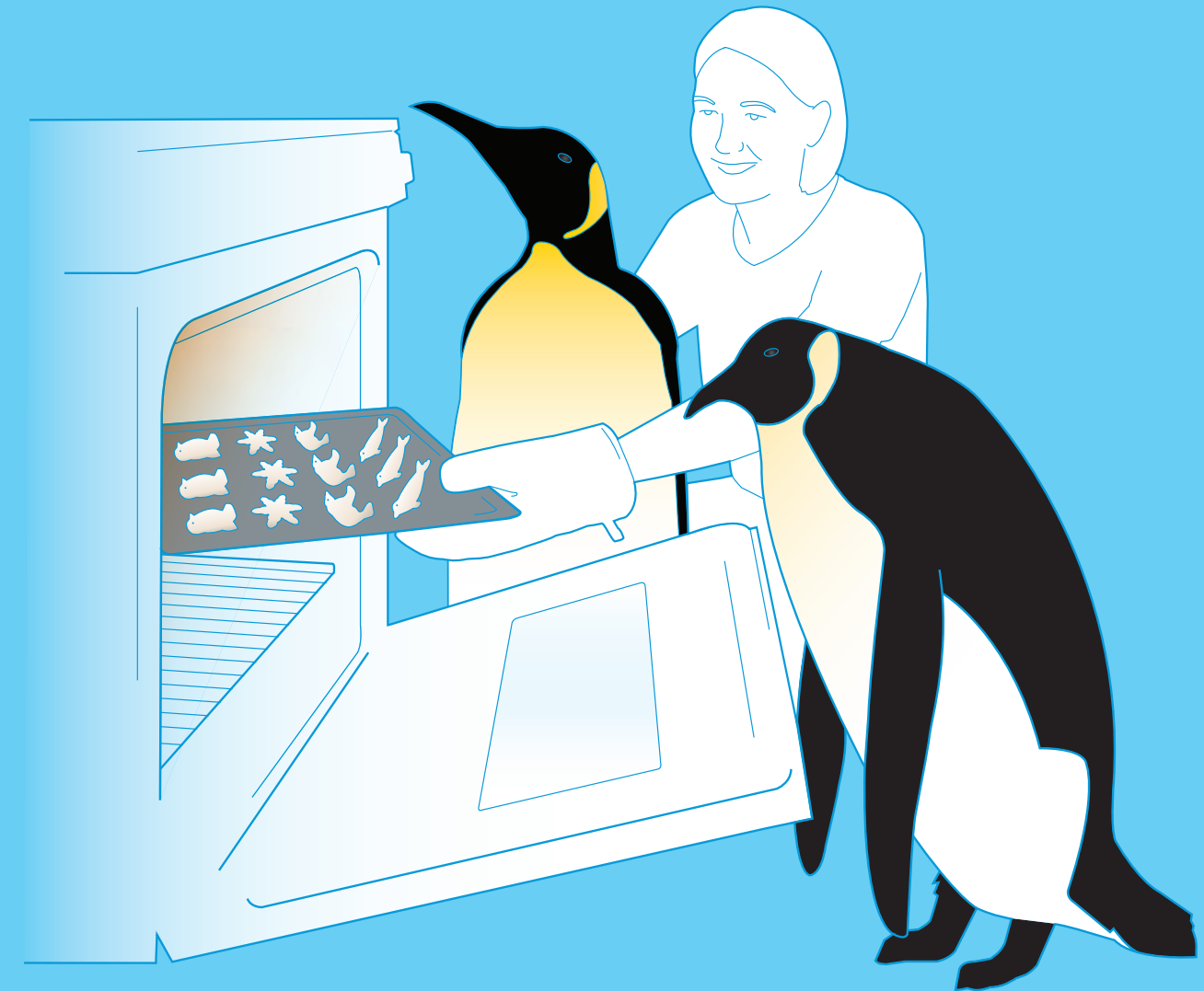
The idea for this underwater monument was born during the Düsseldorf dive show in January this year when Egypt Red Sea governor, Bakr al Rashidi, visited the "sharkproject" booth. "We decided to construct this monument to sensitize the divers to the shark problem. The state of the great white shark population is also a good indicator of the state of our oceans," Gerhard Wegner, president of sharkproject, said.

More information:  
[www.hepca.com](http://www.hepca.com)  
[www.sharkproject.org](http://www.sharkproject.org) ■



THIS HOLIDAY SEASON...  
**ADOPT A CREATURE,  
EARN A COOKIE.**

[oceana.org/adopt](http://oceana.org/adopt)



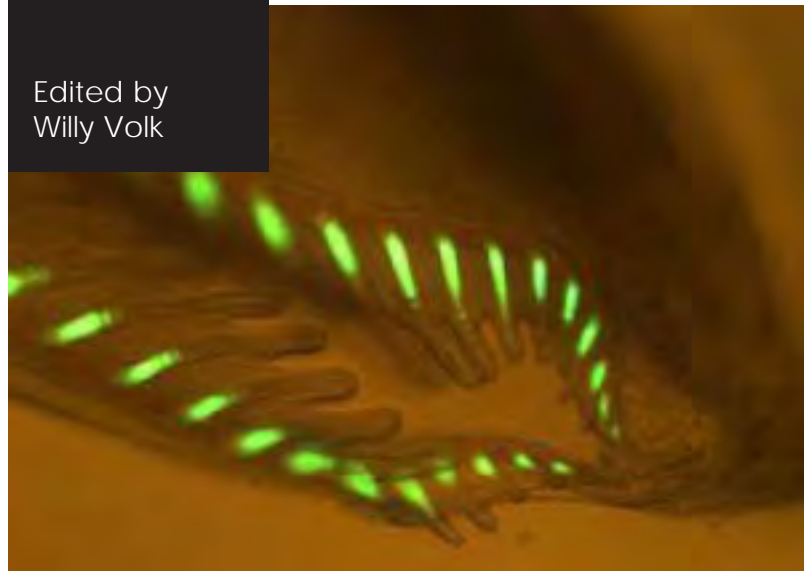
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Edited by  
Willy Volk

SCRIPPS INSTITUTION OF OCEANOGRAPHY AT UC SAN DIEGO



Fluorescence shown along the body structure of amphioxus

## Fluorescence probably commonplace in marine creatures

U.S. marine scientists have determined green fluorescent proteins might be widespread in the animal kingdom.

Until now, fluorescent proteins have been identified mostly in jellyfish and corals, leading to the belief that the capacity for fluorescence in animals is exclusive to such primitive creatures.

However, new research by scientists at the Scripps Institution of Oceanography has discovered fluorescent-light emitting features in the amphioxus—which are a primitive group of chordates—indicating that such a capacity might be much more prevalent in nature than previously believed.

The amphioxus also known as Lancelets grow up to about five centimetres long, reaching eight centimetres at the longest. In common with the vertebrates, lancelets have a nerve cord running along the back, pharyngeal slits and a tail that runs past the anus.

Dimitri Deheyn and his Scripps colleagues said their discovery emphasizes the idea that evolutionary preservation of fluorescence must play an important ecological function. Deheyn said many animals have not been tested for fluorescence, and its prevalence in the animal kingdom remains undetermined.

The research appears in the October issue of the journal *Biological Bulletin*. ■

## Clam found to be over 400 years old

An ocean quahog clam dredged off the Icelandic coast has been found to be 405 to 410 years old, BBC reports. This makes the otherwise unassuming *Arctica islandica* clam the longest lived animal species on record, though some corals are probably much older.

The clam was nicknamed “Ming” after the Chinese dynasty that ruled when the clam settled. Researchers from Bangor University in North Wales determined the age by drilling through and counting rings on its shell (a technique known as sclero-chronology). The researchers are uncertain how long the clam may have lived on had it been left to mind its own business on the ocean floor. ■



An Atlantic clam has lived since the reign on Queen Elizabeth I

JAN JOHAN TER POORTEN

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Martyn Heyn Photograph

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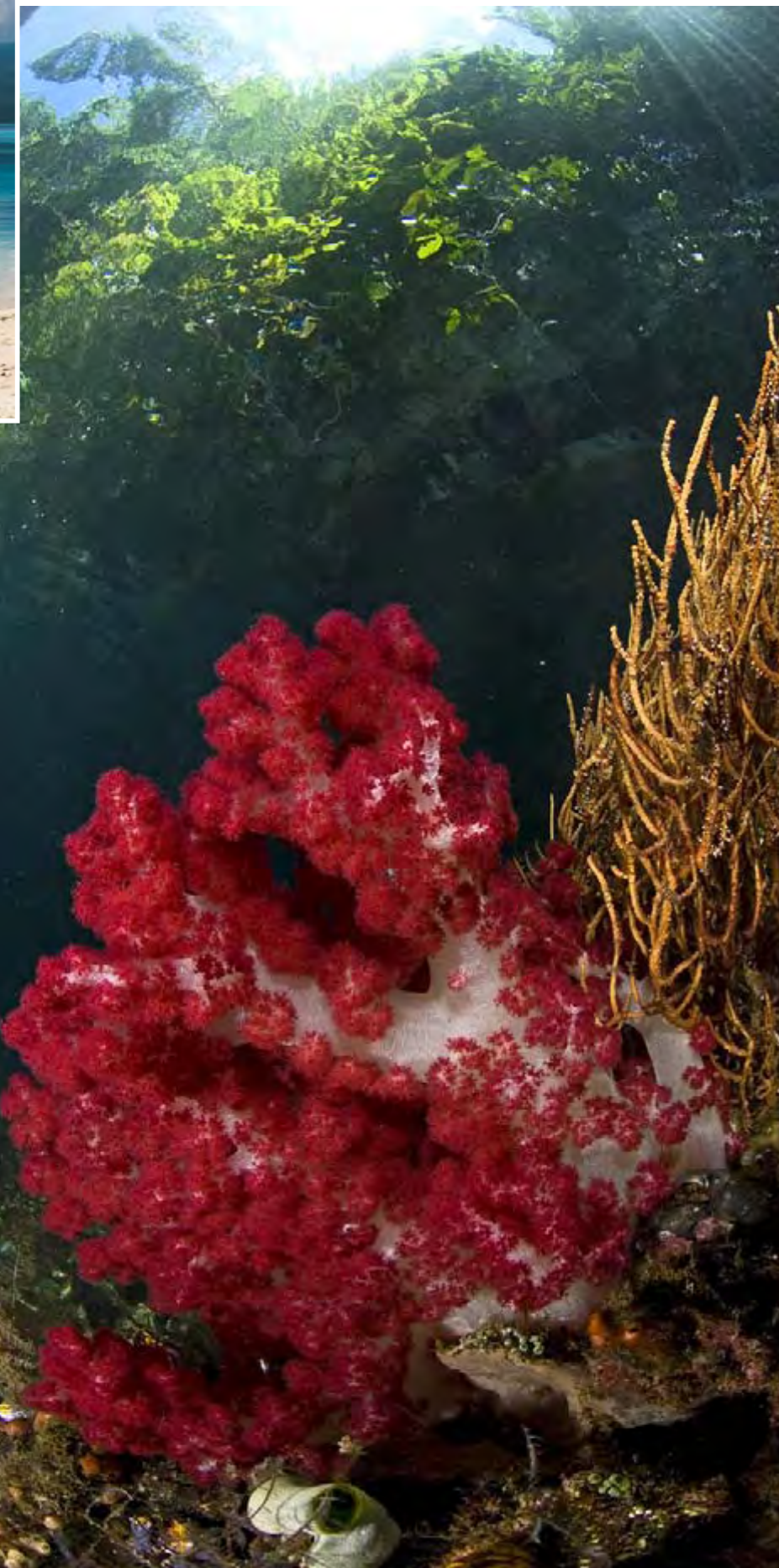
An aerial, wide-angle photograph of Raja Ampat, Indonesia. The image shows a vast expanse of turquoise and deep blue water, with a diver in a black bikini and fins swimming in the foreground. The water is clear, revealing a sandy bottom and some green vegetation. In the distance, several small, green islands are scattered across the horizon under a bright blue sky with scattered white clouds. The overall scene is serene and beautiful, showcasing the natural beauty of the region.

# Raja Ampat

*Reloaded*

Text by Andrea Ferrari  
Photos by Andrea & Antonella Ferrari





CLOCKWISE FROM ABOVE: The spectacular limestone cliffs of Raja Ampat; Antonella on Wai Island's beach; Huge soft corals at The Passage; Wild Sulphur-crested cockatoo. PREVIOUS PAGE: Antonella snorkelling on Sorido Bay's home reef—not a soul in sight for miles!

Lying on my back, floating on the surface in a lazy, ever so slow current, I feel the warmth of the tropical sun on my face, the bright sunlight tinged with an orange glow on my closed eyelids. I flick them open at the startlingly raucous, loud cackle of a passing *Eclectus* parrot, just in time to glimpse a ludicrously bright flash of red and blue fly overhead, a splash of colors against the deep blue skies and the towering, silent clouds soaring far away.

The water is warm and jade green, a few yellow floating dead leaves tickle my feet, and here and there I catch the glint of a reef fish below me. I propel myself lazily with a squid-like push of my hands towards the middle of the lagoon, still lying on my back. The only audible sound is the high-pitched buzz of an occasional mosquito and the faint splash of an archer-fish squirting a jet of water towards a small bug on a branch overhanging the still surface.

Around and above me, I can see vertical limestone cliffs rising vertically towards the sky, eroded in abstract shapes by thousands of years of tropical rainfall, draped in mottled white roots, twisted clinging vines, precariously balanced dry lowland forest trees. Huge ferns and clumps of orchids

hang everywhere, with big swallow-tail butterflies slowly flapping in the warm humid air here and there. Sitting under the stretched canvas roof in the boat a few meters away, Antonella smiles dreamily, points her camera at me and clicks away blissfully. I close my eyes again, absorbing the sun's warmth, submerging my ears just enough to listen to the distant clicks and snaps of the coral reef extending a few feet below me. Yes, this is heaven for me. Welcome to the Passage. Welcome to Raja Ampat.





CLOCKWISE FROM TOP: Blue-water mangroves; Incredible underwater landscape at Mike's Point; Gorgonians and sea fans at Crossover; Big Tasselled wobbegong or carpet shark at Sardines; Tiny, colorful Denise pygmy seahorse at Mike's Point



### The Passage

The Passage is a five-meter deep, river-like sea fjord snaking inside the forest; the tree canopies often close in above it; strange purple sponges and gigantic orange sea fans almost reach the surface; the sea and the sky above mirror each other, mixing, inextricably blending into each other. It is an almost mystical place, rich in silent grottoes and underwater passages, submerged tunnels leading to still seawater pools hidden inside the forest and sun rays slanting down in the green darkness like light shining through a cathedral's multicolored windows. The Passage is unique, and yet only one of the many wonderful dive sites found in Raja Ampat. Many, many others dot the area, close and not so close to peaceful Kri Island.

Other sites include Mike's Point, possibly the most beautiful of them all and certainly one of the most scenic dive spots on Earth, is a living multi-layered tapestry of pink and orange gorgonians; Sardines, an underwater promontory jutting out in the open sea where all the action is—raging currents, gigantic schools of fish, lurking wobbegongs waiting among the luscious corals; Cape Kri, marine life Grand Central, is rated as the dive site with the most fish species in the whole world, rivalling in



sheer technicolored spectacle Sipadan's drop-off and Palau's Blue Corner; Myos Kon, an underwater wonderland of stealthy Carpet sharks, pygmy seahorses and schooling yellow-lined snappers; Chicken Reef, a thick coral slope of a





Raja Ampat



CLOCKWISE FROM TOP: Antonella swimming with batfish at Mike's Point; Striped triplefin; Schooling snappers at Myos Kon; Common lionfish displaying at Melissa's Garden

thousand untouched shapes and sizes, crowded with enormous schools of fish; Manta Point, a cleaning station in the middle of Dampier Strait where one can dive—if lucky—with up to twenty gigantic mantas, each up to three meters wide (we had four, three of which were completely black—and it was simply amazing); Melissa's Garden by the remote island of Fam, a submerged psychedelic panorama of mushroom-shaped limestone islets draped in red gorgonians and bright purple soft corals.

And fish—small fish, large fish—everywhere. Schools of fish, fish in the hundreds, in the thousands—jacks, surgeonfish, batfish, snappers, basslets, barracudas, emperors, giant bumphead parrotfish,

spanish mackerels, rainbow runners—they're all here. And even sharks, despite the widespread local fishing pressure, put in an appearance—large, bottom-dwelling, exquisitely camouflaged wobbegong carpet sharks are everywhere, and so are the well-known "walking" *Hemiscyllium* coral catsharks, and huge, inquisitive, swiftly swimming black-tips, *Carcharhinus melanopterus*, even the grey reefs, *Carcharhinus amblyrhynchos*, which had been conspicuously absent two years ago from these waters, now make their presence felt, often closely and threateningly buzzing divers on the reef top.

In a world where truly wild shark sightings are going down to zero in many loca-





tions in a matter of weeks, it is incredibly rewarding being able to report that here shark sightings are actually increasing. Might this mean the actual numbers of these beautiful, endangered predators are rising also in Raja Ampat? True, the practice of shark fishing goes on unabated in the general area, but it is a fact that, at least in the proximity of Kri, blacktip and grey reef sharks (wobbegongs have never been an issue) seem to have found a sanctuary.

The coral landscape does not show any signs of diver damage yet, and coral bleaching is almost unheard of in these waters. Indeed, on this, our second visit to these distant shores (see [www.reefwonders.net](http://www.reefwonders.net) for a trip report

on the previous one), the spectacular diving and technicolored marine life of Raja Ampat seem to us even more extraordinary than in the past. Oh, and of course we have to add that most of this occurs at shallow depth—most diving takes place in the 5-20 meters range—with the majority of dive sites less than ten minutes away from Sorido's or Kri's wooden piers.

It's quite obvious—good news for the environment, for once—that the presence of Max Ammer's tourist operations—traditional, long-standing Kri Eco Resort and the more luxurious and recently completed Sorido Bay Resort—is actually making a difference regarding conservation.

Local fishing communities seem to be accepting Max's strict views on conservation, and the regular income his business is providing to many Papuans working there is clearly convincing them that protecting nature might actually be a good investment for the future of their children.

In fact, the whole of Raja Ampat is apparently being taken very seriously by conservationists worldwide and even by the Indonesian government (to which West Papua is subject). Max recently wrote us

THIS PAGE: Diving with the black Mantas of the Dampier Strait with the towering jungle-clad limestone cliffs of Raja Ampat above—pure heaven and a unique experience!

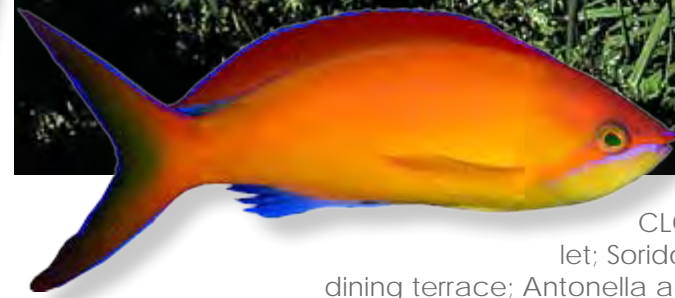


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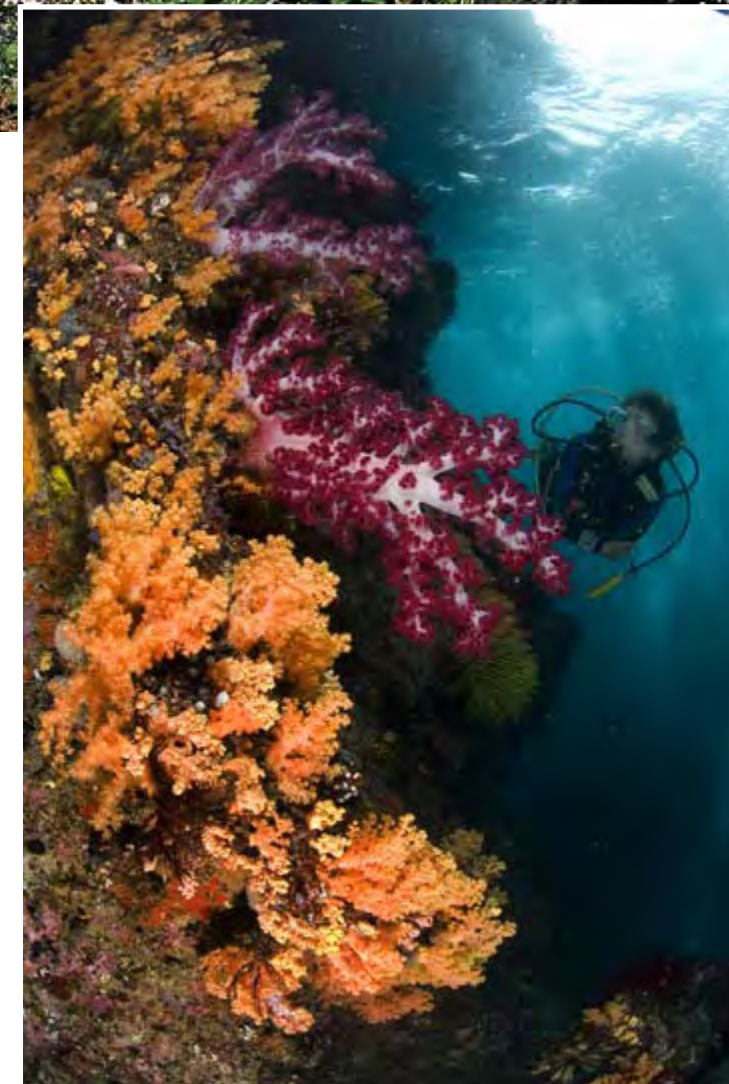


CLOCKWISE FROM LEFT INSET: Flame bass-let; Sorido Bay Resort's jetty seen from the open dining terrace; Antonella admiring huge soft corals at Gam Island

and said: "The Raja Ampat Regency Government in West Papua, Indonesia, has announced the launch of an annual tag system for visitors to their newly declared network of seven Marine Protected Areas (MPAs). The annual plastic tag, modified from the successful Bunaken Marine Park tag, will be valid for 13 months from the first of each calendar year and will cost Rp500,000 (US\$55) for international visitors and Rp250,000 (US\$22) for Indonesian citizens. Seventy percent of the funds will be managed by a multi-stakeholder team for conservation and community development programs. Thirty percent of the funds will go to the Tourism Department for tourism development. The local government engaged the assistance of three major International NGOs—Conservation International, The Nature Conservancy

and WWF—to help define the most valuable areas of Raja Ampat for protection. Currently, they are helping to develop management plans with the local communities and enforcement agencies appropriate for each area. The Coral Reef Alliance assisted with the development and socialization of the tag system with the diving community. Raja Ampat has been found to have the highest biodiversity of fish and corals within the Coral Triangle. All visitors to Raja Ampat will need to pay this fee. We will collect payment at our two resorts (Sorido Bay & Kri Eco) on behalf of Conservation International and the local government."

That's great news for the marine environment—let's just hope the funds will be properly utilized and not dispersed by the local government as it often happens in these cases.







Raja Ampat



**Raja Ampat is in the news**

It's a hot destination, the place you cannot miss visiting. For those who do not know yet, Raja Ampat is a large area at the tip of Vogelkop (or Bird's Head) peninsula at the western tip of the island of Papua New Guinea, which is itself equally split in the middle in two separate nations: independent Papua New Guinea proper in the East, and West Papua, a province of Indonesia once known as Irian Jaya, in the West.

Raja Ampat itself comprises about 600 limestone islands and islets, the great majority of which are completely unpopulated and shrouded in virgin lowland forest, often with impenetrable, thick, blue-water mangrove belts surrounding them. Dugongs are often sighted in these habitats—occasionally in groupings—and I strongly suspect the presence of saltwater crocodiles even if their presence is denied by the local Papuans. The karst nature of the rock—covered by an incredibly

thin layer of fertile soil originated by decaying organic matter—is responsible for the very dry nature of the place, with abundant seasonal rainfall disappearing almost immediately in the crevices of the rocky substrate. Fresh water is a premium, and at the same time its scarcity is a blessing in disguise—as it makes development of most islands impossible.

Max Ammer's Kri Eco Resort and Sorido Bay Resort on Kri island ([www.papua-diving.com](http://www.papua-diving.com)) currently are the only land-based operations, while Andy Miners is busy working on the newly announced Misool Eco Resort ([www.misoolcoresort.com](http://www.misoolcoresort.com), still unfinished and a long way further southeast on Batbitim Island). A few traditional-style liveaboards also show up regularly in the area—but to all extents, this is a real frontier (the last one?) where daily ordinary maintenance is still very challenging, costs of living are still very high (everything has to be brought in by boat, from screwdrivers to fuel and



CLOCKWISE FROM TOP: Amazing panorama of the Raja Ampat islands in the Dampier Strait; Local boy fishing from his dug-out canoe; Our Dutch friend Rinie Luykx shooting a Manta; Dawn at Sorido Bay; Close up of a beautiful Ribbon sweetlips





CLOCKWISE FROM LEFT:  
Enormous schools of silversides and scads at Arborek Island in the Dampier Strait; Amazing underwater landscape at Sardines; Close-up of a Mushroom coral

from lightbulbs to boat engines) and where professional underwater photographers and marine life scientists from all over the world are busy congregating.

Drop in at beautiful, well-appointed (and quite expensive, bear that in mind) Sorido Bay Resort, and you might bump into people like David Doubilet, Gerry Allen, Stephen Wong

and Takako Uno or the Tacketts anytime—why, you might even meet the Ferraris there!

Seriously, as a dive travel destination goes, Raja Ampat has few equals in the world—spectacular marine life (all sorts of stuff including carpet sharks, mantas, dolphins, rare flasher wrasses and four different species of pygmy seahorses—bargibanti, denise and two undescribed

ones, possibly pontohi and colemani), incredibly scenic topside views, unique land wildlife (Sulphur-crested cockatoos, *Eclectus* parrots, Cassowaries, Cuscus—a cuddly, small, tree-dwelling marsupial—and two Birds of Paradise!), colorful, spirited and very friendly local people, and finally a good all-year round tropical climate.

Occasionally, currents can be extremely strong (veteran dive guides Otto and Nikson know that in advance, however, and act accordingly) and visibility less than optimal, but these are—however bothersome to the underwater photographer—guarantees of a healthy, vital environment. No wonder all who can afford it are flocking there (well, flocking might be too big a word—Raja Ampat currently gets less than 500 visitors a year), even if it's a long, tortuous and occasionally unpredictable route; from Manado (Northern Sulawesi) on, you are advised to expect sudden flight cancellations and the like by the day. But it's all part of the game. After all, Raja Ampat would not be the same without the unexpected, would it?







CLOCKWISE FROM LEFT: The uniquely beautiful Raja Ampat landscape; Antonella at Wai Island; Sorido Bay's unspoilt beach; Local Papuan kids on their dug-out canoe

ring free jet-lag massages!

While camera and video facilities in Kri Eco Resort are rather basic, Sorido Bay Resort is exceptionally well-g geared towards professional photographers and videographers, offering communal freshwater rinsing tubs on the jetty, Apple computer stations in a dedicated air-conditioned camera room by the library and recharging power banks in every bungalow. Bali-built fiberglass dive boats are very comfortable, sturdy and fast, being equipped with oxygen and a very welcome canvas roof. Nitrox is available in both Sorido and Kri. Electricity is 220 V, being available 24 hours a day.

Cerebral malaria is present in the area—especially if you go for land excursions in the forest—so always remember to obtain

two activities which can often become as obsessively absorbing as diving itself. Spectacular bird species encountered in the area include the common Sulphur-crested Cockatoo, the large flightless Cassowary, huge Sea Eagles, shockingly colorful *Eclectus* parrots and naturally the incredible Wilson's and Red Bird of Paradise, *Paradisea rubra*, endemic to Waigeo and Batanta and reliably sighted if trekking with the local guides to a few protected sites in the forest (but be warned—you'll have to wake up at 4:00 am on Saturday morning!).

If wrecks are your cup of tea instead, you'll go nuts over the incredibly well-preserved P-47 D Thunderbolt "Razorback" lying on its back in 20 meters of water off the Wai island reef. This US Army Air Force single-engine fighter-bomber was one of seven ("Tubby Flight" of 311th Fighter Squadron) which took off from Noemfoor Island on a bombing and strafing mission to Ambon Harbor and subsequently ditched in the area on 21 October 1944 after having run out of fuel. The plane is in perfect shape with only a nicked propeller blade and all dashboard instruments and wing armament intact—a moving and

recently updated, reliable medical information and do not underestimate the very real danger posed by



this deadly mosquito-borne illness; when we go there, we take our Malarone pills regularly and never have a problem. Be advised that given the owner's religious beliefs—Max Ammer is a Seventh Day Adventist—Saturdays are strictly observed holiday days with no guided diving until 7.00 pm.

**IT'S A BIRD, IT'S A PLANE!** Raja Ampat offers exceptional opportunities for bird watching and WWII wreck hunting,



**Travel information**

Raja Ampat (meaning "The Four Kings") refers to four large jungle-clad islands (Batanta, Waigeo, Misool and Salawati) which are part of a 600 islands and islets archipelago west of the coast of the Vogelskop or Bird's Head Peninsula in West Papua, formerly known as Irian Jaya (this is the half of the island of Papua New Guinea politically belonging to Indonesia today). Culturally and historically rather similar to the Maluku (or Moluccas), the islands of Raja Ampat were ruled in the 15th century by the Sultanate of Tidore, originating from Halmahera in the Maluku, and offer today unsurpassed topside scenic beauty, crystal-clear water and an unbelievable richness of marine life. The region can be easily reached with a short turboprop or jet flight by local airlines from Manado in Northern Sulawesi to Sorong, the harbour town from which

transfer boats leave to Kri Eco Resort and Sorido Bay Resort.

English is spoken almost everywhere at travel junctions and at the resorts. All necessary documents, flight reconfirmations and travel permits are obtained for visiting divers by the local staff of Papua Diving ([www.papua-diving.com](http://www.papua-diving.com)) in Sorong and handed to you in Manado—remember, however, flight delays and cancellations are always possible due to a variety of reasons, so be prepared for the occasional hassle. When in Manado, stay overnight at Tasik Ria ([www.eco-divers.com](http://www.eco-divers.com)). Besides their beautiful swimming pool, they've now got a lovely new spa offer-





FAR LEFT: Tremendous fish action and huge gorgonians at Sardines  
LEFT: Sweetlips in the current at Chicken Reef

fascinating testimony to the young pilots, both American and Japanese, who bravely flew, fought and often died above the sea of this area during the Second World War.

Literally hundreds of other occasionally well-preserved wrecks—boats, tanks, airplanes—can be seen in the region, but most require special trips. Max, however, is a wreck aficionado (WWII relics are in fact his main reason for relocating to Raja Ampat from his native Holland almost 20 years ago) and will be happy to show you his collection of incredible photographs and artifacts—including rusty but still live bullets, airplane maintenance hatches, bomb aiming devices and even a couple of hefty Browning machine guns!

## Raja Ampat

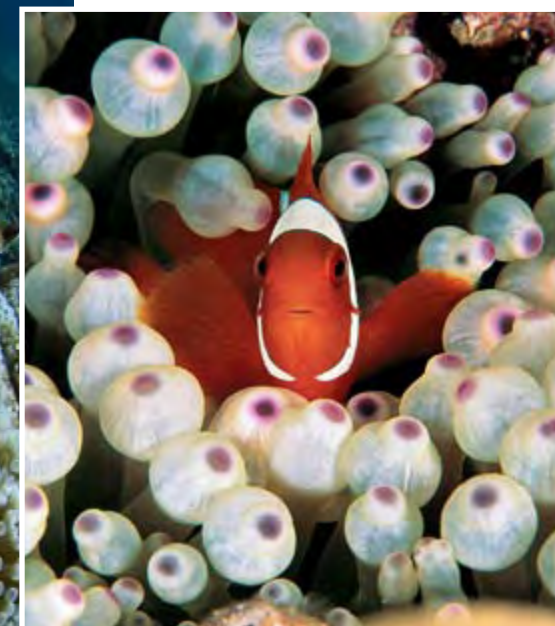
### Getting there:

Sorong in West Papua can be accessed via Jakarta, Manado and Makassar. Merpati operates daily flights from Jakarta to Sorong via Ujung Pandang and Manado. Lion Air flies from Manado, and Express Air from Makassar. SilkAir operates regular flights from Singapore to Manado. Many major airlines fly to Jakarta. Make arrangements with your dive operator to be met in Sorong.

### Dive Season

Tropical climate and diving is possible throughout the year. In general, wet season is from April to September, with the dry season being from October to March. Water temperatures are generally warm (28/ 29°C), so a 3 mm suit or equivalent should be sufficient.

For more information, please visit *Andrea & Antonella Ferrari* at [www.reefwonders.net](http://www.reefwonders.net) ■



Clownfish galore at Mike's Point



# fact file



## Raja Ampat, Indonesia



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

**History** Humans first settled New Guinea at least 50,000 years ago when it was connected to Australia by a land bridge. A British attempt at colonization in 1793 colony was evacuated within two years. The Dutch were next, proclaiming in 1828 that the natives of the western half of New Guinea were to be subjects of the King of the Netherlands. They opened Fort du Bus to protect their lucrative trade with the spice islands from other European powers, but abandoned the area after only ten years. No continuous settlement was established in West Papua until 1897, and no substantial development was undertaken within the country until the 1950s. In 1949, the Dutch ceded sovereignty of Dutch East Indies to the Indonesian Republic, but excluded Dutch New Guinea (West Papua). A long and tortuous history followed. The controversial West Papuan version can be examined at [www.newint.org/issue344/history.htm](http://www.newint.org/issue344/history.htm). Government: Republic of Indonesia, Papua is one of 27 provinces with its capital in Jayapura. As of late 2004, Raja Ampat has a separate district government.

**Geography** Located in Southeast Asia, Raja Ampat is the most western district of the Indonesian province of Papua. Raja Ampat consists of an area

surrounding four major islands off the western coast of the Bird's Head Peninsula of New Guinea Island, the western half of which is Indonesia and the eastern half, Papua New Guinea. The province was formerly called "Irian Jaya".

**Climate** Tropical, hot and humid. The water temperature is normally 84-86F / 28-29C year round, with an occasional "chilly" 82F / 27C spot. Divers have no problem with cold when diving 4 -7 long dives per day in 1mm neoprene suits, however some people prefer 3mm.

**Environment** Logging. The rainforests within the combined West Papua/Papua New Guinea land mass are second in size only to those of the Amazon, making it 'the lungs of Asia'. In 2001, there were 57 forest concession-holders in operation around the country and untold other forest ventures operating illegally. Mining. Tailings from copper, nickel, and gold mining are real threats.

**Currency** The currency is the Indonesian rupiah. ATM machines generally offer the best exchange rates, dispense rupiah and are readily available in most major cities or where there are many foreign visitors. Large denominations (\$100 bills) of cash in US dollars are fairly easy to exchange,

however all bills must be issued after 1999 and certain series of bills are almost impossible to exchange. Travelers' cheques are becoming quite difficult to use except at banks.

Visa cards, and cash in major currencies are widely accepted at banks, money changers and hotels in major cities and tourist destinations. When visiting Raja Ampat it is unlikely you will have an opportunity to use an ATM or exchange money. Check with the dive operator for forms of currency they accept, or bring cash in rupiah for tips and purchases. Tipping, generally not practiced but appreciated.

**Population** All of Papua Province's total population: 2.1 million (2.5 million). Indigenous: 1.3 million (1.5 million). Migrants and transmigrants born in other parts of Indonesia: 350,000 (850,000).

**Language** Bahasa Indonesian, in addition to 253 tribal languages. West Papua and its neighbour, Papua New Guinea, contain 15% of all known languages. English, Spanish, German are spoken on some liveaboards. Bahasa

RIGHT: Detail map of Raja Ampat

BELOW: Global map with location of Raja Ampat highlighted



Indonesian and English are generally spoken at hotels and airports along the route and in Sorong.

**Security** Although they are in an active Independence movement in Papua, tourists have not been impacted.

**Electricity** Standard electricity is 220V, 50Hz. A few hotels and liveaboards have transformers to provide 110V. Bring smart chargers for rechargeable batteries. The plugs have two prong round plugs.

**Health & Vaccinations** Nearest decompression chamber: Manado. Malaria is common in the area. Check with WHO or your dive operator for prophylactics recommendations. Larium is not effective in Papua. Take into consideration that malaria prophylactics may have significant side effects. Be prepared with insect repellents containing DEET. International Certificate of Vaccination required for Yellow Fever if arriving from infected area within five days.

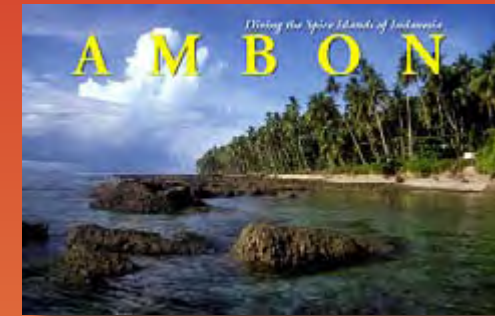
**Visas & Permits** Passports must be valid for at least six months. A 30-day visa-on-arrival facility is available to nationals of the USA, UK, most European countries and many Asian countries. Check before leaving. The fee is currently US\$25 for visitors from most countries. Check with the Indonesian Embassy or Consulate nearest to you for a longer visa. All passports must be valid for a minimum period of six months beyond your intended stay. To enter Papua, you need a *surat jalan* which is issued by the local police. This can be arranged by your dive operator. You'll need three passport-sized photos, three copies of the details page of your passport, and three copies of the page with the Indonesian visa or entry stamp. Check current requirements with your operator prior departure.

**Communication** GSM coverage and international roaming is available in Sorong, as is Internet connectivity, but not on the Raja Ampat islands. Some liveaboard operators have satellite phones onboard.

**Time Zone** GMT + 9 hours ■



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White nights  
at the  
**White Sea**

Text by  
Gunild & Peter Symes  
Photos by Peter Symes  
& Andrey Bizyukin, PhD





THIS PAGE (LEFT SIDE): Scenes from St. Petersburg, a bustling cultural city of history, art and romantic canals



Russia. I am here. I am gripped by a sense of disbelief. As the tundra flies past the train window recollections of grainy tv-images from my childhood keep popping up. The marching soldiers and missile batteries being paraded across the red square before the pouty looking Leonid Breshnev and the politbureau looking on from the top of Lenin's mausoleum. That was scary days. The Iron curtain was impenetrable and Russia was a place only for spies and covert business men and diplomats. That is what it felt like anyway. So here I am, sipping tea in a old, but very comfortable sleeper wagon heading up north from Sct. Petersburg towards the artic circle and some spectacular diving during the long days.



THIS PAGE (RIGHT SIDE): Scenes from the journey to the White Sea from St Petersburg



The train is very comfortable and provides a rare low-stress environment where you can do nothing than chill out, perhaps stretch across your generously wide berth and read a novel while the red-star adorned locomotive pulls you steadily northbound across the endless expanses of wilderness.

**Going north**

After a couple of days of much commendable sight-seeing in Sct. Petersburg – one of the most beautiful cities in the world, and home to an incredible collection of art – we had ample time to check out of our hotel and leisurely catch our train around noon. It is a 26 hr ride north and with an arrival time at the tiny whistle stop of Chupa, a small dispersed urbanisation some 40kms south of the artic circle you need not worry about oversleeping either. Meals onboard are sturdy but that is part of the real experience.

In hindsight the train ride was just as memorable and a highlight like St. Petersburg and the diving

that awaited us ahead.

Getting off the train, we were struck by the fresh crispness of the air that characterises the high north – you just had to inhale deeply - and as the train leaves and you listed to it disappearing in the distance it gets really quiet. The kind of quietness that just transplants itself into your mind. Soon, some non-descript ex-military four wheel drive vehicle that looked like a hybrid between an Asian mini-bus and a ww2 amphibious landing craft screeched up on the scene. Our ride to the dive resort had arrived.



PREVIOUS PAGE: White nights reveal harmonies of purple and blue hues on the bay in Chupa

Our ride to the dive resort







## White Sea

### A Spanish galleon?

40kms out of dirt roads later we got a "Close encounter of the Third Degree" experience as something that looked like a yellow Spanish Galleon appeared behind the spruces in the wilderness. But that, Ladies and Gentlemen, should soon turn out to be the artistic superstructure of the dive center and our abode for the next week. To this day I have never been able to make up my mind whether this construction was silly, childish, funny, remarkable, daring or plainly just an eyesore. But it was surprisingly functional and roomy inside. Very nice rooms, good dining facilities and great view from the upper deck, lots of storage and changing room downstairs, effective drying facilities and, off course, the indispensable sauna.

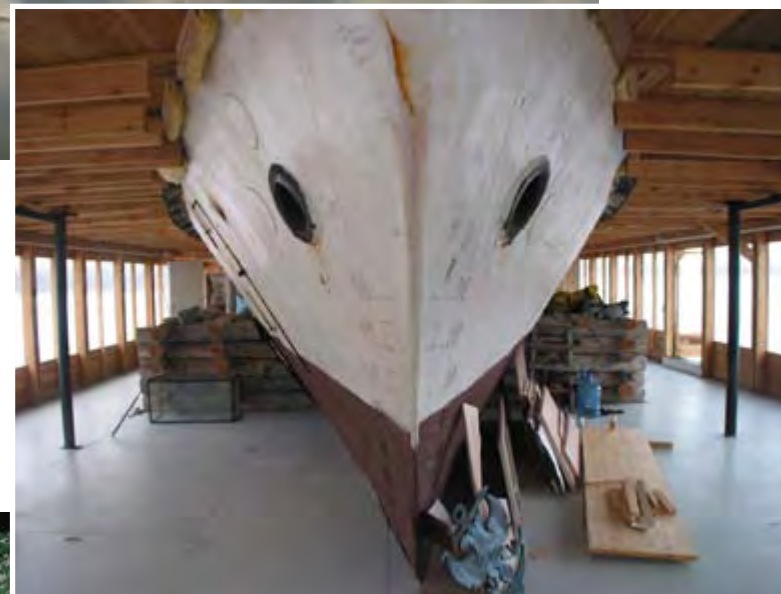


going on under the leaves of the kelp. There was a little headland in front of the divecenter with a drop-off permitting some deeper diving. The water was flat and still and the sky was just magnificent – at these high latitudes it is just soft and have a lot of tones. As we were sitting for a while in the surface before submerging it was so tranquil that we could hear each other breathing. The water is clear and cool. At first I can't see a thing as I marvelled a bit too long at



THIS PAGE: Built in the hull of a ship, Nereis dive center and hotel has comfortable, clean rooms with traditional decor and delicious local cuisine, ventilated drying cabinets for dive gear and a sauna

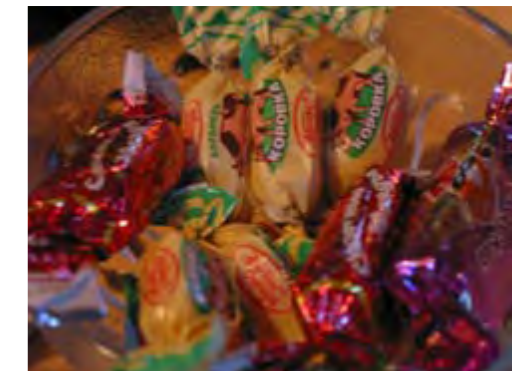
BELOW: NASA worldwind satellite image of location. Click on image to open in Google Maps



### Diving

The thing we came to do. The dive centre sits right by a little

shallow bay or inlet, which constitutes a sort of ..uhm... housereef. Only is there no corals here, at least not in the shallows, but a lush vegetation of kelp in which numerous species of nudibranchs crawl about. I could spend hours – until I was called out of the water as dinner was to be served – just watching the critter spectacle





# White Sea



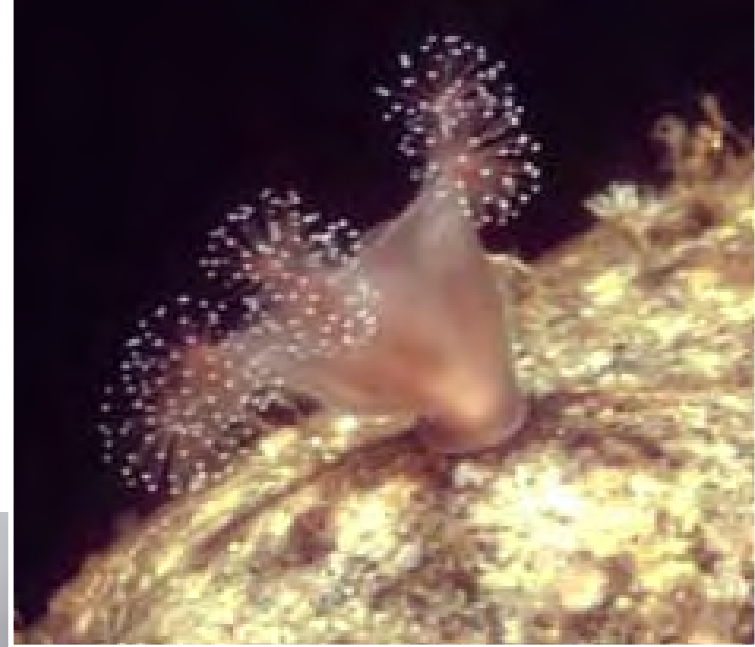
magnificent installations, being careful not to kick up too much sediment. Not only are we trying not to destroy the visibility but the kicking up particles are

not good for the coral either. They are filter feeders and catch their food by sifting through the water. Would you like to get a handful of gravel thrown in your plate of ravioli with parmesan? I guess not, so be considerate around soft corals.

Things are kept straightforward and basic up here. Meals are not five star gourmet cuisine but they are good, solid and genuine. And there is plenty of it and more where it came from. The samovar is constantly brewing tea and with a piece of candy or cookies you soon make yourself very comfortable after a meal either with a good book or more likely with a conversation into the long bright evenings. You are so blissfully disconnected up here. No TeeVee, no emails, no cell phone connection, no nada. Just you and the grand wilderness outside. I asked Yurij, the

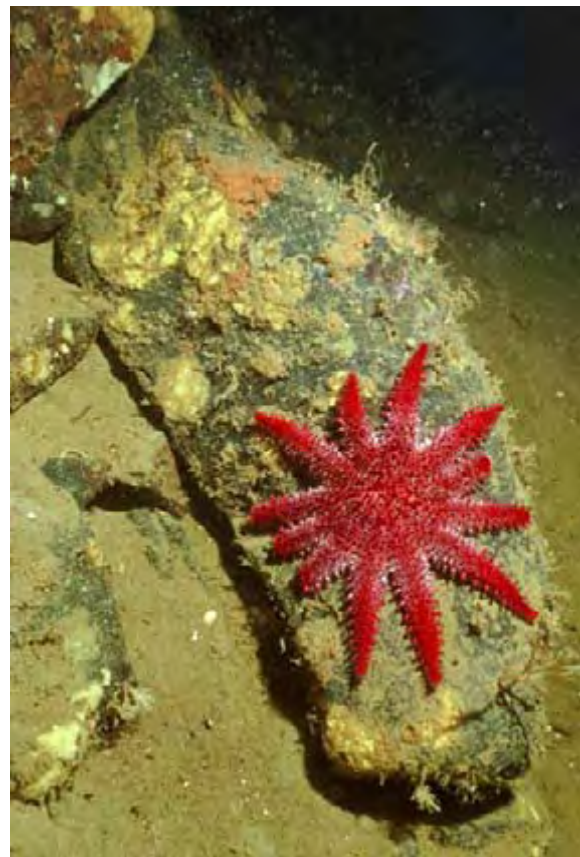


THIS PAGE: Scenes from Chupa, an opportunity to dive and enjoy the wilderness of northwestern Russia, fresh smoked fish on the sea shore, wild blueberries under the brush; delicate stauromedusa attached to a frond of kelp



the bright sky before going down but soon I see the bushes of lightly coloured softcorals all over the mulch coloured and textured bottom. It is like a garden down here, not unlike the tropics in a sense, only is the colour schemes reversed. The corals are bright and the bottom dark. And oh... it is pretty cold under the thermocline and crystal clear. But who's affected by the temperature, we are not diving in skins up here. Bring a thick wetsuit, or better still, a drysuit which is much more comfortable anyway. Andrey and I hover around some of these





director of the dive centre whether they had internet – via interpreter as he didn't speak English and my Russian was less than rudimentary but he gave me this look, pointed to the sky and said 'Sputnik' followed by the international handsign for "pricey". Who needs it anyway.

The next day we sail out the narrow fjord on the dive boat. It is, obviously, some former fishing vessels that has been transformed into absolutely decent dive platform with a roomy aft deck. It ain't fancy but it gets the job done. Where the fjord meets the White Sea proper there is a little archipelago into which we soon weave in and out between the spruce, birch and fyr draped islets. We anchor in another sheltered cove nearby a drop-off that leads to a cavern. The visibility is less good today but once you break through

THIS PAGE: Diver explores a cave in the White Sea; Huge fronds of kelp sway on the rocky sea floor; Diver sheds light on the craggy walls of a cave; Double-vision, split-view of the dive boat moored near Chupa; Giant sunstar decorates a boulder on the sea bed



## White Sea

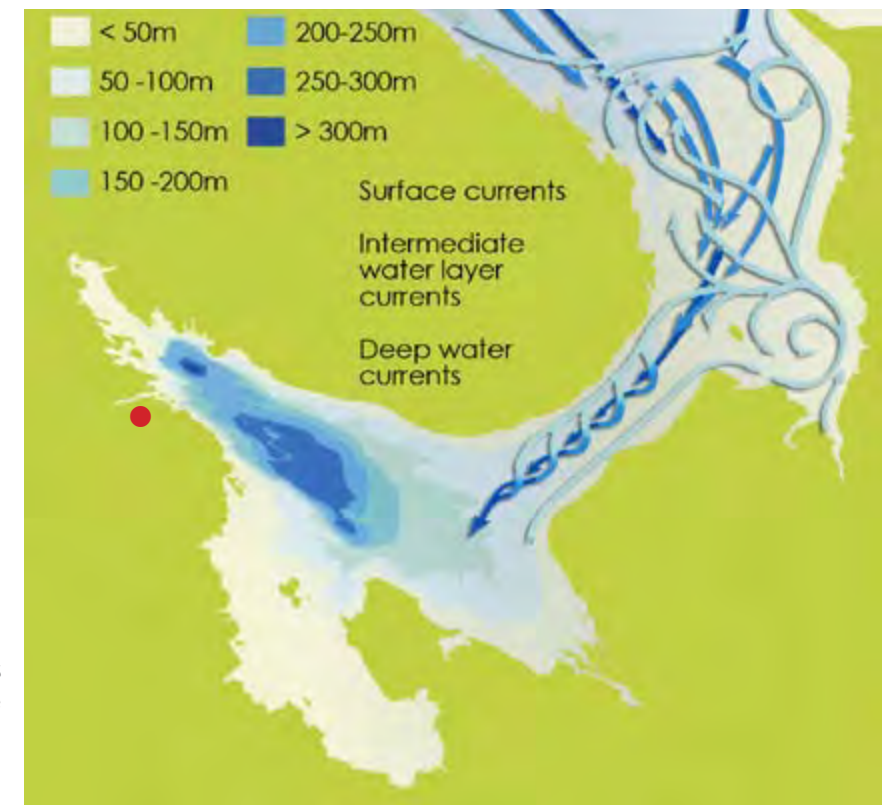
and get under the thermo-cline it gets clear as usual – and dark and cool. It is like a netherworld with an almost Gothic atmosphere. But otherwise the diving is easy as I haven't encountered any current or wave action. If you can deal with being cocooned in a puffy drysuit to keep you warm for the duration this place is very pleasant and exciting to visit. I swim slowly forward along the cliff and then I see it. A giant gaping black hole into the rock – and it is draped by some of the most intense coral festoons hanging down from the overhang. I carefully swim closer to take a closer look. It is not always easy to look upwards in a drysuit without incidentally letting some air out of some cuff or valve – or worse, also let is a squirt of cold water along the neck seal

as you stretch to turn your head. I hate when that happens. It is as bad as stepping into cold water in a bathroom soaking your warm comfy socks on a cold winter morning. But for now I manage to gently hover around like a levitating monk, without touching anything precious and fragile. The images speak for themselves.

### Fodder

Lunch is made local style. We anchor in a little cove, where the skipper makes a camp fire. Here he boils freshly caught blue mussels, fish and some mushroom. They also have some, rather smelly, smoked fish of an indeterminate species on offer which among our Russian friends seem to be a great delicacy. The squeamish Westerners had no hesitation in giving it a pass, but the mussels which were served with a little bit of butter and garlic were just irresistible. And so was the strong tea with lots of sugar that I have come to favour. After lunch we went for a little leg-stretcher along the coastline. There were lots of flowers, mushrooms and delicious sweet blueberries which we eagerly collected along the way. And then we came past some dung, that looked like the pellets that rabbit or deer leave behind, only supersized. We were puzzled but upon our return to camp we were told that what we have come across was a brown bear's 'business card'. Glad that I didn't know that when I ventured into the wilderness.

Night dives are hard to come by



Bottom profiles and currents in the White sea. Composite illustration adapted from Siminov et al 1991 and Naumov, Fedayakov, 1991



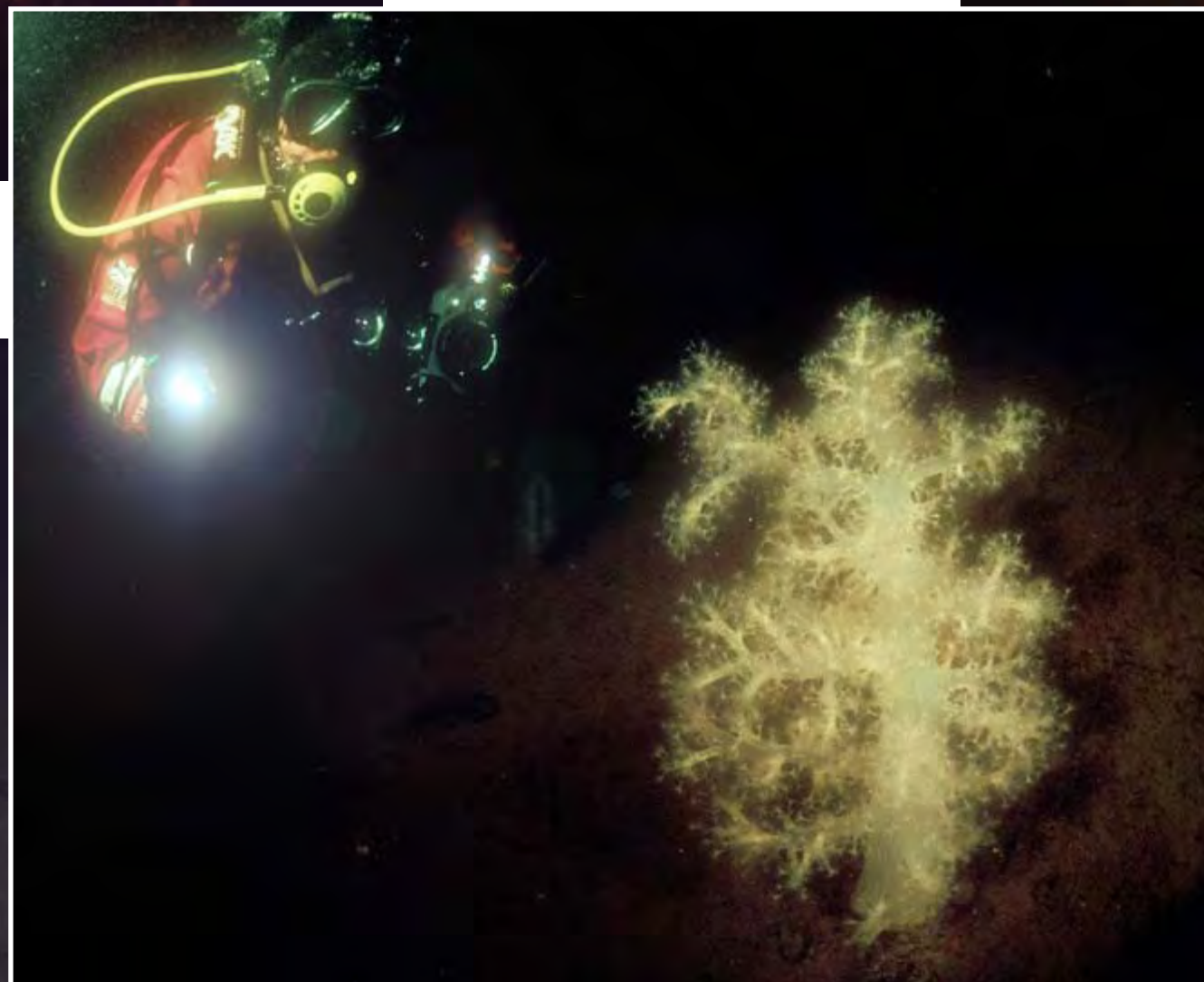
## White Sea

at this time of year. Being close to the arctic circle around midsummer means that there is virtually daylight round the clock. The sun barely dips below the horizon. But you can have some awesome evening dives in the almost perpetual twilight. In the dense kelp forests in the shallows there is plenty of nudibranchs, shrimps, shellfish, anemones and small fish with ogling sculpins being omnipresent. And a hot cop of tea with ginger cookies is never far away.

Close by the centre, only minutes of sailing time away, there is a wreck of a



COUNTER-CLOCKWISE FROM ABOVE: Soft corals hang from an overhang at the entrance to a cave; Huge soft corals glow against the dark sea floor; A flocked Christmas tree in the deep? No, a diver meets a large delicate coral; Extra large Russian-size sea anemone



The wreck isn't the greatest but it there and decent and adds to the diversity of dive sites in the area. There is also a submerged mine close by that can be dived. I didn't go but our good colleague Andrey, who is a die hard cave diving aficionado, couldn't help him self, of course, and off he went one early morning while we are still sipping our morning coffee

small fishing vessel. It lies close to a cliff so this is another site where you can anchor along the coast and dive from the shore.

only to return later in the day with a happy-elated expression smeared all over his grinning face.

I didn't even bother to ask him if it was good.

At the end of the fjord, at a strategic position, there is a marine research station which belongs to one of the faculties under St. Petersburg University. Here we are greeted by professor Victor Berger who give us a tour of the facilities and explains the geography and ecology of the region. We are struck by how dilapidated and run down the facilities are. Underfunding in science and scientists struggling to make ends meet seem to be a global ailment but the Russians are better than any to do great science on a shoestring. Necessity is the mother of invention. Out here we have another couple of dives between the islets.

On the way back we come by a group of cheerful seals playing in the surface. Every day we see something new. On occasions the white whales also pay the inlet a visit, but we were not that lucky. Back at Nereis someone has fired



## White Sea

up the sauna. It has been a long day and the evenings can be cool so that is a very welcome diversion after the trip back along the fjord. And, oh yes, they do the whole thing, even throwing some vodka on the coals. Not that it did much other than add a little scent of juniper but in this country vodka comes cheaper than bottled spring water. After 20mins in the sauna my tensions are melted away and with knees that feel like rubber I stagger out to get dressed before having a late supper.

That evening I feel asleep before my

head hit the pillow. Every morning the cook

produces a very generous stack of pancakes, which took me about 8 seconds to become addicted to. I still reminisce about these solid breakfasts served at the most wonderful view. All around us we could see the wilderness. On one side we had the water with the inlets and headlands, on the other side we had the forest. Nereis sits in a little fishing village which is partly abandoned. We were told that many of the locals used to work in the local mines, which has now been closed down and abandoned for lack of

profitability- after perestrojka, I guess - while others have simply left for better jobs and careers in bigger places. We don't see many people and those we

see seem to be mostly pensioners. The areas also seem popular with canoeists and hikers. We also see some big and expensive SUV's belonging to wealthy anglers from Sct Petersburg, Moscow and Finland. They seem a bit out of place here.

### Meeting an angel

I was surfacing from a dive in the fjord, when I caught this orange flicker out of the corner of my eye. Some strange creature, about an inch long, with stubby wings and horns on a rounded head were hurrying across the open water in flapping motion. I handed up my tank on the boat and went after



it to get a closer look but it was hard as it was scooting along in jittery moves. Somehow - I still don't know how - I managed to catch the delicate creature between my hands and swim back to the boat where it was released into a bucket for closer scrutiny. It was a sea angel, a mollusc that belongs to the same suborder as the nudibranchs. Their feet have developed into wing-like appendages which they flap vigorously to propel themselves forward and their shells have been lost, both adaptations made to suit their free-swimming oceanic lives. The species in question is most likely the large polar species of sea

angel, *Clione antarctica*, which defends itself from predators by synthesizing a previously unknown molecule, named pteroenone. Pteroenone has been shown to cause significant feeding deterrence in antarctic fish species known to feed on planktonic organisms. *Clione Antarctica* is commonly found near the undersurface of the sea ice and is sparse in water deeper than twenty meters. Localized population density down to twenty meters depth may be as high as 300 per cubic meter.

### The verdict

In a diving world starving for novelty, this is a real deal. It is easy,



THIS PAGE: Some of the sea creatures divers can find in the White Sea include (left to right from above) Nudibranchs, Sea angel, anemone fronds feel the current, bottom dwelling fish





## White Sea

it is (for Europeans at least) close by and it is inexpensive. And as the trip will inevitably take you in through St. Petersburg the traveller will get the option of a couple of days stay-over in St. Petersburg that will almost be a crime to take as well as a pleasant and beautiful train ride it is a whole package that gives you plenty of diversion and adventure before you arrive back home. The diving is not technically challenging in any way but does require cool water garment and it is not a technical dive site either, though the tekkies can find their spots here too. The logistics are pretty basic and while the rental equipment was all new Aqualung BCs, tanks and regulators, the compressor did not deliver more than 150bar (2200 psi) which was fine for a single dives but not for two on one tank. It is a place for kids? It depends. There doesn't seem to be anything around that can harm them, but there are no facilities and no entertainment for them either. Overall our stay was very pleasant and relaxing, the diving was diverse and exciting and the whole experience a refreshing novelty that gave left a good impression and a desire to bring back friends next time. Excellent value for your money. ■

THIS PAGE: Scenes from Chupa on the White Sea





# fact file



## White Sea, Russia



SOURCE: CIA WORLD FACT BOOK NASA

**History** After 200 years of Mongol domination in the 13th-15th c., the Principality of Muscovy, which was established in the 12th c., was able to emerge and gradually expand with the conquest of surrounding principalities. The Romanov Dynasty continued the expansion across Siberia to the Pacific in the early 17th c. Territorial conquest continued with the Russian Empire through to the 19th c. The devastation left by the two World Wars led to the overthrow of the royal family in 1917. Soon Lenin and Communism came to power at the formation of the USSR. Russian dominance of the Soviet Union was strengthened by Stalin at the cost of millions of lives. Stagnation in the economy and society followed until Gorbachev introduced glasnost (openness) and perestroika (restructuring) in the 80's. Swift changes led to the splintering and fall of the Soviet Union in 1991. A struggle to establish a democratic political system and market economy has occupied Russia ever since. Recentralization of power and erosion of some democratic institutions have occurred under President Putin while guerilla conflict in Chechnya still plagues Russian leadership.

The important port on the White Sea is Arkhangelsk. For much of Russia's history this port was Russia's main center of international maritime trade. Norwegian and Russian sailors, merchants and fishermen interacted in the region of the White Sea during the 18th and 19th c. During Soviet rule, the port became an important naval and submarine base and the White Sea was closed to Nor-

wegians by 1918. The 1990's saw a reopening of the sea to Norwegian and other western scientists, plus trade and tourism. Government: federation. Capital: Moscow

**Geography** 17,075,200 sq km; Northern Asia bordering the Arctic Ocean, between Europe and the North Pacific Ocean. Regions west of the Urals are included with Europe; Terrain: broad plain with low hills west of Urals; vast coniferous forest and tundra in Siberia; uplands and mountains along southern border regions; Coastline: 37,653 km; Resources: wide natural resource base including major deposits of oil, natural gas, coal, many strategic minerals, timber; Formidable obstacles of climate, terrain, and distance hinder exploitation of natural resources; largest country in the world in terms of area but unfavorably located in relation to major sea lanes of the world; despite its size, much of the country lacks proper soils and climates (either too cold or too dry) for agriculture; Mount El'brus is Europe's tallest peak.

An inlet of the Barents Sea, the White Sea is located on the North Western coast of Russia. Karelia lies to the west of the sea and the Kola peninsula lies to the north.

**Climate** ranges from steppes in the south through humid continental in



ABOVE: Map of Chupa and surrounding area  
LEFT: Location of White Sea on globe

much of European Russia; subarctic in Siberia to tundra climate in the polar north; winters vary from cool along Black Sea coast to frigid in Siberia; summers vary from warm in the steppes to cool along Arctic coast.

**Population** The population of Russia is 143,782,338 (2004 est.), Ethnicity: Russian 81.5%, Tatar 3.8%, Ukrainian 3%, Chuvash 1.2%, Bashkir 0.9%, Belarusian 0.8%, Moldavian 0.7%, other 8.1%; Religion: Russian Orthodox, Muslim and other religions.

**Currency** Russian ruble (RUR). Exchange rates: 10 RUR = .27 EUR / .36 USD.

**Language** Russian

**Diving** maximal depth of the White Sea (340 m); salinity varies from 0 ‰ in estuaries to 30 ‰ in places exceeding 200 m. Surface salinity in open sea is about 25 ‰. Upper water layer ranges

12-15°C and are inhabited by boreal species. Deep sea areas are occupied mainly by arctic fauna.

What to see: Anemones, large soft coral, huge starfish and sunstars, but the enormous Russian sea kelp is seasonal and can only be seen in warmer weather. Dry suit required.

A deco-chamber is located at Nereis Dive Center in Chupa.

### Dive Center

Nereis Dive Centre  
[www.nereis.spb.ru](http://www.nereis.spb.ru)

### Web sites

Russian Tourism  
[www.russiatourism.ru](http://www.russiatourism.ru)  
St. Petersburg  
[www.saint-petersburg.com](http://www.saint-petersburg.com)  
Hermitage Museum  
[www.hermitagemuseum.org](http://www.hermitagemuseum.org)  
White Sea Biological Station  
[www.zin.ru/wsbs](http://www.zin.ru/wsbs)

### Books

*White Sea Ecology & Environment*  
V. Berger and S. Dahle, eds.,  
Zoological Institute - Russian Academy of Sciences, \$34 USD  
Akvaplan-niva, Tromsø, 2001.  
[www.akvaplan.niva.no](http://www.akvaplan.niva.no) ■

Press Release:

## Just for Divers!

Reef Relief Founder Craig Quirolo has created a new webpage on coral reef health at [www.reefrelief.org](http://www.reefrelief.org) that is designed to introduce divers and snorkelers to what they will encounter on a coral reef entitled "Pre-Dive Introduction to Reef Health." This new section of the Reef Relief website expands the non-profit grassroots organization's efforts



to educate various coral reef user groups and provide them with tools and information on coral reefs.

"When a diver is able to identify healthy corals as well as those that are diseased or showing other signs of stress, it makes the dive a more meaningful experience; the diver will go away more informed about coral reefs. Hopefully, it will encourage them to get involved in the global effort to protect the biologically diverse, but increasingly endangered, coral reefs of the world," notes Quirolo.

The "Pre-Dive Introduction to Reef Health" is drawn from Reef Relief's Coral Photo Monitoring Survey that features images from the Florida Keys, Bahamas, Cuba, Mexico, Puerto Rico, Jamaica, Honduras and St. Kitts. Quirolo has been surveying coral reefs for the past 14 years and has created an Online Archive of images on the website. The survey was begun from the funds received with the first Robert Rodale Environmental Achievement Award in 1993.

For more information, contact Reef Relief at [www.reefrelief.org](http://www.reefrelief.org) or call (305) 294-3100 email [reef@reefrelief.org](mailto:reef@reefrelief.org).





# Equipment

Edited by  
Harald Apelt

Do divers really need underwater lamps?

It is a simple question to which there is no simple answer, as it all depends... If you are mostly diving in Southeast Asia or the Caribbean where visibility is fantastic, during days of bright sunshine and in waters of 20m or less, you probably don't need one. But if you plan on diving in lakes, doing night dives, penetrating wrecks or do any sort of technical dive, then a good lamp becomes an essential part of your diving gear.

# Lamps

How to choose

By Harald Apelt





WOLFGANG POLZER

## What makes an underwater lamp a good lamp?

First of all, it needs to be bright and closely reproduce the colour of daylight, so it shows the colours as realistic as possible. For a long burn time, it needs to be equipped with a high capacity accumulator. A short charging time is also essential, especially if you plan on having several dives in a row.

Size and weight is also of importance because of weight limitations and space restrictions when it comes to bringing it on an aircraft. It is not really a question of build quality, but rather of comfort, in how the lamp can be transported in an aircraft. Due to airline regulations the bulb or lamphead has to be transported separately from the accumulator, so divers are normally required to detach the bulb.

There is a wide variety of different lamps and techniques available. First of all, you will have to determine which sort of diver you are. As mentioned before, the requirements for a lamp are different, and that's why you should decide which type of diving you are going to use it for. Do you need a system of extreme durability and power for extended cavern dives, or just a small lamp for your BCD pocket?

Do you require a 10 Watt backup-light or a 100 Watt high performance spot? And which system will meet your requirements best? Is it a halogen-lamp, a Xenon-light, the "power pack" HID (High Intensity Discharge) or the LED-technique (Light Emitting Diodes)?



This tiny HID from Singaporean Aunoc is less than three inches long and will fit into any pocket, yet it boasts an impressive output

Underwater lamps can be classified into three basic categories:

There are handlamps with batteries, rechargeable handlamps with accumulators or *acculamps*, and lamps with external battery packs or *accu-tanklamps*. The operation of these three types are quite different.

Those divers who need a lot of light for a long time, will become fans of an accu-tanklamp. The canister with the accumulator is normally fixed on the side of the tank



The XHL-4500 rechargeable handlamp from Metalsub represents the mid-sized solution

The battery pack can be attached to your tank with a clamp



What do you need? Which lamp type is best for you? It all depends, as the article explains...

and is connected with a cable (*umbilical*) to a lamp head which is held in the hand. The lamp head quite often has a special grip—a so-called Goodman-grip—which makes the use of the lamp head very comfortable. For cavern dives, there is also a special version that fixes the lamp heads to the helmet. These accu-tank lamp are often the choice of tech- and wreck divers. Videographers also tend to prefer the tank-system because of its high capacity.

The disadvantage of these lamps is their high price and their high weight. These are the main reasons why they are not widely used by classic sport divers.

The powerful and high quality alternatives to these complex systems are the accu-handlamps. They are normally made of aluminium tubes, have an integrated accumulator-pack of different power, and they are available with all kinds of above mentioned bulbs.

The cheaper alternative to this kind of lamps are the battery lamps. They are mostly made of plastic and can be used with rechargeable or normal batteries. These batteries—whatever is used—can be easily removed and makes this type of lamp very comfortable for

The high-end lamp type. HIP Lamps like the H10 from American Diverite with eight hours of burn time are the choice of many technical divers

The lamp head is connected to the battery canister via an "umbilical"



With a "Goodman-grip", you can carry the lamphead on the back of your hand

SCUBALIGHT



DIVERITE



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- Visit [www.divecochran.com](http://www.divecochran.com) for a FREE demo.



flight transportation. The lower price of the battery-lamps seems to be a good argument for scuba divers as well.

The biggest disadvantage of these two more professional types of lamps lies with the accumulator. They have to be handled with care. One highly important aspect is quite often neglected by the owners: Reading the instruction manual. Here you'll find the important answers to which kind of accumulator is used in your lamp, how and in which intervals it must be loaded, and how to prevent the damages of memory effect or wrong long-term storage.

### New technology

The newest technological development is a mixture of all three types of lamps. These modular systems are designed by several companies (for example Green Force or TillyTec Lightsystem) with a lot of creativity and imagination.

The lamp is divided in different segments, which is the reason why it is possible to interchange the different lamp heads with different accumulator-packages, too. It is a big advantage because now you can start with a "small" solution and "upgrade" later to a more powerful system.

In the end, you are able to reduce or upgrade the battery-pack of your light-system, use two different lamp

SCUBAPRO



Scubapro's bid for a modular lamp system. The lamp heads are available in halogen, HID and LED

Durable, cheap and with good performance. Lamps like this battery LED lamp (left) and 10 W with rechargeable NiCad batteries have become commonplace

The LED lamp has a burn time of more than six hours on just three standard batteries. The lamphead is rated at +50,000 hours lifetime



HARALD APPELT

heads and set up the exact light-system you need for your next dive.

The limits to what you would like to invest in the best hobby in the world is really only set by the size of your budget.

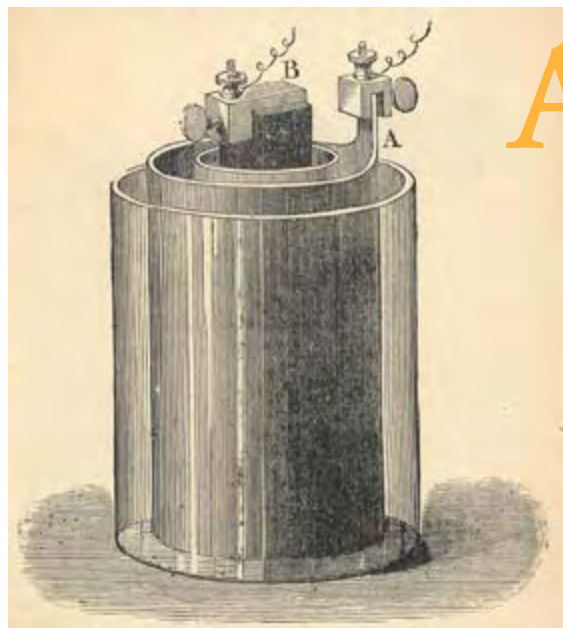


Big battery packs can be mounted on the tank or on the harness

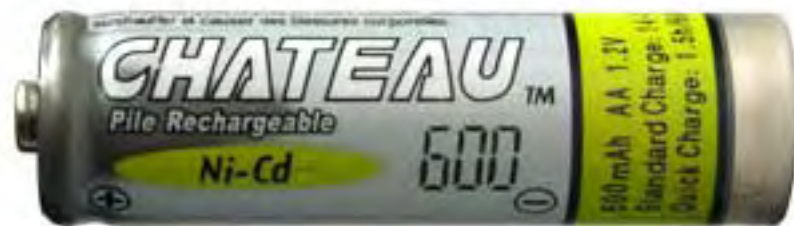
UPS ANUKER



# Batteries & Accumulators



*If the bulb is the heart of an underwater lamp, the accumulator is its soul*



Cadmium, which is used in rechargeable batteries, is also an environmental hazard

If the bulb is the heart of an underwater lamp, the accumulator is its soul. And as with humans, the soul can be difficult to comprehend. There are a lot of different types of accumulators available for underwater lamps, but at present, none of them is absolutely perfect. All of them generate electricity through some chemical process inside, and all of them have certain characteristics that affect them from being a perfect energy storage.

## Good price

The most widely used accumulators in diving lamps presently are nickel-cadmium-accumulators (NiCad). They have been used worldwide for many years, and because of mass production, are reasonably priced.

But there are a few disadvantages with this technology. As Cadmium is environmentally problematic the European Parliament has passed a ban using NiCad-accumulators in diving lamps in the European Union—and, as usual, at the same time they granted an exemption for the continued use of NiCad-accumulators in power tools. The ban is going to take effect from October 2008.

## Downsides

The technical disadvantages of NiCad-accumulators include the need for new lamps to undergo up to ten cycles of charging and discharging before they reach their full capacity. Another problem is caused by the self-discharge effect, which is responsible for suboptimal shelf life. But the most noted disadvantage of NiCad-accumulators is the memory effect, which is due to mistakes and bad handling by the user when recharging the accumulator. Last but not least, at the end of its usable life, a NiCad-accumulator has to be disposed of as hazardous waste (and so do the other types of batteries).

External charging is more practical

The next generation of accumulators were the nickel-metal-hydride accumulators (NiMH). They have a good rate of possible recharging cycles: 500 up to 1000 charge cycles can be reached with these accumulators. Unfortunately, these accumulators tend to become weak once they get overcharged. They also tend to discharge during storage and react with a loss of capacity at low temperatures around zero degrees Celsius.

## The options

So what is the best solution for our diving lamps? For quite a while, the general consensus seemed to be that the lithium-ion accumulators, which have proven their value in mobile phones and laptop computers, would also be the perfect solution for diving lamps. They are small, light weight and have a short charging time. They can be charged without opening their container, at any time, and in any state of charge. And they also work fairly well in the low temperatures below freezing. In addition, no self-discharge and no memory-effect is

## Charging your lamp

Do you have to open it to charge it, exposing the delicate innards to the elements? You also have an o-ring to look out for and make sure it is watertight every time you close the lamp after each charging session



known in this technology. So, it seemed like a perfect solution until some cases of notebooks and cell phones caught fire, resulting in the closer scrutiny of this technology. Lithium-ion accumulators are indeed tricky to handle and can become dangerous, as they might react to physical damages with explosions and burnouts. The worst issue is that once they catch fire, they are nearly impossible to extinguish.

The charging technology for these accumulators is a complicated matter, especially when HID bulbs are used. Then, the operation of a lithium-ion accumulator becomes a very complex process. That's why most of the manufacturers of lithium-ion accumulators are not issuing any warrants for the usage of these accumulators in diving lamps. Except Sanyo. This company is delivering their accumulators only to lamp producers, who ran a special test and have integrated a special PCB-electronic device that powers down the accumulator in case of technical problems. Manufacturers like German Kowalski is using the Sanyo accumulators

for the lithium-ion HID-lamp "maxum", and they are in good company as some aircraft manufacturers have chosen to use the same cells in their airliners. This and the certification by the Federal Aviation Administration (FAA) ensures that the technology is considered safe and can be used without problems, provided that the safety and processing issues are being handled correctly.

Nearly the same technology is used in the lithium-manganese accumulators. They keep their efficiency in cold water and a good shelf life. Another advantage is that they don't need safety electronics and may be charged in closed containers, too. They are said to be safer, but they are not as powerful as the lithium-ion versions, and long-time storage without use might reduce lifetime of these accumulators.

Which type of accumulator is best for you depends on your intended usage—as well as the size of your wallet.







# Bulbs

U.S. Patent 0,223,898 by Thomas Edison for an improved electric lamp, January 27, 1880

Just imagine. You are out on a night dive somewhere nice with a group. You switch on your new 50 or 75W dive lamp flood-lighting the whole reef for everyone to see, instantly making you the person of the day.



Halogen bulb on a dive lamp



PETER SYMIES

Thanks to a little help from technology and the latest developments in light bulb manufacturing, we now have an impressive output at our fingertips. It has only been a few years since the LED-technology (Light Emitting Diodes) was the laughing stock, but now it's on the cutting edge. State-of-the-art used to mean Halogen bulbs. Later, Xenon bulbs became the buzz word, and then—as seen in cars—HID-bulbs (High-Intensity-Discharge) were all the rage.

Let's take a closer look at the differences.

## Halogen

The halogen lamp is similar to the conventional non-halogen incandescent lamp in that it employs a tungsten filament in a gas-filled, light-transmitting glass-shell and produces the same type of light. It has a colour temperature of about 3600 Kelvin, which means it emits a slightly red and "warm" light. (See next page for explanation of "Colour temperature").

The major difference is that a halogen vapour (Iodine or Bromine) is added to the inert gas inside the glass bulb, and the gas pressure and bulb temperature are much higher than in non-halogen lamps. Also, the bulb is made of fused quartz, high-silica glass or aluminosilicate "hard" glass, which is capable of withstanding the high operating pressures and temperatures.

## Tungsten

Tungsten-halogen lamps operate in a "halogen regenerative cycle", which maintains constant light output and colour temperature of about 3600 Kelvin throughout the life of the lamp. The halogen cycle permits the use of more compact bulbs than those of conventional tungsten-filament lamps of equal ratings, and also

The Xenon bulb in Kowalski's XR mini-X produces a light with a white to bluish tint

permits either increasing lamp life to approximately twice that of conventional tungsten filament lamps having comparable wattage and colour temperature.

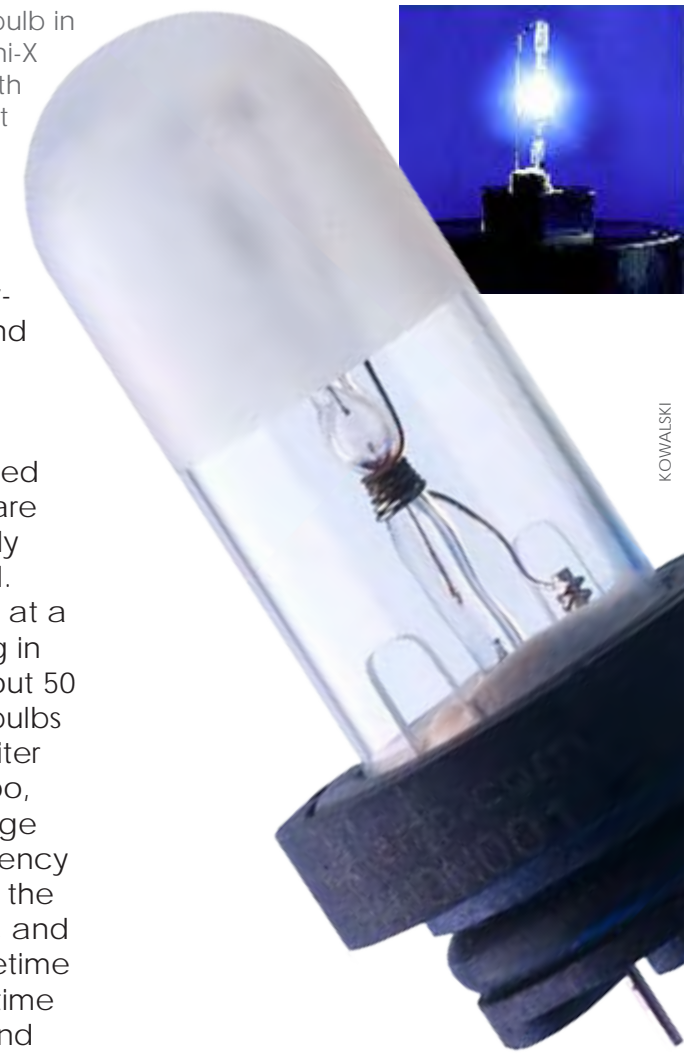
## Xenon

The halogens were succeeded by the Xenon-lamps. These are similar to halogen-lamps, only filled with Xenon gas instead. This makes the filament burn at a higher temperature, resulting in an increase in output of about 50 percent. That's why Xenon bulbs seem to be brighter and whiter than halogen bulbs. They, too, can be used with over voltage that increases the light efficiency as well. The downside is that the higher working temperature, and the over voltage reduces lifetime of the bulb. The nominal lifetime of a Xenon bulb is only around 100 hours. Halogen-bulbs will last up to ten times as long.

## HID

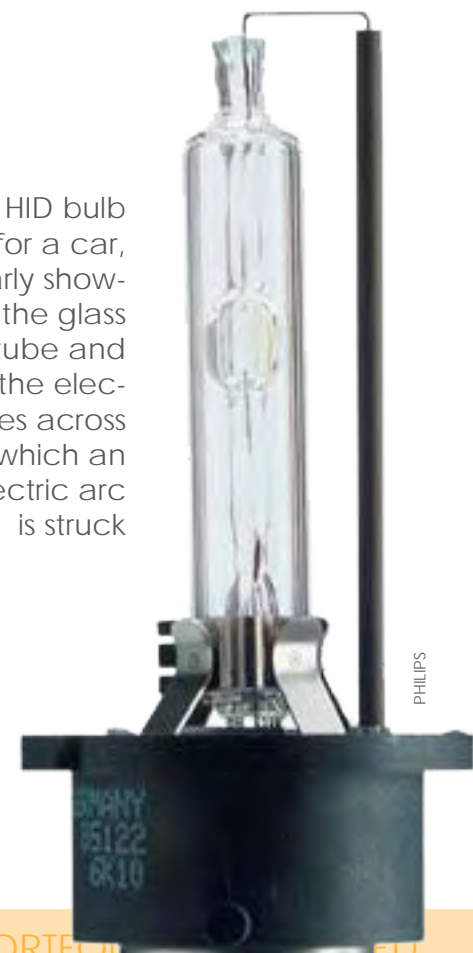
HID-technology was first widely used in cars. HID stands for *high-intensity discharge*, which is the technical term for the process which produces the light by striking an electrical arc across tungsten electrodes housed inside a specially designed inner fused quartz tube. This tube is filled with both a gas and metals. The gas aids in starting the lamp. When a HID-lamp is switched on, an ignition spark of about 25,000 Volt ionizes the gas, which is under high pressure. The metals produce the light once they are heated to the point of evaporation, forming plasma.

Note that a HID bulbs are, in fact, also filled with Xenon gas which may lead to some confusion.



KOWALSKI

A HID bulb for a car, clearly showing the glass tube and the electrodes across which an electric arc is struck



PHILIPS





PETER SYMES

After ignition a rather complex piece of electronic circuitry adjusts the voltage from the high ignition levels down to a process-voltage of about 60 to 90 volt. Once running, the arc produces a better and brighter light than the lamps with filaments while using less energy.

By comparison HID bulbs produce between 2,800 and 3,500 lumens using between 35 and 38 watts of electrical power, while the performance of halogen filament bulbs lies between 700 and 2,100 lumens while consuming between 40 and 72 watts at 12.8 Volt.

The light from HID lamps has a distinct bluish tint when compared with tungsten-filament headlamps. The bluish tint is less absorbed by water so the HID-beam has a better penetration than a comparable halogen beam.

HIDs are well suited for cave and wreck diving. But not optimal for the casual diving on reefs in daylight in depths of no more than 10-15m. As the red parts of the light spectrum are being absorbed first by the water with the blue colours being filtered last, what you mostly need at these shallower depths is boosting the red tones.



Xenon HID

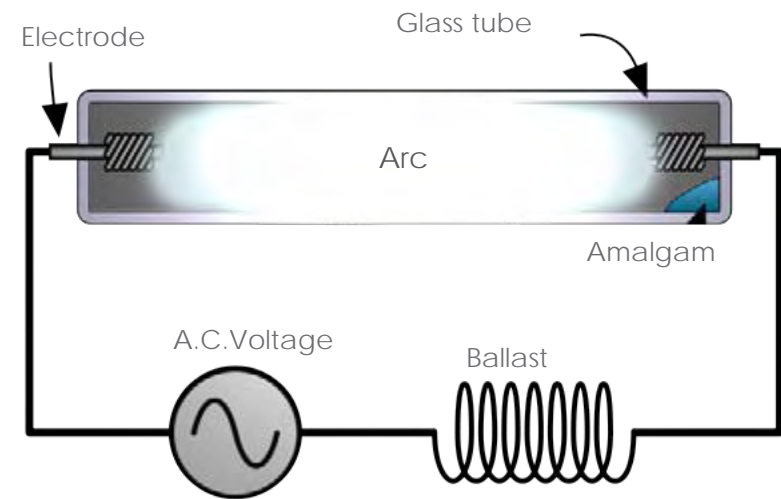


Diagram over a HID bulb



Scanning Electron micrograph of a light bulb filament (75x)

Another advantage of HID-lamps over halogens is their much longer lifetime of about 5000 hours. In addition, the colour temperature of HID lamps of 5500 to 6000 Kelvin closely resembles that of daylight (5700K) making it near ideal for photo- and videography. This is also why these lamps have gained such popularity with indoor gardening and made it practical, especially for plants that require a lot of light, like vegetables and flowers. They are also used to reproduce the intense tropical sunlight for indoor aquariums.

Consequently you are not looking for the neutral or even bluish colours of HID lamps for normal scuba dives at day-time.

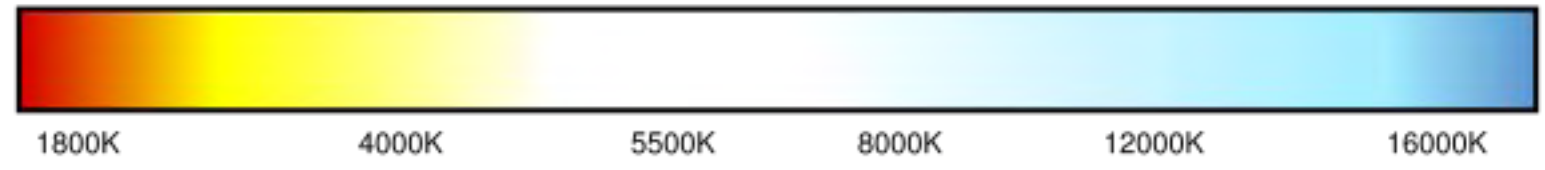
By contrast the higher colour temperature of HID-lights photo and video purposes makes them the choice of photo- and videographers. Especially when it comes to illuminating the shady parts of the reef on day dives and to the illumination of wrecks and caverns the advantages of HID-technology really shows.

The Halogen bulb emits a reddish light



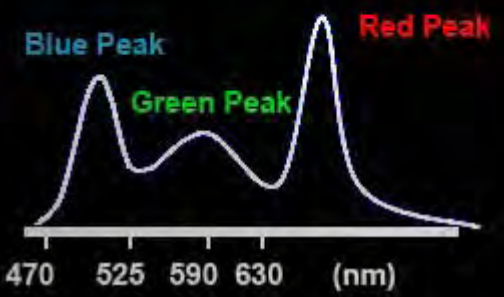
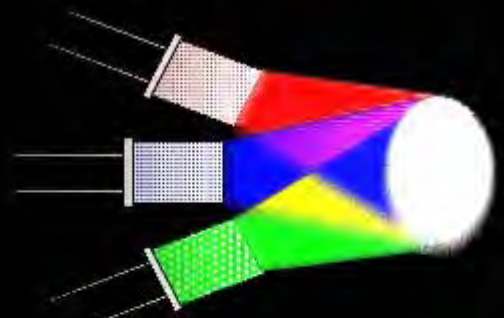
HARALD APELT

### Why it is called colour temperature?

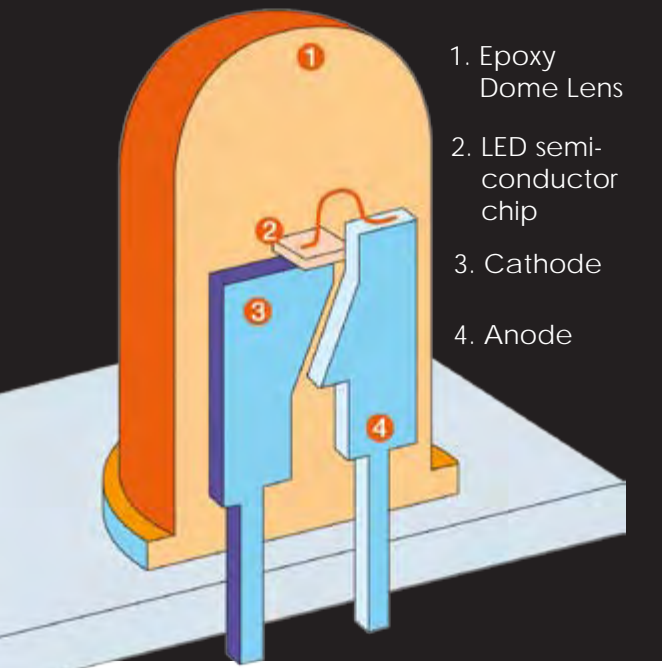


As we know from the glow of i.e melting iron it changes colour according to how hot it is. This phenomenon is used to link colour with temperature. The colour temperature of the thermal radiation from an ideal black-body radiator (a hypothetical material that reflects or emits no other light) is defined as equal to its surface temperature in Kelvin degrees. 5500 K is widely considered "standard daylight"





Making white light with the LEDs



1. Epoxy Dome Lens
2. LED semiconductor chip
3. Cathode
4. Anode



LEDs as most of us know them. Omnipresent, innocuous, not sexy at all



mb sub is the first to introduce a diving lamp based on the new Osram Ostar LED

Thanks to a new production technology this substrate can be removed and the surface of the light generating layer coated with a thin metal film. This metallised side now serves as a reflector and is placed close to the top of the LED. The result is that the LED can emit almost all of its light at the top, which causes a major increase in brightness.

**'Laughable' LEDs**

For many years LED's were simply thought of as small and dim lights in electronic devices and signal lamps. How times have changed. There are quite a lot of technicians and scientists who now believe that the LEDs will be the lights of the future.

The technical innovation lies in a perfect interplay between various manufacturing techniques. LEDs consist of semiconductor crystals that grow on a substrate during manufacture. Up to now, the substrate remained in the diode after manufacture, where it absorbed much of the light produced.

LEDs are characterised by a low energy consumption, extremely long life span, compact dimensions, and they are shock and vibration resistant. Another advantage of this innovative illuminant is that it has a very low failure rate and emits no ultra-violet or infrared radiation. In recent years, there have been significant developments with substantial improvements in this technology. Recently, a major breakthrough took place with the development of the Osram Ostar light emitting diode.

The Ostar high brightness LEDs are built with a multichip-onboard-technology with four- and six-chip-versions. The LED is the first LED to exceed 1000 lumen in output—and that is just with the 15 Watt version. That means that diving lamps equipped with this chip will produce the brightness correspond-

**What is: Lumen?**

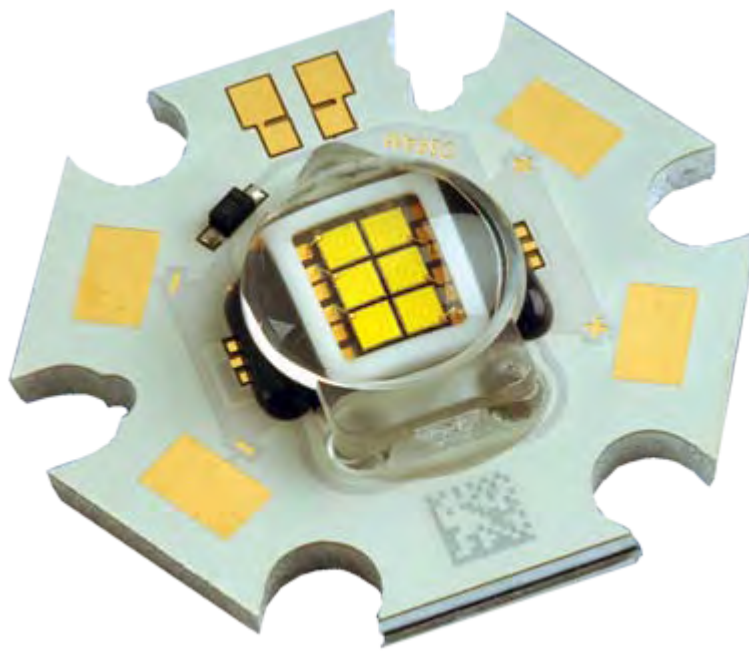
The lumen (symbol: lm) is the SI unit of *luminous flux*, a measure of the perceived power of light. Luminous flux differs from *radiant flux*, the measure of the total power of light emitted, in that luminous flux is adjusted to reflect the varying sensitivity of the human eye to different wavelengths of light.

A standard 100 watt incandescent light bulb emits approximately 1700 lumens in North America and around 1300 lumens in 220 V areas of the world.

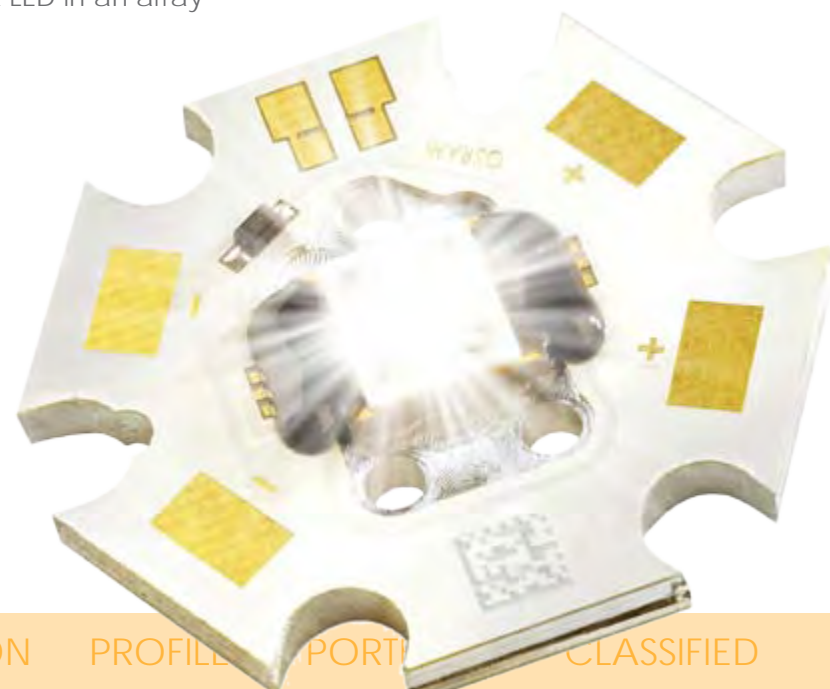
**Definition**  
 1 lm = 1 cd·sr = 1 lx·m<sup>2</sup>

SOURCE: WIKIPEDIA

ing to that of a 50 Watt halogen lamp. The first prototype is already built, and the output is perfect. German lamp constructor Michael Bienhaus from mb sub is the first to introduce a diving lamp based on the new Osram Ostar LED. He has already marketed an underwater hand lamp, the "Photon". It comes



The Osram Ostar LED chip packs six LED in an array





with a two stage dimming and 12.6 Volt 1.6 Ah LiMn (lithium-manganese) accumulator. This power package has a burning time of about 60 minutes followed by an additional 30 minutes of emergency lighting. All this just weighing in at a little more than half a kilogram of weight—a big step towards optimizing dive gear. As the LED module costs about 37 Euro, the complete hand lamp will be sold for 472 Euro.

### Pushing the envelope

Sources have also informed us that a group of German lamp nerds have already constructed a 20 Ah tank lamp with this tech-

nology. Into the small lamp head they integrated four of the new Ostar LEDs. Due to the extreme process temperatures, this lamp can only be used in water.



But with a burning time of about five hours and a whopping output of 3200 lumen—which is about 200 percent more than a strong HID burner makes—it is now possible to illuminate an entire reef at night and in bright colours. (For more information's about this lamp project see [www.tauchfunzel.de](http://www.tauchfunzel.de)—unfortunately, only available in German).

The next revolution of underwater lamp-technology has just begun in earnest. And at least in this regard, the future looks bright indeed. ■

The 'Revolution' from mb sub is equipped with three 3 Watt LEDs (left). There are three interchangeable heads available in the system. The two others are halogen and HID

*LEDs are characterised by a low energy consumption, extremely long life span, compact dimensions and they are shock and vibration resistant.*

Reliable lamp systems are essential when it comes to the more demanding types of dives. Don't skimp on quality

## How to shop for an underwater lamp

### 10 tips for beginners

1. First consider which kind of dives you want the lamp for. Then find the type of lamp that will match the requirements.
2. Next, try and get an overview of which lamps are on offer in this segment and select some "candidates" to your liking. Don't put emphasis on look and aesthetic design, but on the technical details.
3. Purchase a lamp with a high quality accumulator from a shop with good reputation. Why? Because accumulators have a limited life span, and you want to make sure that your new lamp hasn't already been spending a good part of it sitting on a shelf in the back of a shop.
4. Your charging device should have an integrated quick charge circuit and a total discharge protection to make sure that use of the lamp and the charging will be done with consideration.
5. Lamps with exterior charging should be preferred. You shouldn't need to open a lamp to charge it with the risk of subsequent leaks or damage to the delicate parts while open.
6. The lamp should be dimmable or have two or rather three different power levels.
7. For the sake of safety reasons, the lamp should have an integrated automatic SOS signal generator
8. Ask your dealer for technical data on the lamp such as burning time, recharging time and light performance presented in a data sheet or a manufacturer brochure.
9. If your budget allows a more convenient solution, you should prefer a modular system where you can upgrade your accumulator or use different lamp heads.
10. Decide upon the weight of your lamp. Each kilogram counts when checking luggage in at airports, and the weight limits will only become more of an issue in the future. Also, as airline regulations already require that accumulator and bulb must be transported separately, it is an advantage having a modular lamp system. ■



"Boys with toys"

Divers with good lamps have more fun

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Edited by  
Peter & Gunild Symes



## Ships Asked to Avoid Whale Route

The endangered right whale is to get extra protection from collision with container ships, which are seen as a key threat to the species.

Despite being protected since 1937, the right whale is close to extinction, with scientists estimating a global population of only 400.

A new 1,800-sq-km zone, the Roseway Basin south of Nova Scotia, has been set aside as a

safe haven from shipping after the International Maritime Organization (IMO) ratified a Canadian proposal to designate the zone an "Area to Be Avoided". The voluntary restriction asks ship captains to steer around the area.

It is close to a major shipping route between North America and Europe, and scientists say the slow-moving mammals have been killed in collisions with huge cargo vessels.

The restrictions will apply between 1 June and

31 December, when whales are known to congregate in the area.

Though the designation is voluntary, conservation groups say other such protected areas have seen a drop in shipping traffic. ■



# Humpback and fin whales spotted north of Alaska

## Quest tracks nursery of Blue whales

Scientists are on the verge of positively identifying the first known breeding and calving area for the elusive blue whales.

Researchers with Oregon State University's Marine Mammal Institute in Newport hope to confirm that a remote nutrient-rich region in the tropical Pacific Ocean, south of Mexico and about 750 miles west of Costa Rica, is the critical habitat for the endangered whales, which is the largest animal on the planet.

If the researchers find the site, the team hopes the international community will take steps to ensure the area—far outside any nation's jurisdiction—is protected.

The area of upwelling where some blue whales gather in the winter shifts from year to year and may have prevented whalers from pinpointing exactly where the whales

were each winter. Bruce Mate, an OSU professor and the institute's director said the blue whales—from the eastern north Pacific stock—are going to be 400 to 1,000 miles west of Costa Rica.

"There's never been a known breeding and calving area for blue whales in the entire world," Mate said. "But because we've tracked animals now for a number of years, this is where we expect them to be."

Once the whales are found, the researchers will study the whales' behaviors, including whether the animals are feeding and the interaction between mothers and calves. They also will do a complete examination of the water, taking salinity and temperature measurements as well as collecting samples of the marine organisms. ■

Humpback whales have swum into the Beaufort Sea off Alaska's northern coast, far beyond their usual range. Some of the whales were spotted by observers involved with the oil industry.

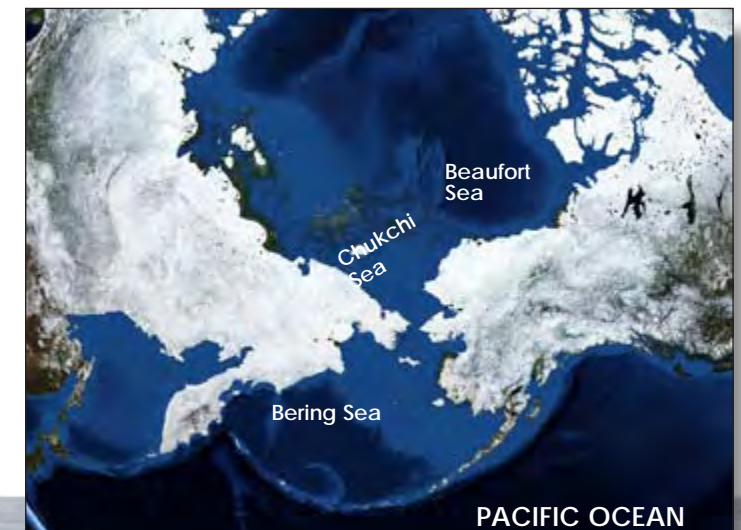
US federal officials monitoring the waters say it's too soon to determine whether it's a trend or an anomaly. No one was expecting humpbacks near the activity connected to Outer Continental Shelf lease sales, said Brad Smith, a protective resources biologist for the National Marine Fisheries Service.

Fin whales have also been detected by acoustic monitoring in the Chukchi

Sea north of the Bering Strait this summer. The fin whales were recorded as far north as Point Lay, a coastal Inupiat Eskimo village of 235 about 700 miles northwest of Anchorage.

Environmental groups say the presence of humpbacks hundreds of miles north of their usual habitat is likely another sign of the effects of global warming and the shifting Arctic ecosystem. They are calling for more study of the endan-

gered animals' habits before industrial activity is allowed to expand off Alaska's northern shores. ■







*"I think their communication system is a lot more complicated than we gave them credit for"*

**It may sound like wops, thwops, grunts, moans and squeaks to the human ear, but it is the complex conversations between remarkable ocean mammals.**

Over the past three years, researchers from University of Queensland have recorded and analysed thousands of hours of humpback whale sounds off the coast of Queensland. And what their analysis points to is that a secret and ancient language of the deep sea does indeed seem to exist—a finding that hardly comes as any surprise to the many admirers of the famous humpback whales songs.

From high-pitched squeaks, shrieks and cries to purrs, groans and low yaps, at least 34 recurring sounds, which can be correlated to different specific social settings, have now been identified. Some last less than one second, while others stretch for more than ten. Some noises represent aggression and competition, others affection and concern.

"I think their communication system is a lot more complicated than we gave them credit for," lead researcher Dr Rebecca Dunlop said. "I've found

that they have this massive repertoire."

While only humpback males are known to perform the famous whale "song", the social sounds are made by all humpbacks—males, females and calves.

The "wop", for example, is common in mother and calf pods. "It's one of the most common that you'll hear," she said. "It's probably a mum-calf contact call."

Other, higher-frequency signals are used when males are competing for the affections of a female. "These high-frequency cries and screams (are also heard) when they're having a bit of a row," she said.

Dr Dunlop describes the male "purring" sound as a "C'mon baby" call to females, used as a mating signal. "The lower the sound, the bigger you are," she said.

The sounds are recorded using an antenna attached to a buoy about one kilometer offshore.

Dr Dunlop's paper, co-authored with the UQ's Michael Noad and published this month in the Journal of the Acoustical Society of America, catalogues the vocalisations of migrating east Australian hump. ■

SOURCES:  
THE TELEGRAPH JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA

## Orcas full of PCBs

Orcas off Washington State in the Pacific Northwest are so full of pollutants that it is making them sick, researchers have found.

Writing in the Marine Pollution Bulletin, U.S. and Canadian scientists have reported that the levels of PCBs, a long-banned industrial chemical in blubber from orcas that frequent Puget Sound, was still high enough to cause health problems.

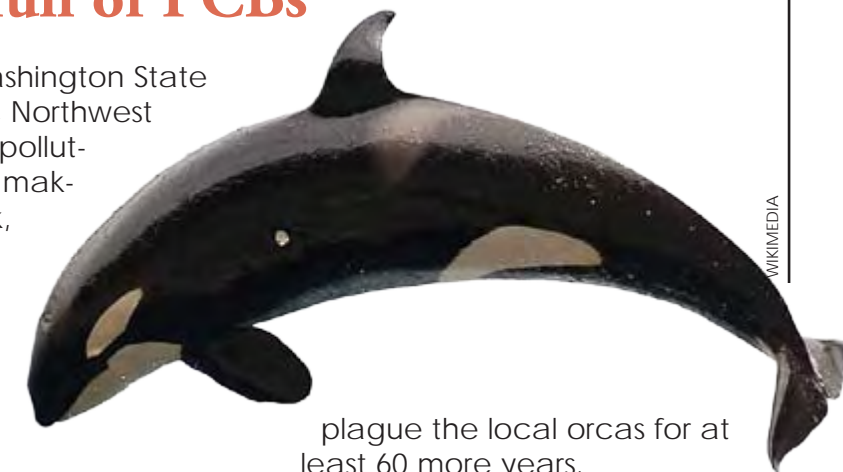
The chemicals cling to fat and can cause reproductive and immunological problems. While the researchers noted a slight decline in the level of PCBs over time, the chemical lingers on 30 years after it was banned,

Another recent publication predicted that problems from PCB contamination would

plague the local orcas for at least 60 more years.

Also troubling was the increase in the amount of commonly used flame retardants called PBDEs, or polybrominated diphenyl ethers, which are structurally similar to PCBs and can cause similar ailments. Thousands of tons of PBDEs are added to TVs, computers and furniture cushions among other items to make them fire-resistant. They can last for years in the environment.

Washington leaders earlier this year approved a ban on some uses of the chemicals because of health worries. ■



# Parlez-vous Whelsh? Whale conversation decoded



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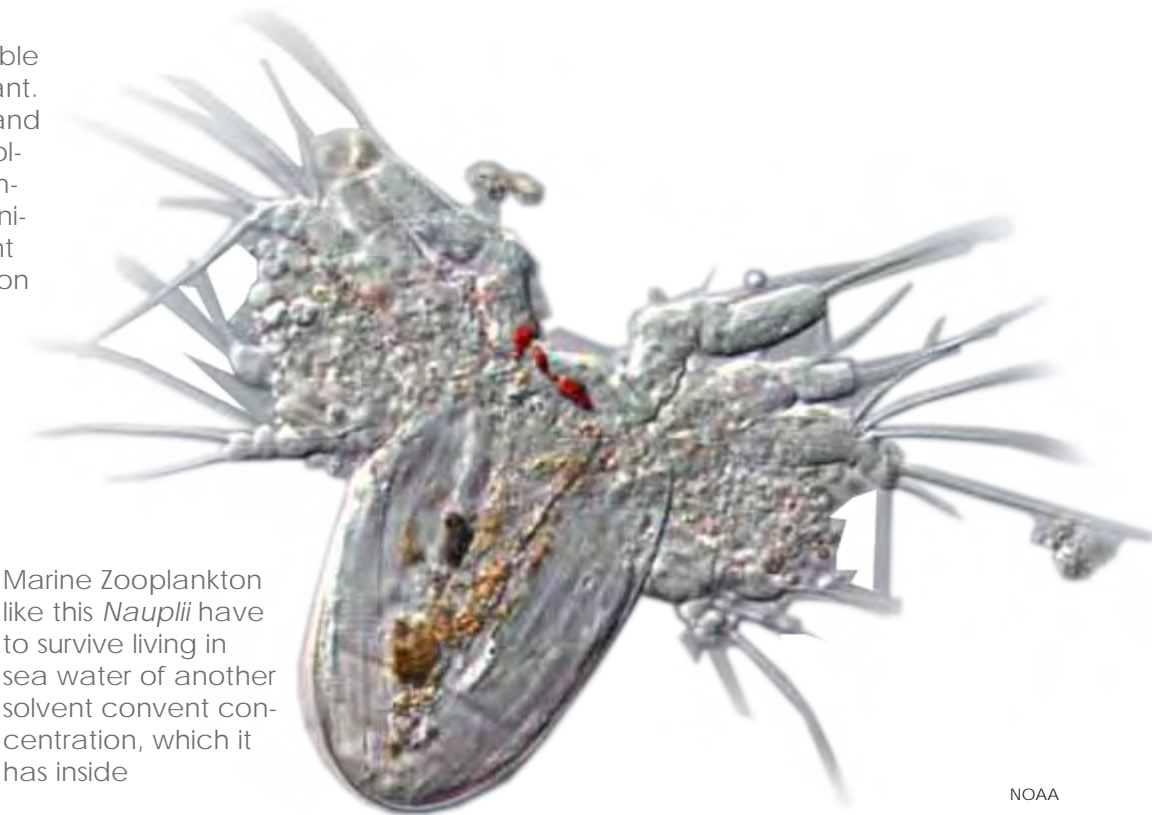


Edited by Michael Symes



The surface tension of water is a visible physical property of water which permits water skaters to skate on the surface of the water

Osmosis is less visible but more important. Without osmosis and the passage of solvents across membranes, neither animal cells nor plant cells could function



Marine Zooplankton like this Nauplii have to survive living in sea water of another solvent concentration, which it has inside

NOAA

Text by Michael Symes

We have written much here in this magazine about the different properties of water. Some of them, such as surface tension, are of importance to the ability of aquatic fauna to function in their given environment. For example, surface tension permits water skaters to skate on the surface of the water where its habitat is neither the water below the surface nor the air above.

However, more than a purely physical phenomenon, osmosis is of importance for life itself, for no physical phenomenon has any greater importance in biology than does osmosis. Without osmosis neither animal cells nor plant cells could function. Not only this, osmosis also appears in many different guises in our everyday existence. So, what is this strange phenomenon?

### Osmosis

First, a definition: osmosis is the passage of a solvent from a region of high solvent concentration through a semi-permeable membrane to a region of low solvent concentration. In by far the majority of cases, especially biological, the solvent will be water.

Now, although this definition of osmosis is complete in itself, it is rather abstract for the general reader, and therefore, requires some amplification. What it means is this. If there is a concentrated solution of sugar, say, on one side of a suitable membrane (see below) and a less concentrated solution on the other side, then water will pass from the

less concentrated side through to the other side where it will attempt to 'thin' the concentrated solution. The flow of water will cease when an equilibrium is established where the pressure on both sides of the membrane is the same.

### The osmosis relationship

The basic relation for osmosis for a dilute solution is the *van't Hoff equation*:

$$PV = n_p RT$$

where P is the osmotic pressure and  $n_p$  is the amount of solute in moles in a volume V of solvent. R, the gas constant, is  $8.314 \text{ J K}^{-1} \text{ mol}^{-1}$  and K is the absolute temperature.

For example, sucrose,  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ , has molecular weight of 342.30. A 1% solution in water will therefore contain  $1/342.30 = 0.00292$  moles of sucrose. This is very small compared with the  $1000/18 = 55.5$  moles of water in a litre of solution. From the molar point of view, it is a concentration of 1 in 19000 i.e. very dilute.

Assuming ideal conditions, the osmotic pressure produced by a 1% sucrose solution in water at room temperature ( $23^\circ\text{C}$ ) is thus given by:-

$$\begin{aligned} P &= 0.00292 \times 8.314 \times 296 / 0.001 \text{ Nm}^{-2} \\ &= 7186 \text{ Nm}^{-2} \\ &= \text{ca. } 0.72 \text{ atmospheres pressure} \end{aligned}$$

# Osmosis



*A crucial phenomenon for living organisms*

*The osmotic pressure produced by a 1% sucrose solution in water at room temperature is ca. 0.72 bar*



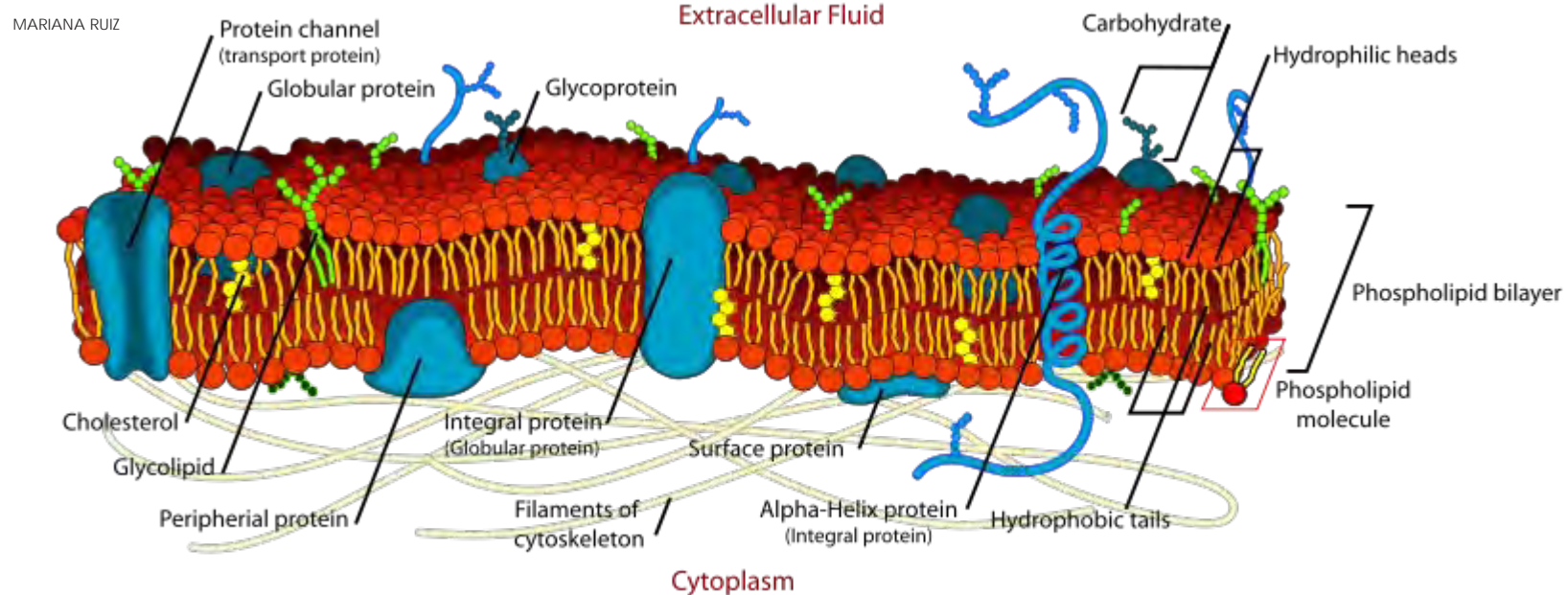


As one atmosphere can support a column of water 10m in height, this means that a 1% solution of sucrose could support a column of water 7.2 m in height. Thus, such a solution of sucrose could pump water to the top of a 7m high tree.

It is evident from the equation that if the osmotic pressure is known for a given concentration of solute, then it is possible to determine its molecular weight. It should be noted that this is not only true for water as the solute but also for other solvents. For example, the molecular weight of polyvinylchloride (PVC) can be determined by osmotic pressure measurements in cyclohexanone solution.

### Semi-permeable membranes

Semi-permeable membranes are very thin films of a material, such as cellulose, that permit some molecules to pass through while hindering others. The molecules are separated from each other by their size, so that a small molecule such as water can easily pass through the membrane whilst large molecules such as sugars cannot. Semi-permeable membranes can occur in nature either as a plant cell walls or animal cell walls. From the point of view of osmosis, the main difference between these two is that a plant cell consists of a cell membrane supported by a strong cell wall while an animal cell has no cell wall, only a membrane.



The cell membrane is a semi-permeable lipid bilayer common to all living cells. It contains a variety of biological molecules, primarily proteins and lipids, which are involved in a vast array of cellular processes

Different concentrations of salts on either side of the membrane creates an osmotic pressure that tends to drive water through the membrane. Maintaining this difference requires a lot of energy

For many technical purposes semi-permeable membranes can be tailored from synthetic polymers to permit specific molecules to pass through.

### Picked vegetables

If you like your pickled gerkins or onions crisp, then use osmosis. When vegetables are put into brine, osmosis will occur through the semi-permeable cucumber or onion skin, so that the water inside the vegetables will pass out into the concentrated brine. This will give the pickles that desired crunchiness.

### Preservation of food stuffs

If there are bacteria or yeast cells present in concentrated sugar solutions, then they will dehydrate due to osmosis and either die or become inactive. This is why sugar is used to preserve fruits in jams, etc.

### Osmotic balance in animal cells

It is clear that if an organism is to function efficiently, if at all, then an osmotic balance must be maintained between the contents of its cells and their surroundings. This can be especially difficult for animal cells as, unlike plant cells, they do not have a strong supporting cell wall, only a cell membrane.

This means that if a blood cell, for example, is introduced into a hypertonic solution i.e. one with a higher concentration of solutes

than that found within the cell cytoplasm, it will lose water by osmosis, and shrink. This can occur in the case of diabetes, where the sugar concentration in the blood becomes too high.

### Burst

On the other hand, if the cell is in a hypotonic solution i.e. a solution with a lower concentration of solutes, then it will swell up and even burst under the osmotic pressure.

In either case there is a problem, so animal cells must always be

bathed in an isotonic solution i.e. a solution having the same osmotic strength as their cytoplasm. The maintenance of such an isotonic solution is biologically very complex, being controlled by the kidneys under the influence of mechanisms in the brain which control the feeling of thirst, for example.

### The challenge

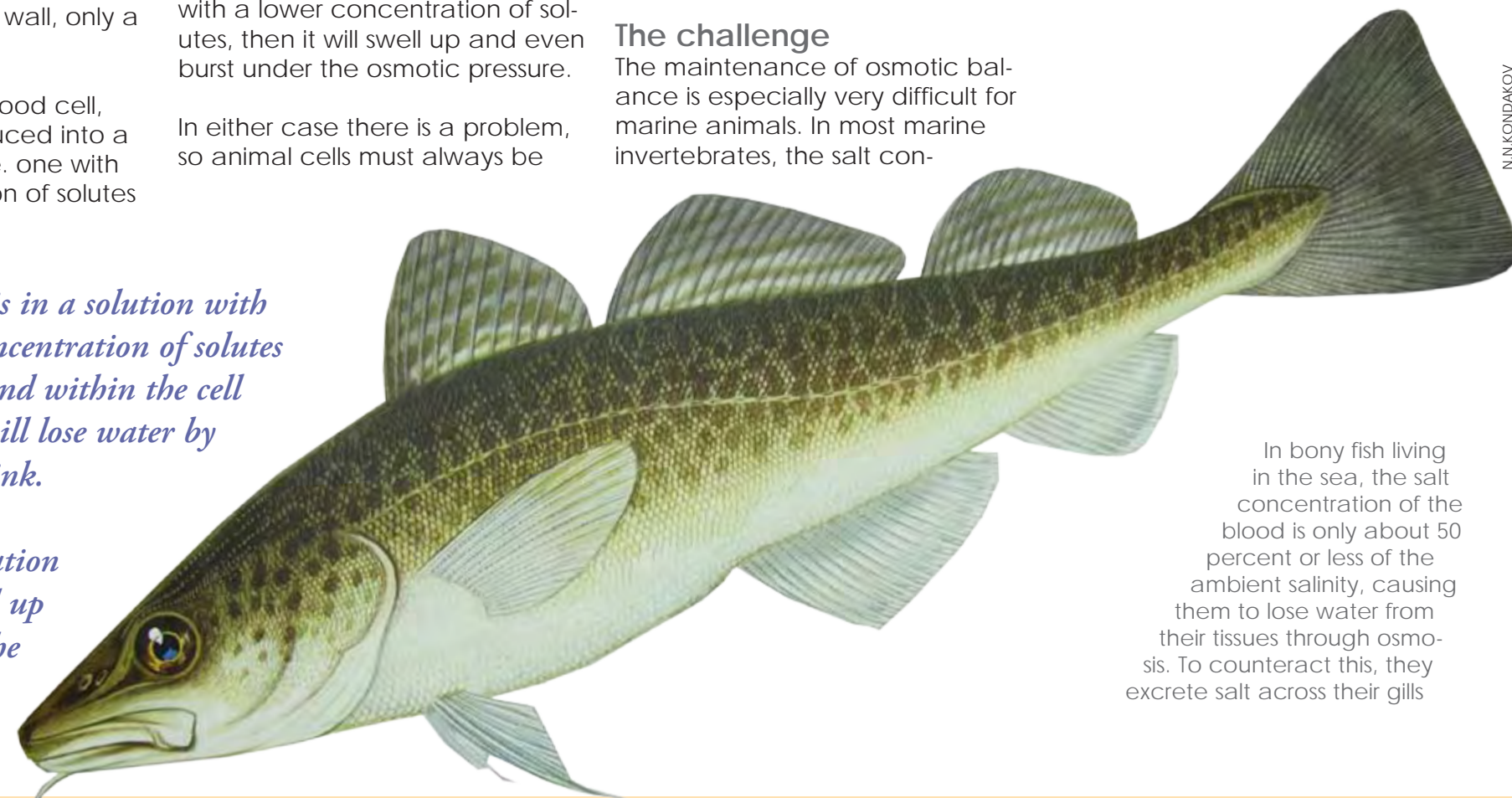
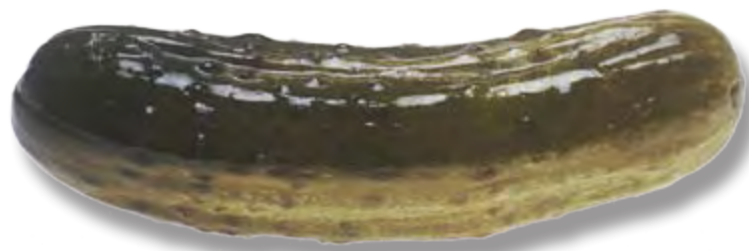
The maintenance of osmotic balance is especially very difficult for marine animals. In most marine invertebrates, the salt con-

centration of the blood and body fluids is about the same as in seawater of average salinity. In the teleosts i.e. the bony fish, the salt concentration of the blood is only about 50% or less of the ambient salinity. This has physiological consequences, especially for aquatic animals migrating between seawater and freshwater.

The anadromous fish (from the Greek *anadromos*, running upwards) like the salmon, sturgeon, and sea lampreys migrate up rivers to breed in freshwater and their young then migrate to the sea. On the other hand, there are the catadromous fish (from the Greek *katadromos*, running down) which migrate down to the seas to breed but spend most of their adult life in freshwater, for example, the American and the European eels. It is also a problem for aquatic animals inhabiting estuaries where the salinity can change rapidly.

*If the cell is in a solution with a higher concentration of solutes than that found within the cell cytoplasm, it will lose water by osmosis, and shrink.*

*In a lower concentration of solutes, it will swell up and even burst under the osmotic pressure*

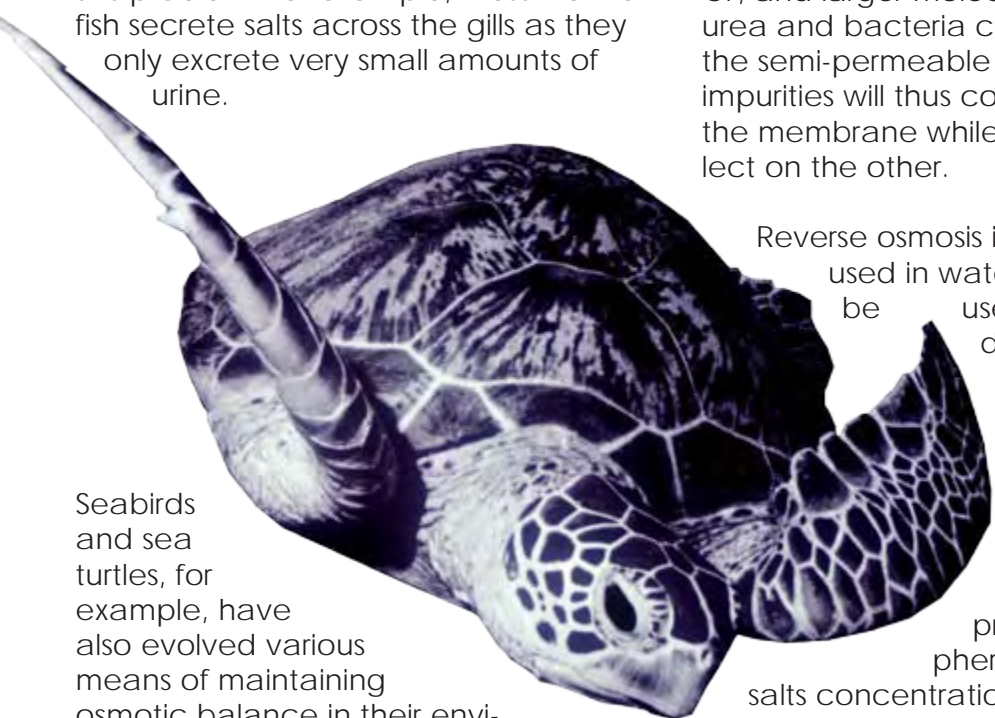


In bony fish living in the sea, the salt concentration of the blood is only about 50 percent or less of the ambient salinity, causing them to lose water from their tissues through osmosis. To counteract this, they excrete salt across their gills

N.N.KONDAKOV



Because of the difference in salt concentration between blood and the ambient water, osmosis will cause teleost fish to lose water. Their internal salt concentration will therefore increase so that several mechanisms have evolved to counteract this problem. For example, most marine fish secrete salts across the gills as they only excrete very small amounts of urine.



Seabirds and sea turtles, for example, have also evolved various means of maintaining osmotic balance in their environments. Marine birds drink sea water to obtain water, but their kidneys are unable to produce concentrated urine. They therefore have special salt glands situated above the orbit of the eye, which can secrete salt. Marine mammals, on the other hand, do not have specialised glands for excreting salts. They avoid drinking seawater and get their water from the metabolism of food, depending on their kidneys for osmotic balance.

### Reverse osmosis

Osmosis can be slowed, stopped and even reversed if sufficient pressure is

applied to the concentrated side of the membrane. Reverse osmosis thus occurs when the water is forced through the membrane against the concentration gradient, from the lower concentration to the higher. Ions such as  $\text{Na}^+$ ,  $\text{Ca}^{++}$ , and  $\text{Cl}^-$ , and larger molecules such as sugars, urea and bacteria cannot pass through the semi-permeable membrane. The impurities will thus collect on one side of the membrane while clean water will collect on the other.

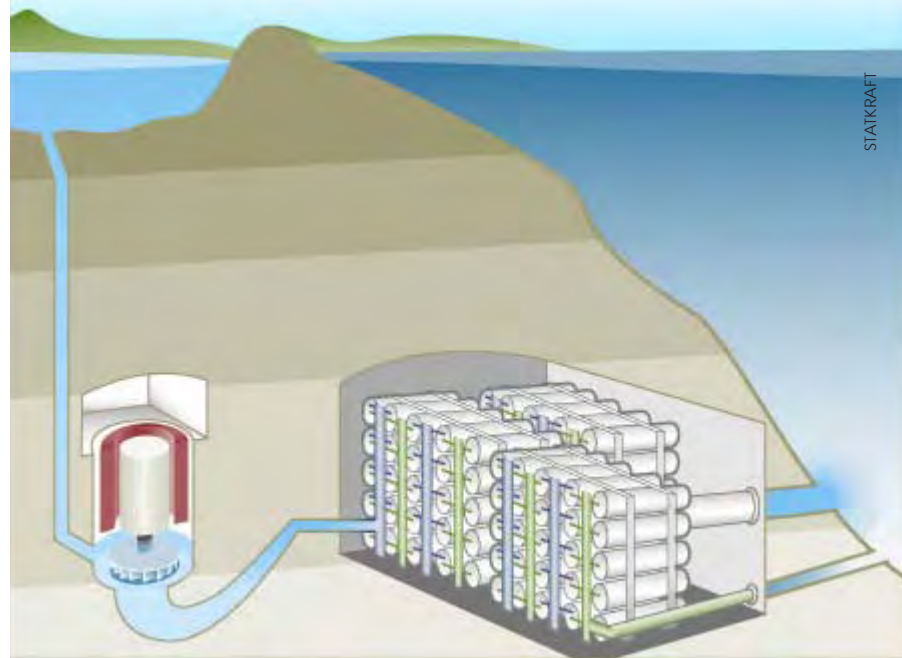
Reverse osmosis is therefore often used in water purification. It can be used, for example, to desalinate seawater, although it requires large amounts of energy. Pressures of up to 40 to 70 atmospheres are required because the natural osmotic pressure of 24 atmospheres arising from the salts concentration has to be overcome. As brackish water contains a much lower concentration of salts, the purification of fresh and brackish water requires much lower pressures of about 10 atmospheres.

It can also be used to remove water as an impurity from other liquids, for example from ethanol, or for removing medical and industrial contaminants from fresh water.

### Dialysis

This is a very important application of osmosis, which is used for purifying blood with loss of kidney function. In a dialysis machine, the patient's blood is passed

Salt power plant as envisioned by Norwegian energy company Statkraft



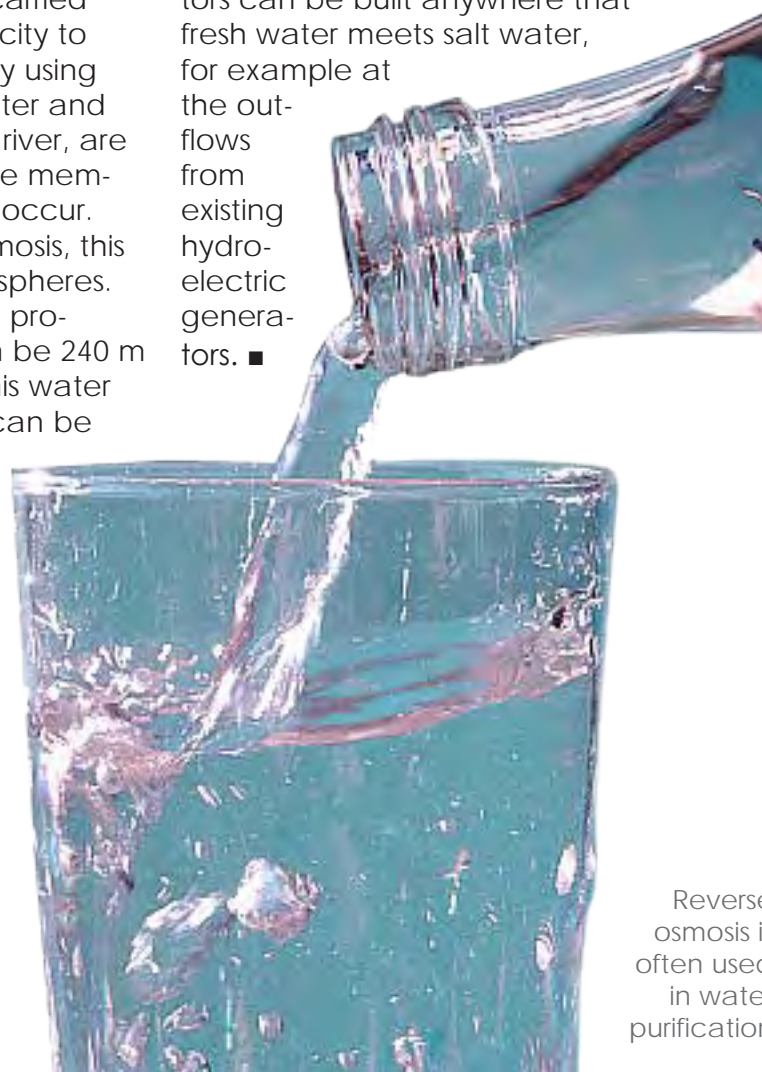
through tubes made of a semi-permeable material. The tubes are flushed externally with a sterile solution of sugars and other components. The corpuscular cells of the blood, such as the red and white blood cells, are too big to pass through the membrane of the tubes. However, urea and salt can pass through into the sterile solution and are thereby removed from the blood.

### Electricity from osmosis

An interesting project is being carried out in Norway to enable electricity to be produced from sea water by using osmotic pressure. When salt water and fresh water, from a stream or a river, are separated by a semi-permeable membrane, an osmotic pressure will occur. As stated above for reverse osmosis, this pressure can be up to 24 atmospheres. A column of water can thus be produced, which theoretically can be 240 m high. The potential energy of this water column, like that from a dam, can be used to drive a turbine, which can then be used to drive a generator. The production of electricity by this method has no apparent ecological consequences, with the

fresh water and salt water being mixed in the water column in the same way as would occur anyway at the mouth of the stream.

The potential for this form of ecologically-friendly energy is large, as such generators can be built anywhere that fresh water meets salt water, for example at the outflows from existing hydro-electric generators. ■



Reverse osmosis is often used in water purification

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# Pearls of the Mediterranean



PETER SUTTER

Text by Harald Apelt

Photos by Harald Apelt, Christoph Gerigk, Wolfgang Pölzer and Peter Sutter

Perhaps you think you know most of the amazing dive sites in the world from the Caribbean to the Maldives, from Asia to Micronesia. Are you looking for something new? We've discovered some hidden pearls in the Mediterranean Sea that you probably have never heard of before. Starting in the next issue of *X-RAY MAG*, we will present our insider tips to you and take a closer look at some of the Mediterranean's most beautiful little picturesque villages and their stunning dive sites. Be prepared to be inspired.

What qualities makes a diving holiday great? Is it the variety of dive sites? The accommodation? Or is it the location? In our opinion, it is the total sum of these three parts and how the mixture comes together. There are so many good reasons to combine a trip to Europe with a

visit to one of our "hidden pearls" at the Mediterranean Sea. Why? Because you will fall in love with these locations, their special mélange of historical charm, international atmosphere, mild climate and good diving. The multicultural nations at the Mediterranean shoreline offer a colourful mixture of culinary delights—a sea-oriented cuisine with roots in the kitchens of Africa, Asia and Europe.

The Mediterranean Sea is enclosed by the landmasses of no less than three continents: by Europe to the north, in the east by Asia and in the south by Africa. There are 22 countries in all connected by this sea, which historically, has had a big influence in the development of cultural exchange and trade.

Although the Mediterranean Sea covers about 2.5 million square kilometers, it does not belong to the seven seas. Officially, it is a part of the Atlantic Ocean to which it is connected with the Strait of Gibraltar, a 14-kilometer wide strait between Africa and Europe. There are 107 islands in the Mediterranean bigger than one square kilometer, and thousands of little islands and rocks that are worthwhile diving.



FRANCK GODDIO / HILTI FOUNDATION PHOTO: CHRISTOPH GERIGK

TOP: Calella de Palafrugell at Spanish Costa Brava is one of the Mediterranean's "pearls"

RIGHT: The Mediterranean presents exiting moments like the discovery of the artefacts of old Alexandria Harbour at Egypt coast by Franck Goddio



# pearls of the mediterranean



Rare moments at the Mediterranean: clouds over southern Italy. On the left side of the map, you see the narrow entry from North Atlantic to the Mediterranean—the Strait of Gibraltar

## The Swimming Pool

In the high season from mid June to the beginning of September, the Mediterranean is the “swim-

mingpool” of the Europeans. Scandinavians, Germans, Dutch—and since the fall of the iron curtain more and more tour-

ists from eastern Europe—journey down in droves by car on the packed highways to the shores of the Mediterranean. But you should not share this experience of being just one of a million at the beach resorts, hotels, camping grounds and overcrowded beaches during the intense weeks of midsummer vacation.

You should visit the lovely shores of Turkey, enter one of the numerous Greek islands or discover the western Mediterranean coastline, from Italy’s Liguria via France’s Cote d’Azur to the Spanish Costa Brava in late spring

or in early September. You will meet hospitable, relaxed and friendly people. Outside the hectic main season, everybody slows down. This is exactly the right time to spend your holiday down there.

## Diving

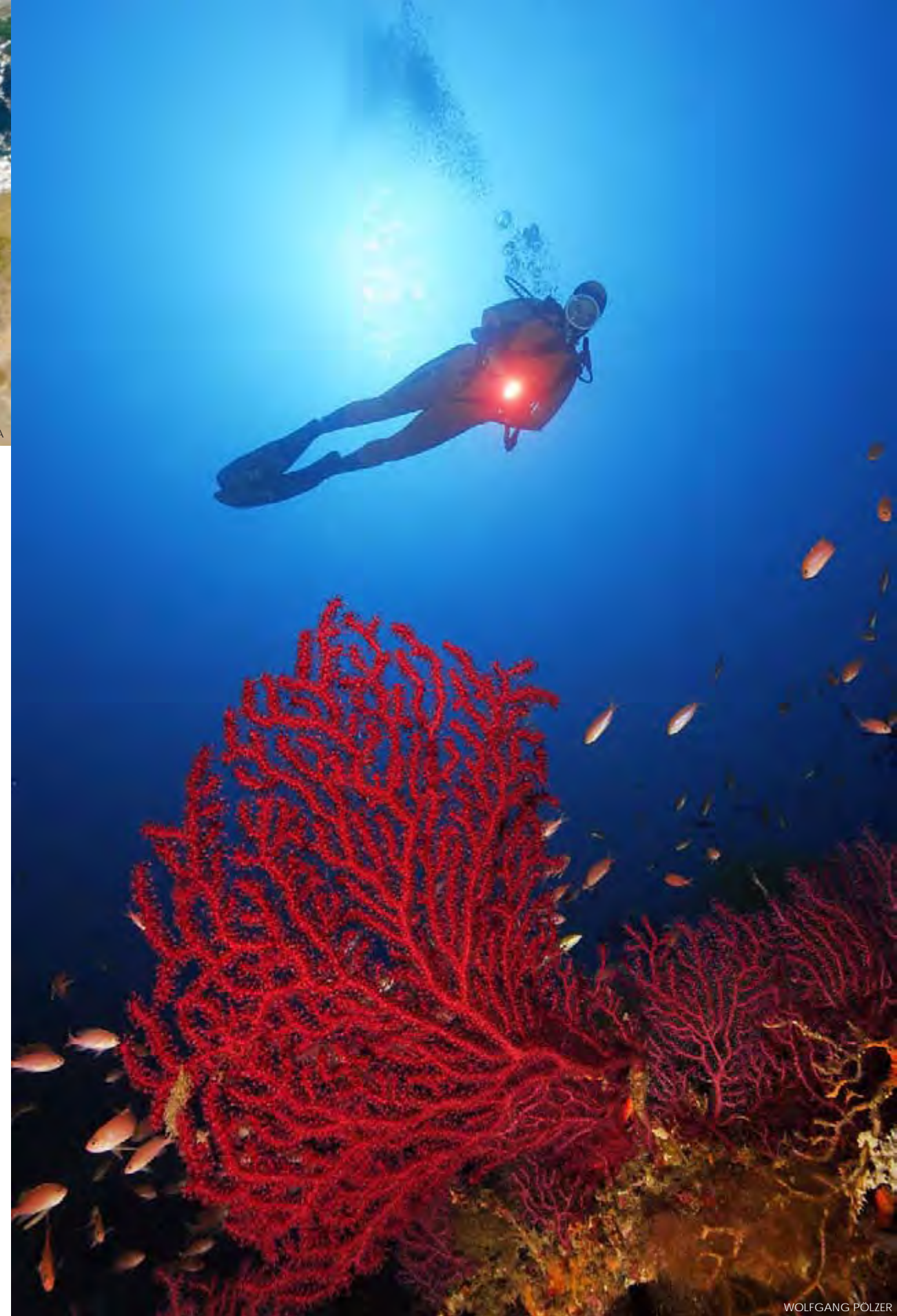
Divers will find good diving conditions throughout the season, which runs from April until the end of October. But the Mediterranean is a sea of very special conditions. It can be quite cold up to the end of April, and sometimes it can have quickly changing weather conditions and visibility.

It has diverse marine flora and wildlife. The western part of the Mediterranean Sea around northern Spain, south of France and the Italian coast can be quite colourful. The awesome reefs, covered with colour changing sea fans and sponges are an unforgettable spectacle even for divers who prefer the tropics.

Big fish are not very often seen, however. The big groupers have been hunted for many years by a huge number of harpoon-divers. Sharks are quite rare because of the high salinity of this sea. Despite this fact, the biggest Great White ever caught by a sport fisher was



WOLFGANG PÖLZER



WOLFGANG PÖLZER

ABOVE AND LEFT: Colourful impressions are awaiting divers, especially in the western part of the “Med”



# pearls of the mediterranean



WOLFGANG POLZER

COUNTER-CLOCKWISE FROM LEFT: Vis Harbour at the Croatian island of Vis is a lovely place to spend summer time; Conger eel patrols WW II wreck; Divers meet these species on nearly every dive—Scorpionfish and cup corals (inset)

caught in the Mediterranean Sea. Since opening of the Suez Canal in 1869, which connects the Red Sea with the Mediterranean Sea, a continuous migration of plants and animals from the Red Sea has colonized the eastern part of the Mediterranean Sea. Thus, step by step, invasive species from the Red Sea entered the eastern Mediterranean region. They are now endangering more and more endemic Mediterranean species.

the most spectacular discoveries was made by Frank Goddio and his team at the northern Egyptian coastline right in front of Alexandria. At the bottom of the bay of Abukir, he discovered remnants of ancient Alexandria. And further to the east, in front of the Turkish coastline, many historical sites have been found by divers. Finally, numerous WWII wrecks are located all over the Mediterranean and guarantee some exciting dives. ■

What makes diving really unique in the Mediterranean Sea are the leftovers of thousands of years of human activity, which are still hidden under the surface of the sea. Historical ruins and amphora fields are mute witnesses of forgotten civilisations. One of



WOLFGANG POLZER



PETER SUTTER



PETER SUTTER





Edited by  
Gunild Pak Symes

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POINT & CLICK  
ON BOLD LINKS



# & Stocking Stuffers for Divers Holiday Gifts

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Great for kids on long trips. The gray and white shark is sewn onto a soft blue velour pillow. The shark's tail makes a handle, which children can hold to carry the pillow. Price: US\$12.99  
[www.tableandhome.com](http://www.tableandhome.com)



## Silk Whale Tie

Little Grey whales decorate this handsome silk tie. It's a classic addition to spruce up anyone's work wardrobe. On Sale: US\$15.50  
[www.whalesdirect.com](http://www.whalesdirect.com)



## Dezi AniMules Shark Slippers

Patrol the halls of your home hunting for a meal with these extra comfy, super-cool Shark Slippers! Adult size AniMules slippers are 10 inches inside the shoe (will not fit men's 7 or women's 9 and up). Price: US\$16.99  
[www.tableandhome.com](http://www.tableandhome.com)



## Man-Eating Shark Costume

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**Man-Eating-Shark Costume >>>**



## Sea Otter Socks

Keep your feet comfy and make a conservation fashion statement with these thick soft socks sporting endearing sea otter faces. Sea Otter socks fit adults sizes 9-11. Price: US\$8.95  
[www.whalesdirect.com](http://www.whalesdirect.com)



## Manatee and Leopard Shark Socks by Wild-Habitat

are comfy and warm while sporting your favorite sea creature. Other marine animal designs available including whales, seals, seahorses, and other endangered creatures. 75% cotton, 15% nylon, 10% spandex. Sizes: S, M, L. Price: US\$7.49  
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**QueaseEASE** is highly effective for the relief of motion, air and sea sickness. Created by a medical professional, it employs pure and natural essential oils of spearmint, peppermint, ginger, and lavender. Simply breathing in the aroma. Reaches the central nervous system to interrupt the nausea cycle. Safe for all ages. Does not cause drowsiness. Does not react with alcohol or medications. Price: US\$14.95 [www.soothing-scents.com](http://www.soothing-scents.com)







### Shimmering Fish

This sassy sparkly top is decorated with a shimmering foil fish and bubble design. Sure to brighten up your holiday party wardrobe, it comes with a matching broom stick skirt. Sizes L, M, S. Price: US\$44.95 [www.whalesdirect.com](http://www.whalesdirect.com)

**Anetta Van Haagen** uses recycled items to create unique and colorful jewelry designs like this necklace and earring set made with recycled sea glass, cultured pearls, semi-precious beads, cable wire, extender chain and lobster lock. Pieces are crafted with ecological and social responsibility in mind. Sea glass comes in various shapes and colors such as sea green, cobalt blue (seen), light blue, dark brown, dark red, light green, dark green, olive and translucent white. Choose from a plethora of flattering styles. [www.harrison-design.com](http://www.harrison-design.com)



**Diving Designs** is a line of fine jewelry for everyone who loves diving, the ocean, and all of its wonderful sea life. Each piece is an original design and is individually hand made ranging from \$289 and up. Their motto: "Embrace the spirit of the ocean. Express your passion.™" Seen here, Diamond and Ruby Dive Flag Pendant with 14 karat gold, diamonds, rubies and 16-inch wheat chain. Price: US\$1699.00 [www.DIVINGDESIGNS.com](http://www.DIVINGDESIGNS.com)



### Sterling Silver Dolphin Necklace

This lovely semi-circle pendant of sterling silver is made up of five leaping dolphins linked together. Makes a wonderful gift for your fellow dolphin lover. 18" sterling chain. Sterling Silver Dolphin Necklace. Price: US\$34.95

[www.whalesdirect.com](http://www.whalesdirect.com)



### Evan Lloyd 14kt Gold Diamond Dolphin Wrap Ring

Another elegant design created by wildlife jewelry artist Evan Lloyd. This dolphin wrap ring is finely crafted with 14kt gold and 18 diamonds set in a white gold tail.

It's sure to turn heads and make her smile. Diamond studded tail ring available in whole sizes. Weight: 4.7 grams. Price: US\$900.00 [www.whalesdirect.com](http://www.whalesdirect.com)

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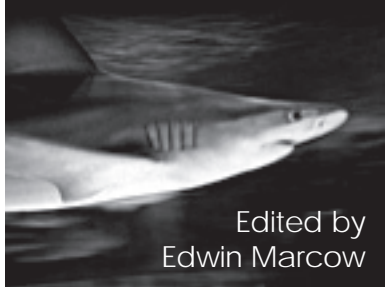


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Edited by Edwin Marcow

## Shark caught 150km upriver in Iraq. Locals blame the Americans

On October 30, Reuters reported from Nassiria in Iraq that a man and his two sons were fishing in the river and discovered they had caught a two-meter-long shark in their net. According to Reuters, locals blamed the US military for the shark's presence.

Tahseen Ali, a teacher, told Reuters that there was a "75 percent chance" Americans had put the shark in the water. "This is very frightening for us. Our children always swim in the river and I believe that there are more sharks.

I believe that America is behind this matter," fisherman Hatim Karim said." ■

Was it a bull shark?

Bull sharks are one of the very few saltwater species who are capable of swimming into freshwater



ALBERT KOK

## Sharks pursue bloody victims using gel

Sharks and rays use a gel-like substance on their heads to help pick out and follow the trail of a bleeding prey, a new scientific study has found

It has been widely known that sharks have a special sensory organ on their heads, called the ampullae of Lorenzini, which enable them to detect the very weak electrical fields that prey emit when they swim or bleed.

But now scientists have found that a gel-like substance plays a big role in this process known as electroreception, explaining why sharks pursue bloody victims, even when other "easy target" prey is around, and the gushing blood obscures the shark's vision and smell.

The gel, which sits in the skin pores that are the openings to the sensory ampullae of Lorenzini, contains various proteins and salts similar to mucus only with a jello-like consistency," said R. Douglas

Fields, lead author of the new report.

"With this gel, sharks can detect the strong electrical field produced by bloody salts," explains Fields.

Skin membrane cells sense electricity, causing positively charged calcium ions to rush in. The charge moves through the gel before reaching nerves that send the electrical signals to the fish's brain.

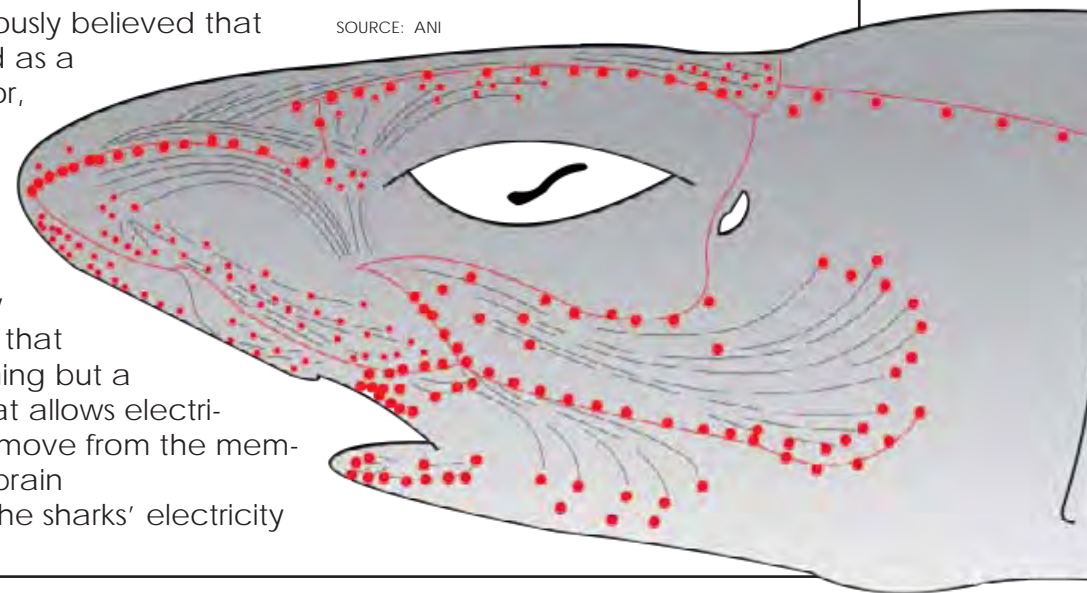
It was previously believed that the gel served as a semiconductor, generating electricity in response to temperature changes, but the new study demonstrates that the gel is nothing but a conductor that allows electrical signals to move from the membrane to the brain

"Now that the sharks' electricity

detection process is better understood, the information may one day lead to better shark repellent devices that can decoy sharks away from swimmers," said Harold Zakon, a professor of neurobiology at the University of Texas.

This new study is based on reports of swimmers towing wounded buddies to shore, with the shark still going after the injured person instead of the rescuer. ■

SOURCE: ANI



CHRIS HUH

## Shark's n Bars

Three sharks dead and one more critically ill are being treated with antibiotics. PETA, People for the Ethical Treatment of Animals, is taking aim at Qua Bottle Lounge, a bar in downtown Austin, Texas. The newly opened bar has a 19,000 gallon aquarium situated underneath the dance floor. This aquarium is home to reef sharks and stingrays.

"The pounding vibrations of a club's music, and the noise from the dancers on the top of the tank as well as the bright lights and all the other things that go on in a night club, will cause unrelieved suffering to these very sensitive animals," said PETA spokesman Daniel Hauff. Sharks are highly sensitive to noise, light and vibrations and they need to hunt and swim unhindered.

Qua Bar responded that the shark tank has a three-inch acrylic barrier that is both soundproof and vibration-proof, and they only lost one shark during transportation. which PETA disputes.

*It is rare that I give a personal opinion on any written article; I always give the full story without bias, though always championing conservational causes. This story only confirms to me how cruel man can be, indifferent to the world around him. I only wish there were laws in the USA to protect these sharks from this cruelty. —ed ■*

## Great Whites in the Mediterranean are disappearing

One of the better-kept secrets is that there is, or was, a large and thriving Great White shark population in the Mediterranean. First identified by Greek mariners at the time of Aristotle, the population appears to live within a triangle shape stretching as far as Gibraltar to Sicily and Greece.

Though, sadly, this population, too, appears to be under threat. A recent study found a population fall of 50 to 60 percent. Over-fishing declines in bluefin tuna, habitat degradation due to tourism, and the development of coastal areas has put tre-

mendous pressure on the Mediterranean Great White population.

Richard Pierce Director of the Shark Trust, a non-profit marine conservation charity based in the UK, was part of a research team in 2005 that spent several months at sea searching for Great Whites.

"We chummed (put out shark bait) around the clock at all depths, but we didn't see a sign of a Great White," Pierce said. "In fact, we saw very little evidence of sharks in general. It was both terrifying and depressing." ■

*"It was both terrifying and depressing"*



PETER SYMES

File photo: Black tip Shark in an aquarium in an exhibition hall



# Call for action

With only an estimated 500 Grey Nurse sharks remaining along Australia's East coast, the phrase *situation critical* coined by National Geographic sums up this impending environmental disaster.

As precisely reported in Sharktales, The Nature Conservation Council of New South Wales has been pushing for the establishment of marine sanctuaries around key Grey Nurse shark habitats. It is hoped that the New South Wales Government will close off critical coastal areas to fishing to protect the sharks.

Mark Spencer, an underwater photographer has been championing the cause of the Grey Nurse Sharks by raising the plight that both commercial and recreational fishing has had on the shark population.

"Almost every second Grey Nurse shark I see has a hook hanging out it's mouth, with a bit of trailing line following it, and in the worst case scenario, you see things like ropes tied around a tail and things like that."

Giselle Firme from The Nature

Conservation Council added: "The greatest traps for the Grey Nurse sharks are fishing practices, that they get caught in fishing lines, and they swallow the hooks, and they die from infections, as well as shark nets".

Bill Litchfield, a local commercial fisherman and campaigner for the fishing industry has acknowledged that these closures are necessary in key habitats, though doubts the effectiveness of fishing closures in protecting this shark. Lets hope common sense prevails.

On the other side of the globe in Florida, an 11 foot Mako shark was caught at the Destin Fishing Rodeo. Weighing in at 844.4 pounds the fisherman who were there fishing for grouper got lucky and caught this mako instead.

The fisherman ignoring their own catch-and-release policy, instead had this magnificent animal presented as a trophy. This negative Jaws stereotype only reinforces the message that the only good

shark is a dead shark, something I had hoped died out in the early 80's, and though the fisherman have expressed their respect for the shark then why kill it and present it as a trophy?

In Inhambane Mozambique illegal fishing is on the rise. The practice of shark finning to supply the Far East market is fueling this. With a kilo of shark fins fetching around 6,000 to 7,000 meticais \$240 to \$280 USD sold directly to Chinese buyers, this shark finning mainly concentrated around Pomene and the coastal districts of Morrumbene and Inhassoro reports of more than 20 sharks being killed per day.

The Chinese traders then illegally export the shark fins to Asia!

It is obvious that if these traders were not within Mozambique. Local fisherman would not be fishing for sharks but following their traditional fishing practises. ■

*"Almost every second Grey Nurse shark I see has a hook hanging out it's mouth, with a bit of trailing line following it"*

## White Ratfish

A rare—and probably the only known—specimen of albino ratfish has been caught off Whidbey Island in Washington state. The fish was almost pure white with a

crystalline layer near the surface of its skin that gave it a silvery sheen. Ratfish usually hang out in places with soft, muddy bottoms, so they are typically brown or black with a smattering of white spots to blend in with the sediments.

"It must have been like a beacon," says Ted Pietsch, a professor of fisheries and aquatic sciences

with the University of Washington. The foot-long female is estimated to be between two and three years old.

"Why didn't it get eaten, long before this, by some predator, for example, by a spiny dogfish so common in the Puget Sound and that love to devour ratfish?" Pietsch pondered. ■



## No more shark's fin soup

Shark's fin soup is off the menu at all functions and events organised by Malaysia's Environment Ministry and agencies under it. Natural Resources and Environment Minister Datuk Seri Azmi Khalid hopes to encourage individuals and organisations to stop serving the delicacy at corporate functions. "Ultimately by refraining from the consumption of shark's fin soup it is hoped that the ministry could contribute in one way or another towards current shark conservation efforts," said a statement from the ministry. ■

## When faking it is good!

From Cairo to Cape Town, San Francisco to Sydney Harbour, most of us have come across fake or counterfeit goods. For the first time, a fake item for legal sale will be good for business, the environment and the consumer!

Nikko Yuba Seizo Co, a Japanese food-processing company has developed artificial (fake) shark fins made from pork gelatin. The fake shark fins costs the consumer about one-tenth—only 1,500 yen or \$15 dollars—of the price of the real shark fin. A spokesman reported that the company had long queues of customers when it first presented its product in China at a recent trade fair in Guangzhou. With greater pressure within China to boycott the trade in shark fins, in part thanks to it's most famous sports personality basketball star Yao Ming, and with this cheaper alternative now being marketed it is hoped that this could be the start of a fall in shark finning. ■

## A Letter From The Editor

### A Call for Action

Just as in war torn parts of the globe decimated by death and destruction, it is often a UN peacekeeping force brought in to bring peace and stability to this ravaged part of the world.

Could the protection of the oceans be given over to the UN? Navies from around the world could be seconded under UN colours to protect the marine environment from illegal fishing no matter were in the world.

Could this force be given the powers to act in all territorial waters otherwise from Australia, the US and Mozambique we will witness and be impendent to the slow death of the shark populations around the World?

Can it be argued that the protection of the marine environment across the Globe has reached such a critical point, that no country, regardless of it's place in the international community can be trusted to safeguard what after all does not belong to them but to mother earth?

Can an international force with no ties to the machinery of politics, both national and international, be the only body trusted to take both immediate and lasting change, otherwise we face an environmental time bomb that will leave it's mark on the world for generations to come? ■

—Edwin Marcow

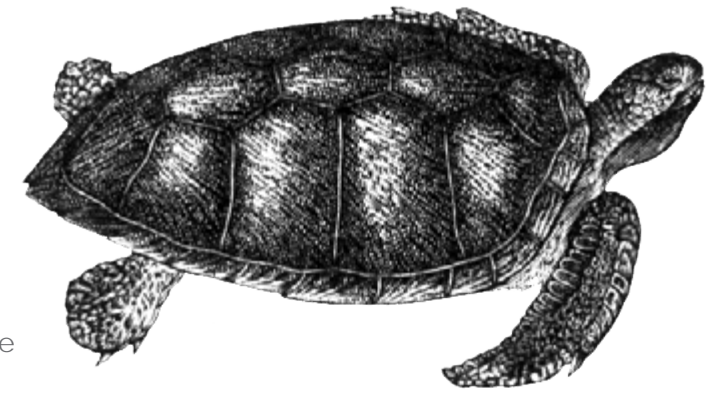






In these squalid conditions the sea turtles were kept before we rescued them

Your support made the difference.  
Your support is still needed.  
This is why...



With a little help from friends, the sea turtles were soon on their way back to the ocean

### The phone call

It was in still in the wee hours of an early morning when Wayan Wiradnayana, the director of the Pro-fauna office on Bali received a call from an Austrian tourist. Whilst walking on Sanur beach, the man had witnessed two large turtles being loaded into a boat and hidden in a nearby hut. What happened next sounds unbelievable, but it is true. Thanks to [www.sos-seaturtles.ch](http://www.sos-seaturtles.ch) and media coverage, the man was fully aware of the plight of the sea turtle on Bali and the name Profauna was stuck in his mind. The owner of a nearby restaurant helped him look up the correct telephone numbers, and Wayan wasted no time in informing the chief of police, the forestry department and the Bali marine police.

Time was of the essence because there was a strong possibility that the sea turtles might be moved on. Indeed, when the

Freedom at last!

## Turtle Week Bali

# A phone call is all it takes!



We have reported on the plight of the sea turtles before. We have reported how they were being butchered by the thousands. And we have asked for your support and signatures on a petition to stop the slaughter of these ancient ocean citizens.

It is now time to report back that your support has made a real difference. But the fight is not quite over yet.

Text and photos by Kurt Amsler

Make sure you visit [www.sos-seaturtles.ch](http://www.sos-seaturtles.ch)







"I still found it challenging to keep my cool when confronted with this man who has, in his lifetime, been responsible for the deaths of hundreds of thousands of sea turtles."

police arrived on site, the animals had already disappeared, and unfortunately, so had the determined tourist.

However, the marine police, not being easily deterred and being officers of the law, soon discovered where the sea turtles had been taken. They moved in to find both the green turtles, which were of a good size, and seized them. They were measured and tagged by the forestry department and set for release. The

release took place a little time later as the tide was going out on Kuta Beach. As always, the spectacle attracted many residents and tourists, and provided a great opportunity for Profauna to distribute information leaflets about the endangered sea turtles.

**In the Lion's Den**

The trade in sea turtles in Tanjung Benoa lies in the hands of two men, Pak Tami

The hiding place

Tied with a rign through its flipper

and Pak Hassan. One man who knows what is going on, is the Swiss-born Heinz von Holzen. He has lived on Bali for the past 12 years and owns the famous Bumbu-Bali Restaurant and Ruma-Bali Village. Understandably, he has mostly to work behind the scenes, but he has a number of people working undercover to keep him directly informed on what is happening on the sea turtle scene.

Instead of turning up at markets, as they did in the past, sea turtle eggs now come to Heinz's place, where he incubates them in his many turtle rearing plants, and then releases them. Heinz literally buys the freedom of illegally caught turtles, so that they are spared the horrific end of being cut out of their shells alive.

The news that five sea turtles were being kept for a buyer in a hiding place on Pak Kami was brought to him by an informer from Tanjung Benoa. The main priority was to free the turtles as soon as possible and also to photograph the proceedings in order to provide material for the media and evidence for the Balinese authorities. How the trader would react to the camera was the least of my worries at that moment. The only thing that gave away our arrival was the Bumbu Bali Restaurant truck that was driven by Pak Madi, Heinz Von Holzen's specialist for this sort of tricky business.

Although quite hardened to these sorts of things, I still found it challenging to keep my cool when confronted with this man—who has, in his lifetime, been responsible for the deaths of hundreds of thousands of sea turtles—to haggle with him over their price, as if they were bananas or coconuts!

Better to see him in a different light, such as through the viewfinder of my Nikon! The noise of the camera produced no reaction from him whatsoever, but the same could not be said for his side-kick, a stocky, sly looking man who was evidently Chinese. One word from Pak Madi put him in his place. Evidently,

How many seaturtles get to ride in a police van?

Bali Turtles







Before the turtles were released at Kuta beach they were measured and tagged by the Forestry Department.

"Last one in is a ...."

he was keen not to bungle the sale over a small disagreement.

With exaggerated politeness, he encouraged us to follow him, and after 15 minutes of insane driving, we arrived at the shed where the creatures were being kept. Both concrete basins measured around 5 x 5 metres and were filled with around 40cm of water. Here, our four adult green turtles were to be found, each one weighing more than 100 kilos, alongside a small hawksbill turtle.

The transporting and preparation for the release carried out by Heinz's men is a procedure that has seen many years of practice. Late afternoon, as the tide was going out, the turtles were taken to the

Holiday Inn Hotel beach and released back into the sea—a very moving moment! Back to their own environment, where up until their capture, they had been living for the past 30-40 years! It is highly possible that the turtles could live to double this age. See [balifoods.com](http://balifoods.com)

### Kuta Beach Demonstration

The backdrop was like the set of a TV commercial. White sand, blue sea, and in the foreground, dressed in white, the Profauna activists holding their banner. With rigid expressions, motionless and straight-faced, they picketed for the endangered sea turtles. Here, on the most famous of the Bali beaches, young

Recognized as endangered species by the IUCN and CITES, sea turtles are protected from exploitation in most countries worldwide. It is illegal to collect, harm or kill individual turtles. In addition, many countries have

implemented various laws and ordinances to protect individual turtles and turtle nesting areas within their jurisdiction. However, the turtles' populations are still in danger because of several human practices. In some

countries, the turtles are still hunted for their flesh, and their eggs are collected from nests and eaten as a delicacy. Pollution indirectly harms the turtle populations both on the population and the individual scale. (WIKIPEDIA)

women with the same look distributed leaflets amongst inhabitants and tourists alike.

Profauna demonstrations always cause a big stir in the media. This occasion was not any different. Cameras flashed, TV cameras filmed, and even an ARD cameraman used the opportunity to build the demonstration into a production he was already filming. Naturally, the place was

*In Indonesia demonstrations and information campaigns are closely watched and taken very seriously.*



Visit [Profauna.or.id](http://Profauna.or.id)  
[Profauna.org](http://Profauna.org)



also teeming with uniforms: the chief of police, the forestry department and other officials were all over the place.

In Indonesia, demonstrations and information campaigns are closely watched and taken very seriously. Profauna takes advantage of this, for in this country, it is the only way to get a strong grip on the protec-



## Thanks to the sponsors

Turtle Week was only made possible thanks to the generous support of the firms Seemann-Sub, Seacam and Schoener-Tauchen, De / Ch.

seemann



tion of animals species. This is why the organisation also works closely alongside schools and universities. Prof fauna is however not only concerned with the protection of sea turtles, but with all endangered species throughout Indonesia.

### Visiting the Governor

The meeting with the governor was scheduled for 10am. On our way to the government buildings we noticed a giant cloud of smoke. Fire engines with flashing lights and sirens blaring headed for the town centre. A large fire had broken out in Denpasar city centre. Therefore, it was understandable that the governor had to be excused from our meeting, and that instead, we were to meet with the Minister for the Environment, Ir.Ni Wayan Sudjj. Even knowing the extent of the Governor's influence, we were not disappointed by the way things turned out. It soon became clear that the minister was fully informed of the sea turtle plight and spoke perfect English. Our

position was clear: According to Indonesian Law, (article 764-98 / April 1997) killing of sea turtles is forbidden, and trade over the border is seen as a violation of CITES convention, the international commission for the protection of endangered species.

### Media matters

This is where image and perception matters. There is no clearer language than the more than 20,000 letters of protest sent all over the world and even more petition signatures. Hundreds of publications and the world-wide link [www.sos-seaturtles.ch](http://www.sos-seaturtles.ch) have drawn people's attention to the murder of sea turtles on Bali.

And as Bali is currently struggling to keep every tourist it can, the Balinese have no other option but to take such issues very seriously. ▶

When we began the first sea turtle campaign shortly after the fall of the Suharto regime around the turn of the millenium, around



"See you out there!"

Author Kurt Amsler getting a friend for life

# IYOR 2008

INTERNATIONAL YEAR OF THE REEF

### What is the International Year of the Reef?

"Recognizing that ten years after the first International Year of the Reef (1997) there continues to be an urgent need to increase awareness and understanding of coral reefs, and to further conserve and manage valuable coral reef and associated ecosystems, the International Coral Reef Initiative designated 2008 as the International Year of the Reef (IYOR 2008)." — International Coral Reef Initiative (ICRI), October 2006. IYOR 2008 will consist of a year-long campaign of events and initiatives hosted by governments and non-governmental organizations around the world. For more on the goals of IYOR 2008, see [www.iyor.org](http://www.iyor.org).

### Why is the IYOR 2008 important?

Coral reefs are some of the oldest and most diverse ecosystems on the planet. They provide resources and services worth an estimated 375 billion dollars each year, a staggering amount for ecosystems that cover less than one percent of the earth's surface. Millions of people and thousands of communities all over the world depend on coral reefs for food, storm protection, jobs, medicines, and recreational opportunities.

Unfortunately, many of the world's coral reefs (including the associated seagrass beds and mangrove habitats) have been damaged or destroyed due to increasing human impacts, climate change, and other factors. According to the Status of Coral Reefs of the World: 2004, 70% of the world's coral reefs are threatened or destroyed, 20% of those are damaged beyond repair, and within the Caribbean alone, many coral reefs have lost 80% of coral species. The decline and loss of coral reef ecosystems has significant social, economic, and ecological impacts on people and communities in the U.S. and around the world.

### When will IYOR 2008 take place?

The calendar year of 2008 — January 1 through December 31.

### If I choose to do something to celebrate IYOR, is it important to network with others?

You're not required to work with others in order to participate in IYOR 2008. All U.S. based individuals, corporations, schools and organizations are welcome and actively encouraged to participate in the IYOR. That said, networking helps ensure that we get the maximum return for our collective IYOR 2008 investments. Follow the steps below to network at whatever level (or all levels) you are most interested: international, national, regional, or local.

### How do I get involved with IYOR 2008?

- Check out [www.iyor.org](http://www.iyor.org) for more information on the IYOR 2008 effort. Here you can register your interest with the international IYOR coordinator, sign up for the international email list by emailing [info@iyor.org](mailto:info@iyor.org), and download basic IYOR 2008 information and key documents.
- Get involved with the U.S. campaign by contacting the non-profit organization Reef Check — [iyor2008@reefcheck.org](mailto:iyor2008@reefcheck.org) — to find out who in the U.S. may be involved in your geographic area or field of interest. Reef Check is serving as a facilitator for the U.S. IYOR effort in the non-government community.
- Then, if you'd like to brainstorm and network at the national level, contact the National Oceanic and Atmospheric Administration — [iyor@noaa.gov](mailto:iyor@noaa.gov) — to get added to the U.S. Coral Reef Task Force Education and Outreach Working Group, a network that encourages information-sharing, collaboration, and collective brainstorming for coral reef outreach and education across the government, non-government, research and private sectors. The USCRTF Education and Outreach Working Group is acting as a platform for anyone interested in sharing information about their U.S. IYOR plans with other organizations, and provides a forum for potential collaborative planning and action.
- Finally, with the aid of the information resources and coordinators above, determine how you or your organization can make a unique IYOR 2008 contribution, and get started!

[www.iyor.org](http://www.iyor.org) FOR MORE INFORMATION





◀A nice little innocent tourist attraction in favour of turtle protection? Wrong! Turtle Island is nothing but a front and a cover-up for the trade in sea turtles

What the tourists see out front ▶

south coast of Tanjung Bena. Tourists are herded out there on little boats to gawk and paw at the 30 sea turtles eeking out their miserable existence in the dirty waters of the lagoon and a concrete basin. Alongside them are cages containing birds, giant lizards not to mention a large python with tape wrapped round its mouth, the front part of which, incidentally, is missing, as it was crudely removed along with its fangs. The icing on the cake is that souvenirs made out of turtle shells are being sold there. It was an exhibition that would take the joy out of the day of any person—the few visitors present were nearly exclusively tourists from Asian countries.



## Bali Turtles



What is really happening in the back... Piles of empty shells and bones tell their own tale



Turtles are discretely being transferred out of the back door

What kind of zoo treats its animals like this?

25,000 animals were being massacred in the slaughter houses of Tanjung Bena. Currently, around 3,000 are being killed in secret.

Of course, we refer to the positive direction in these developments, but stressed that police action must be continued and even increased so that an end is brought to all killings. Once this happens, we can show the more beautiful side of the dream island of Bali in the media, and not more of the bloody images from Tanjung Bena.

### The Cover-Up

Alibi-Island. This "turtle island" is located not far off the



Souvenirs made out of turtle shells are being sold at the "Turtle Island"

By researching and closely observing the island, Pro-fauna members and the journalist Daniel Peterlunger was able to gather clear evidence that "turtle island" was nothing more than a front and cover-up for the trade in sea turtles. Through the back doors of the compound, we were able to get some pictures of creatures stored on a small boat transferred to a hut lying directly opposite of a water basin. The shells and bones lying in the waste outside were further proof that slaughter was taking place here. As of this is writing, the photos taken of these proceedings are lying on the desk of the Minister of the Environment and are being channelled through all levels of government by the Profauna team.

### In conclusion

The developments on Bali since we began our campaign in March 2006, shows very clearly that our "public relation" strategy with emphasis on obtaining media coverage is working. However, in order to remain the front line and support the actions of our comrades-in-arms on Bali, we are heavily dependent on sponsorship and donations. In the end, putting an end to the murder and trade of sea turtles on Bali comes down to who is the most determined to succeed!

Please visit [www.sos-seaturtles.ch](http://www.sos-seaturtles.ch). We appreciate your support ■







Books Film DVDs CDs

Edited by Peter Symes & Michael Symes

POINT & CLICK ON BOLD LINKS

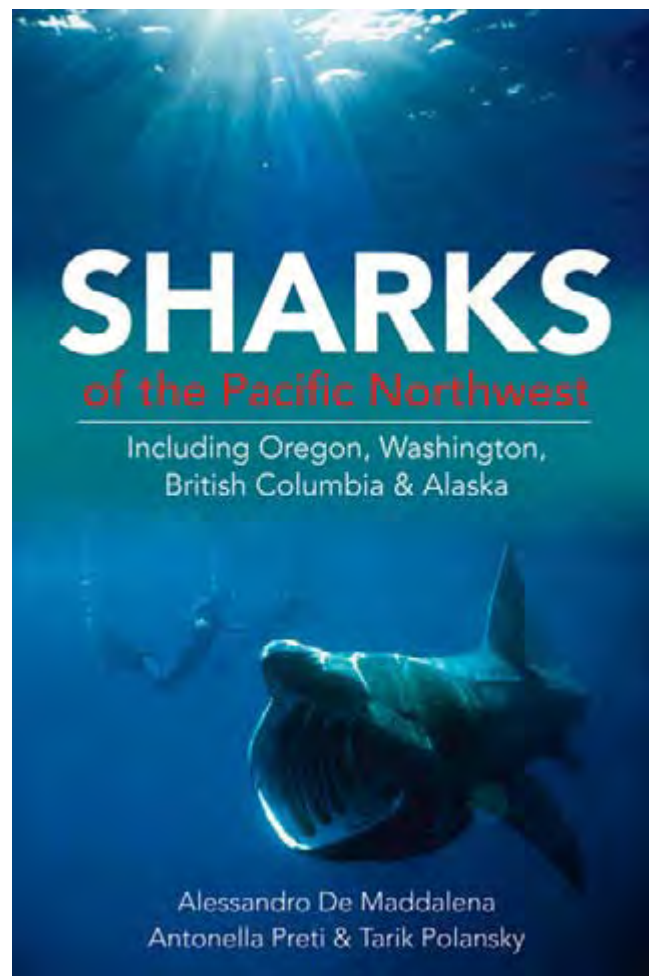


## Sharks of the Pacific Northwest!

Harbour Publishing Sharks that inhabit the Pacific Northwest are the stars of this new book by shark expert Alessandro de Maddalena, biologist Antonella Preti and director Tarik Polansky. Simply entitled, *Sharks of the Pacific Northwest*, this book focuses on the region's 18 species of sharks, as well as those in Oregon, Washington, British Columbia and Alaska. Readers learn about each species' classification, morphology, distribution, habitat, diet, reproduction and behaviour. Included is also a write-up of

the general evolution, anatomy and physiology of sharks in general. Although written for the general public, zoologists and marine scientists would find this book a stimulating read, due to its spectacular photographs, paintings and illustrations.

ISBN: 978-1-55017-418-2  
ISBN: 1-55017-418-5  
Paperback, 144 pp  
Published in May 2007



## This Christmas, why not pay a visit to Christmas Island?

Think Christmas Island, and little red crabs come to mind. Well, this book, *The Essential Christmas Island Travel Guide*, aims to add more variety to that stereotypical image. While there is no doubt that Christmas Island is famed for its annual migration of the red crabs, this charming island is also renowned for its rich variety of endemic animal and plant species, pristine beaches, fascinating cultures and exciting dive sites.

Even if you were to quickly flip through the pages, you would be captivated by the stunning images captured in print by photo-journalists Beth and Shaun Tierney. Backed by extensive onsite research, this book is a comprehensive guide to every that is quaint and exciting in Christmas Island. As you read

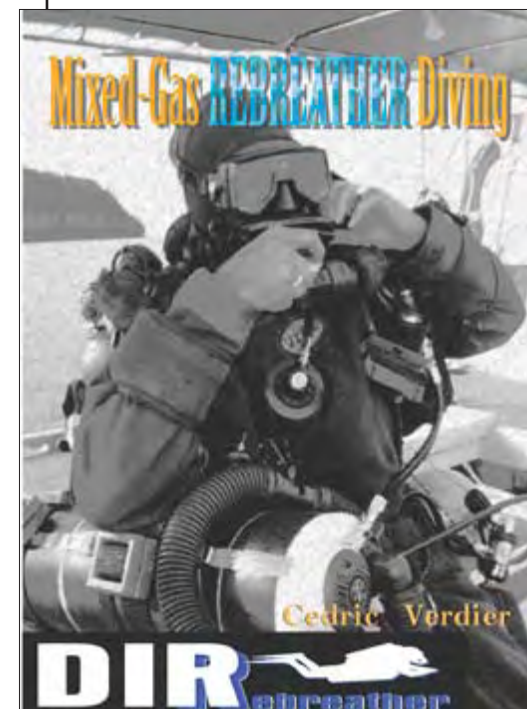
the commentary, it soon becomes obvious that this is a book that has been created out of a love for the island and its numerous charming facets.

This is more of a general travel guide than a book that focuses on diving, so you'll get to learn about the island's history, culture, towns, flora and fauna, etc. There are also suggested itineraries, listings of accommodations and restaurants, as well as information about the weather and airlines.

200mm x 140mm  
ISBN: 978-0-646-47591-2  
Published by Christmas Island Tourism Association

## Rebreather literature

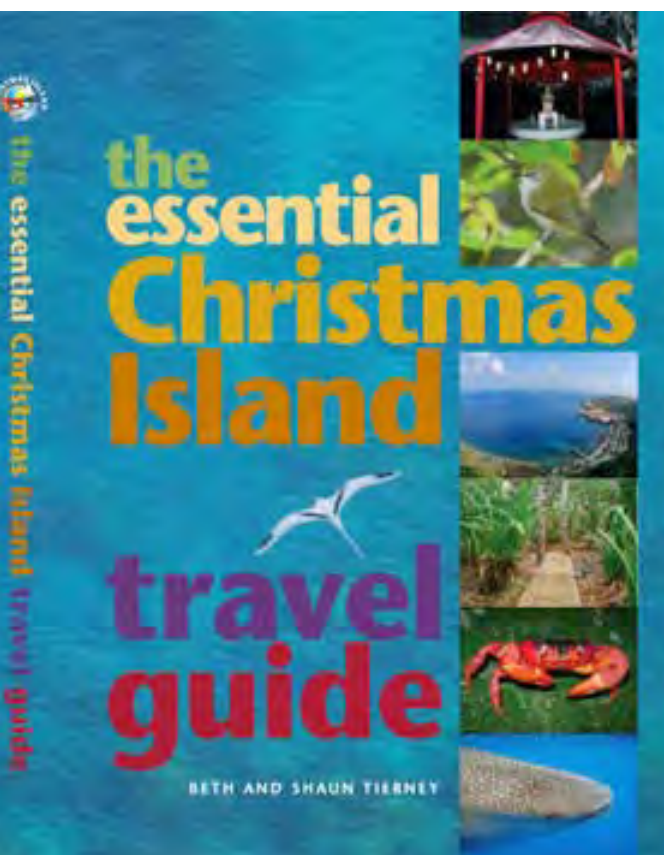
Cedric Verdier needs no further introduction than that he is X-RAY MAG's regular rebreather contributor. He has written two manuals in PDF format for rebreathers with all the principles, benefits and risks of Semi-Closed and Closed Circuit Rebreathers. The first full color 70 page manual gives the proper procedures for planning and diving with a rebreather including advice on



how to minimize the risks of Nitrox rebreather diving. The second full color 70-page manual is a comprehensive guide about Mixed-gas Rebreather Diving, which covers everything from in-depth mixed-gas dive planning to Accident Analysis. A third manual covering Diving Expeditions and extreme rebreather diving including is coming out soon. Price for each manual for DIR members is US\$21; non-members pay US\$32.00. [www.dirrebreather.com](http://www.dirrebreather.com)

## Refresher DVD

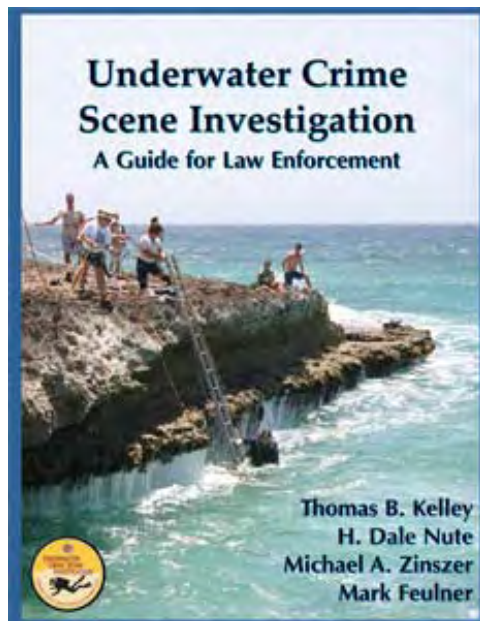
If you got a little rusty using your Inspiration or Evolution rebreather, this DVD will come to your rescue. This CCR, Closed Circuit Refresher DVD, refreshes the pre-dive procedures, assembly and disassembly, dive skills, rinsing and post-dive care and storage. Filmed in the clear waters of the Red Sea, there is even an optional multilingual commentary—specifically in English, Dutch, French and German. Written by qualified rebreather instructors, this footage is aimed at improving the viewer's diving abilities and safety in the water.





## CSI

### The Underwater Edition



No, it's not about Grissom, Cathrine and Warrick from the TV series. It's about the real thing.

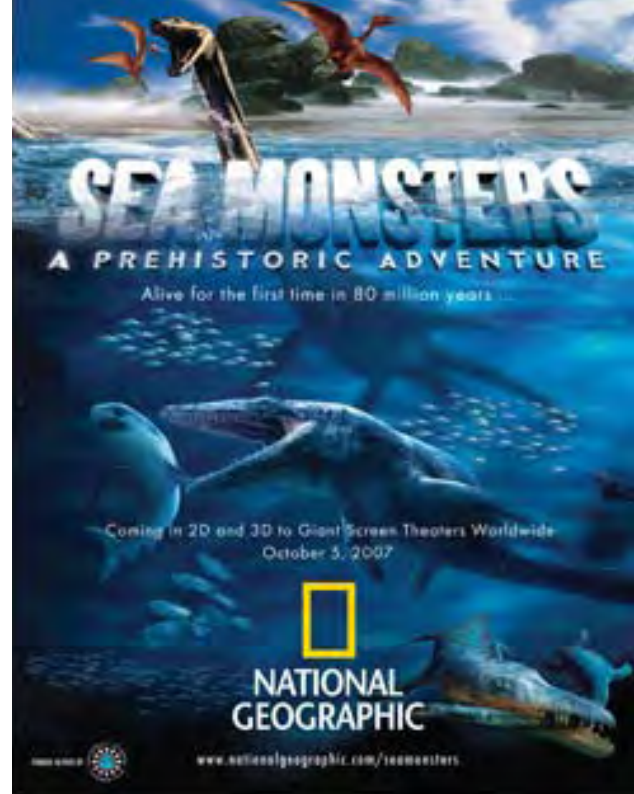
Written by four experts in the field of criminology and crime scene investigation (known as CSI), *Underwater Crime Scene Investigation: A Guide for Law Enforcement* is essentially a how-

to guide for investigators faced with an aquatic-related crime scene or recovery operation.

While clearly an instructional volume, this book is palatable and not excessively technical. Examples, photographs, and forms illustrate a variety of topics that run the gauntlet of organising, evaluating and effective crime scene reporting and procedures of professional crime inquiry. A systematic breakdown of the investigation process, from initial response and pre-search organisation all the way to post-search evaluation and protocols, is featured.

Although clearly written for those in law enforcement, individuals like rescue divers, educators in underwater investigation and lawyers—as well as all you CSI-wannabes—are bound to find this book a fascinating read.

Paperback  
Spiral bound, 90 pages  
ISBN: 9781930536371



*Diving into Prehistory*  
*Diving with Dinosaurs*  
*Swim with the Dinosaurs*

## Sea Monsters 3D

*Sea Monsters: A Prehistoric Adventure* allows you to come face to face with a young Dolichorhynchops (known colloquially as "Dolly"). Born into a Late Cretaceous world that

existed more than 82 million years ago, this gentle creature would soon grow into a fast-swimming, dolphin-sized adult, but not yet. Not until your knowledge and fascination of the prehistoric marine world grows alongside her, as she encounters long-necked plesiosaurs, giant turtles, flippered crocodiles, sharks and mosasaurs.

Possibly intended as an educational treat for students, this information-packed IMAX dramatisation also contains re-

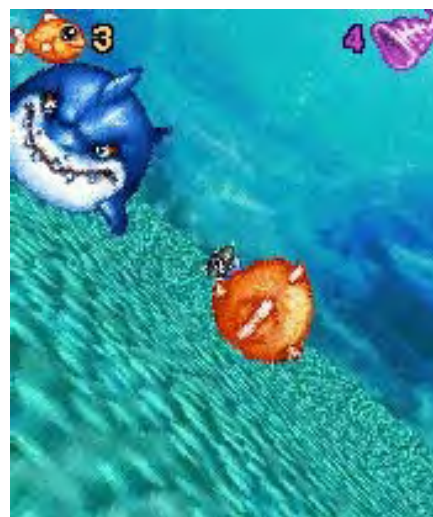
enactments of archaeologists discovering fossils in the central plains of the United States. This is all well and good, but hey, we all know that the true stars of this IMAX film are the computer-generated prehistoric creatures and the fascinating world they inhabit.

Running time: 40 minutes.  
Directed by Sean Phillips  
Written by Mose Richards  
Narrated by Liev Schreiber

## Shell-Seeking Game for Your Cellphone

As I write this review, the song from *The Little Mermaid*, "Under the Sea", keeps playing in my mind. Don't ask me why. Perhaps, it's the premise of mobile game *Underwater 3D*—a small animated fish swims around looking for shells. This rather quaint scenario is quickly shattered when the fish comes face to face with adversaries like giant crabs, sharks and piranhas. This is when some deft fingerwork is needed to save the day—and the life of this peaceful fish that just wants to build up a shell collection.

Developed by DS Effects.  
[www.dseffects.com](http://www.dseffects.com)

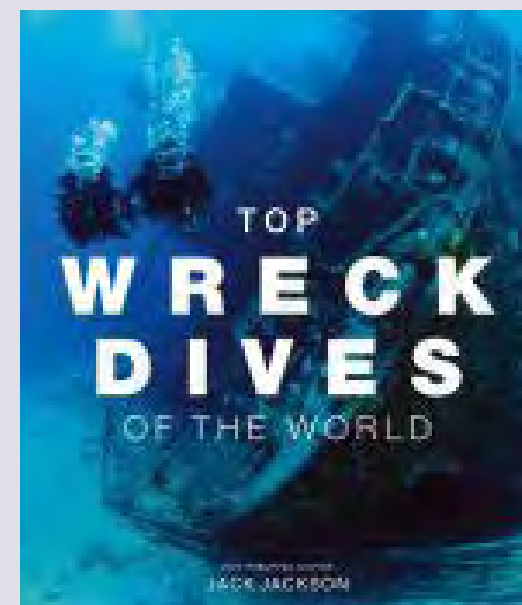


## REVIEW

Reviewed by Peter Collings

## Top Wreck Dives of the World

General Editor: Jack Jackson



Jack Jackson has had—over the last 35 years—an incredible diving career, notwithstanding his work in the Sudan with Hans Hass, Jackson has now written and edited some 18 books. In his latest offering, Jackson not only shares his own experience, but also enlists that of Bob Halstead, Jason Martin and Rochelle Mutton. However, it is the contribution of Lawson Wood, which stands out along with Jackson's own work. A touch of irony as the front cover features the *Giannis D*, which Lawson and I found together with the *Lady Jenny's* crew back in 1983.

The book is divided into five sections: The Atlantic, Mediterranean, Red Sea, Indian Ocean and Pacific. Many of the choices therein are predictable such as the *Thistlegorm*, *Umbria*, *Fujikawa Maru*, *Zenobia*, *President Coolidge* and *Yongala*.

On the other hand, I was very pleased to see that the *Antilla* in Abuba had not been overlooked, and likewise, to see more of Lawson

Woods work, who in his section on wrecks in Scapa Flow details three of the blockships. Sadly, the *Fran*, *James Barrie*, *Breda* and *Port Napier* did not make the grade.

But then again, with so much material, it's not a case of what to put in, more what has to be left out. However, some glaring omissions lends a strong argument for making a volume two, with the Maldives, (*Maldivian Victory*, *British Loyalty*, *Al Karim*) Palau (*USS Perry*, *Iro*, *Tiesho Maru*) and Bikini Atoll (*Saratoga* et al) as some examples that immediately springs to mind.

Jason Martin adds his contribution by covering South Africa featuring the *Maori Bay*, *Smitswinkel Bay* and *Robben Island*. Andy Bletcher covers New Zealand with the *Rainbow Warrior*, *Mikhail Lermontov* and the *Taioma*—and the Solomon Islands with the *Kinagawa Maru*.

Jackson, himself, also does justice to the Philippines, highlighting the wrecks of *Busuanga* and *Coron*, and has selected no less than nine wrecks from Chuuk or Truk Lagoon.

The format and layout of the book is excellent, clear underwater images complimented with equally clear maps for each section over 160 pages. Historical and diving information is provided for each wreck.

Front cover honours go to Charles Hood.

Bottom line: *Top Wreck Dives of the World* would grace any collection of wreck books, and I, for one, hope there will be a volume two.

Published by New Holland  
ISBN 978-1-84537-466-2  
£29.99 (Hardback)





technical matters

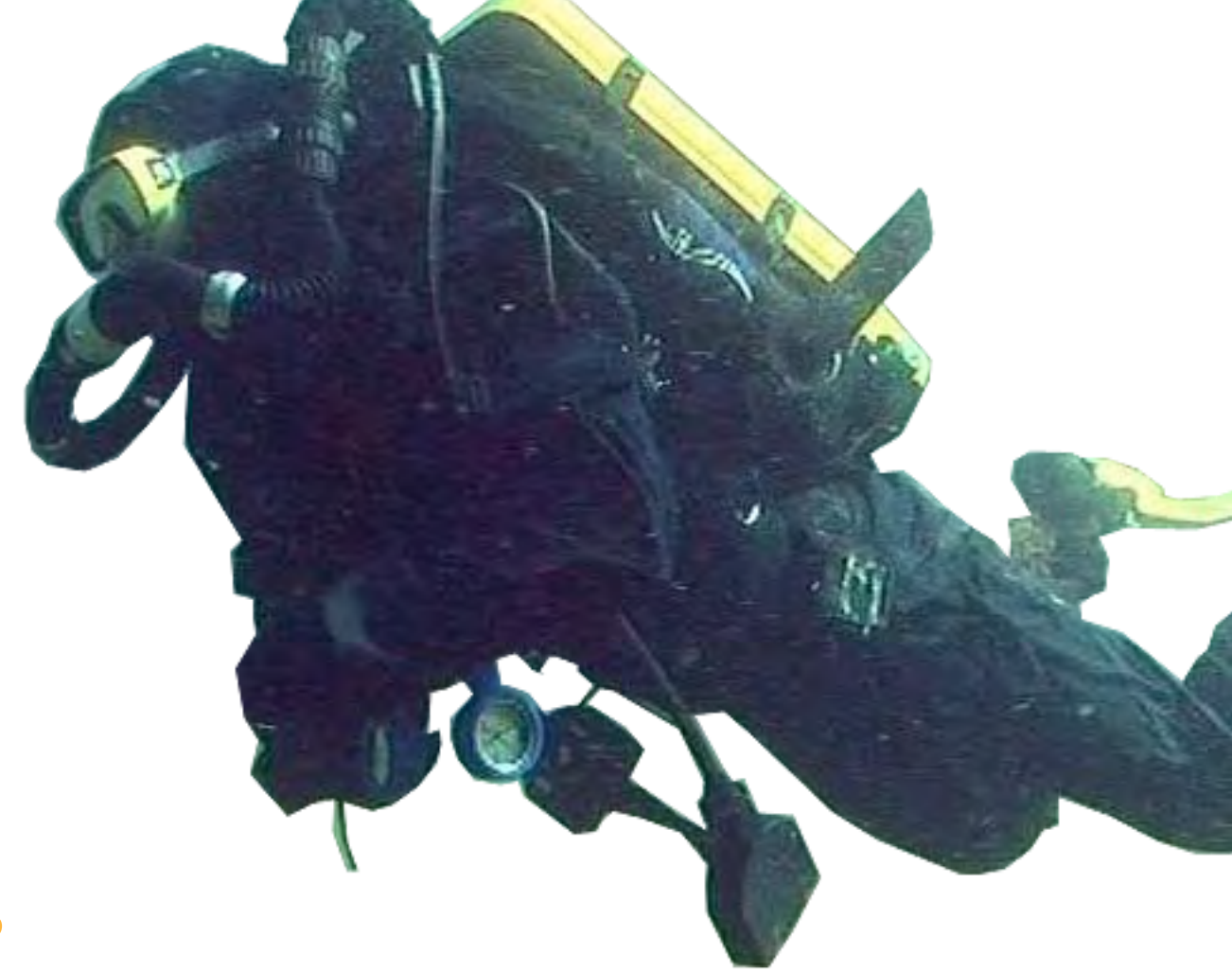
Column by Cedric Verdier

Images courtesy of Jan Jørgensen [jj-technique.com](http://jj-technique.com)

# How to Rescue a rebreather diver

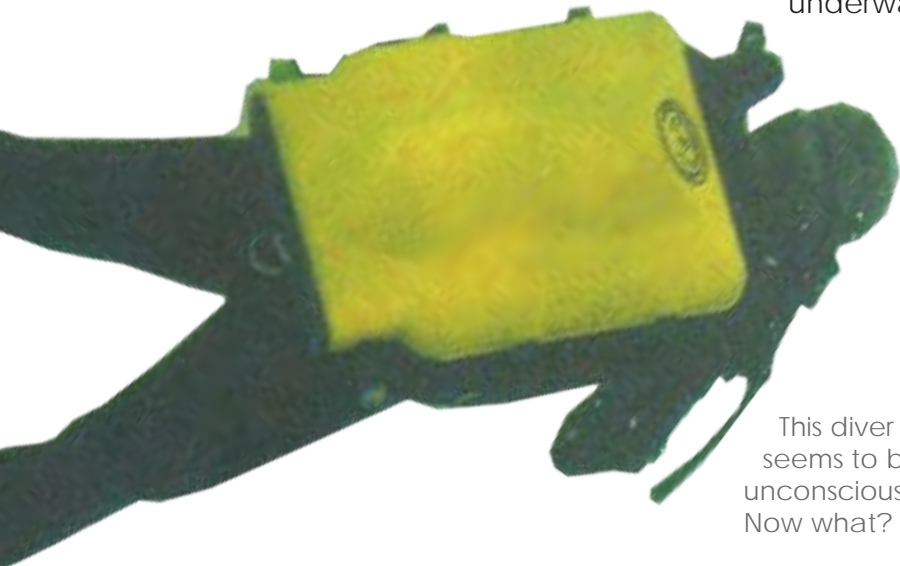
By Cedric Verdier  
Photos courtesy of Jan Jørgensen

*The most important action will be to bring the victim to the surface safely and as quickly as reasonable.*



## How to deal with an unconscious rebreather diver?

The title of this article was originally: "What to do if a convulsion happens". Based on a lot of discussion, private or on various forums, the protocol being presented here can actually be used for any kind of situation where an unconscious rebreather diver is found underwater.



This diver seems to be unconscious. Now what?

The purpose of this article is to provide some guidelines on how to safely and efficiently deal with an unconscious diver. These guidelines are meant to be:

**Simple and easy to remember.** In a real life emergencies rescue techniques are always more complex to perform and more difficult to remember, even if the rescuer practises it on a regular basis.

**Flexible enough** to be used in most of the circumstances: Dry suit or wet suit, overhead environment or open water, deep Trimix or shallow Nitrox dive—and with all the rebreathers available (back-mounted/OTS CLs, SCR/CCR, FFM, etc).

In any rescue-scenario, not just diving, it is paramount to first consider the two following important factors before taking any action:

- 1. The safety of the rescuer.** The victim is already in trouble. Make sure that the rescuer doesn't get into trouble, too, and turn one accident into two.
- 2. What is the most life-threatening problem for the victim.** In most of the cases regarding diving, drowning should be considered the major threat. People can recover from DCS or even from AGE, but not from complete drowning. Hypoxia is also a very important issue.

**The most important action** will be to bring the victim to the surface safely and as quickly as reasonable. Establishing what initially caused

the unconsciousness is not really crucial, and the rescuer shouldn't waste precious time trying to determine whether the root problem is hypercapnia, hypoxia or hyperoxia.

Hyperoxia is a *special case*, which requires observation as a convulsion could appear. Susceptibility to a high level of oxygen varies both between individuals and within the same person from day to day. A grand mal convulsion generally occurs in three phases:

- 1. The 'Tonic' phase** – a period characterised by body rigidity. In this phase, it is dangerous to attempt to surface the casualty because spasms of the glottis and respiratory muscles will cause inadequate exhalation that in turn may result in pulmonary barotrauma. Fortunately, this phase doesn't last

more than a minute.

**2. The 'Clonic' phase** during which the casualty undergoes true convulsions. This can last for widely varying periods of time. Based on some studies and discussions with medical experts (see reference), it looks like the airway is not blocked at this stage.

**3. The 'Post-Ictal' phase** during which the victim rests and actually resumes breathing. Depending on the circumstances, the victim can "wake-up" and be confused, disoriented or even combative for quite a long time, or simply stay unconscious. Other convulsions may follow the first one, sooner or later.

*So, what to do?*



## Step 1: Stabilize the victim in the water column.

If the diver is found unconscious close to the bottom, find a stable position on the bottom or a shot line. If the diver is found unconscious in mid-water or during deco, try to maintain the depth by catching the ascent line.

If the rescuer can attract attention and get some help, a second diver can be very handy to assist the rescuer in doing the following:

- In open water, to send up an emergency SMB to alert the surface support team
- In a cave, to aid going through restrictions or simply to take care of the navigation
- At the surface, to help removing the victim's gear and to provide first aid
- In general, to control buoyancy on the bottom and during the ascent



## Step 2: Assess the situation

The rescuer has to assess the victim, the equipment and the environment in order to determine the best course of action, and if the ascent has to be immediate or slightly delayed. In any case, this assessment should be quick and shouldn't delay the rescue, but make it more efficient. The rescuer has to deal with a high level of stress as time is crucial.

### Assessing the victim

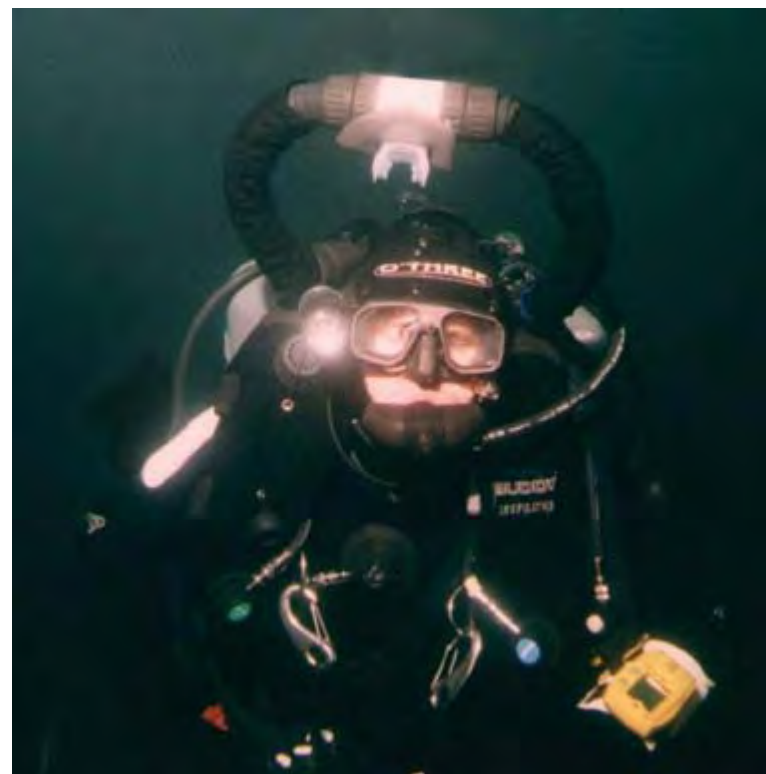
*Is it an oxygen toxicity seizure?* In case of a convulsion underwater, the dangerous part being the Tonic phase that doesn't last very long, the diver's depth has only to be kept constant at the very beginning (a few seconds up to one minute). If drowning is the major concern (as it should be if the rebreather diver does not wear a FFM or a neckstrap that efficiently protects their airway), the main priority is to bring the victim as soon as safely possible.

*Is the victim breathing?* If there is no obvious sign of breathing (no bubble, no chest movement, no movement of the counterlungs), it is of the utmost importance to bring the victim to surface to administer artificial respiration/ CPR.

### Assessing the equipment

*Does the diver wear a full face mask or a neckstrap that efficiently protects the airway?* If it is not the case, even if the diver still has the mouthpiece in place, drowning is a major concern and any delay in the ascent should be avoided.

*Is the mouthpiece still in the mouth?* If not, do not attempt to replace it but ensure that the mouthpiece is switched to the surface position. Try to seal the mouth and ascend immediately.



Is the mouthpiece still in the mouth?

**Note:** Opening the mouth to put in a regulator might only achieve water introduction/drowning.

Some rescuers feel confident in attempting to seal a second stage with their lips in the hope that if breathing resumes air will be inspired instead of water. None of these actions should delay the ascent or compromise the efficiency of the rescue.

*Is there any water in the mask?*

A partially or completely flooded mask could be a major problem for the victim's airway. If it is the case, try to pinch the nose

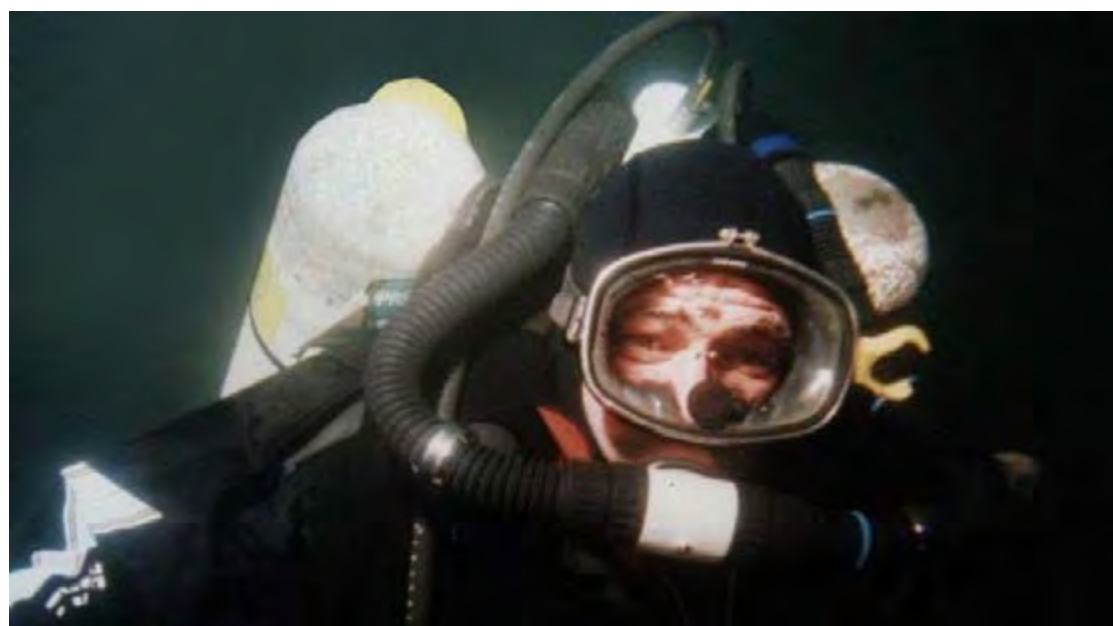
during the ascent. *Is the loop content safe to breathe?* This is only a concern if the diver breathes, and the airway is protected. The rescuer can check the pO<sub>2</sub> readings to make

sure that the victim will be able to breathe a safe mix during the ascent.

**Hypoxia:** It is crucial to check the loop content, as the pO<sub>2</sub> will drop when ascending to the shallows.

**Hyperoxia:** Flushing the loop with diluent or switching to an integrated OC second stage (BOV) could be an option to consider.

(Remember that breathing a high O<sub>2</sub> content in the loop could also be beneficial on a decompression standpoint).



Is there any water in the mask?

sion standpoint).

In case of Mixed-gas diving, the Open Circuit mix has to be breathable all the way up to the surface, and the amount of gas in the tank has to be sufficient (and the valve open).

**Hypercapnia:** Without a proper scrubber monitor, it will be difficult for the rescuer to assess the CO<sub>2</sub> level in the loop, and it's not a major issue anyway. A diluent flush will help in any case, as it could also help in case of a partial loop flood.

**Note:** To efficiently flush the loop on most of the units, the rescuer has to open the over-pressure valve first.

*If the victim doesn't breathe or doesn't have a properly protected airway, the ascent to the surface should be immediate.*

### Assessing the environment

*Is there any physical problem that could delay the ascent?*

A strong current could make the rescuer consider swimming to an ascent line rather than drifting far from the boat. An overhead environment (cave, ice, wreck penetration) could delay the ascent as the rescuer will have to swim to the exit point.

*Is there any physiological concern that could delay the ascent?*

If a breathing victim with a properly protected airway (Full face mask, neck strap) has a significant decompression obligation, the rescuer has to consider the possibility of performing the required stops to minimize the risks of DCS.

If the victim does not breathe or does not have a properly protected airway, the ascent to the surface should be immediate. Nevertheless, the rescuer could have a significant decompression obligation as well.

In this case, three main options are available:

1. Ascending with the victim at the surface, provide first aid or hand over the victim to the surface support, then eventually follow a missed deco procedure
2. Handing the victim over to another diver with no/less decompression obligation
3. Sending the victim to the surface on their own, hoping that the surface support will be efficient and fast enough

**Note:** This is a *personal decision*, based on a lot of factors that have to be quickly considered by a highly stressed rescuer:

- The apparent state of the vic-



tim (not breathing for a very long time, etc.)

- The amount of decompression obligation and the perceived risk of DCS
- The accepted risk (that could depend on the relationship with the victim)
- The efficiency and the availability of the surface support
- The surface condition (rough sea where the victim will not be seen, etc)

### Step 3: Ascending to the surface

#### Opening the airway

Ensure that the victim's airway is open by keeping the neck slightly extended.

#### Controlling the ascent

It is often very difficult to keep control of the buoyancy of two divers at the same time, particularly in the shallows:

- Slowly inflate the victim's BC to start ascending.
- Open the victim's loop OPV (and the dry suit purge if appropriate).
- Control the victim's BCD purge.
- Control the rescuer's own buoyancy.

**Note:** In case of a malfunctioning unit (leaking solenoid, ADV, manual injector, BCD inflator, etc), it may be difficult for the rescuer to quickly find out if there is a leak, where it comes from and how to stop it. The rescuer has to be aware that the rescue could end up in an uncontrolled ascent.

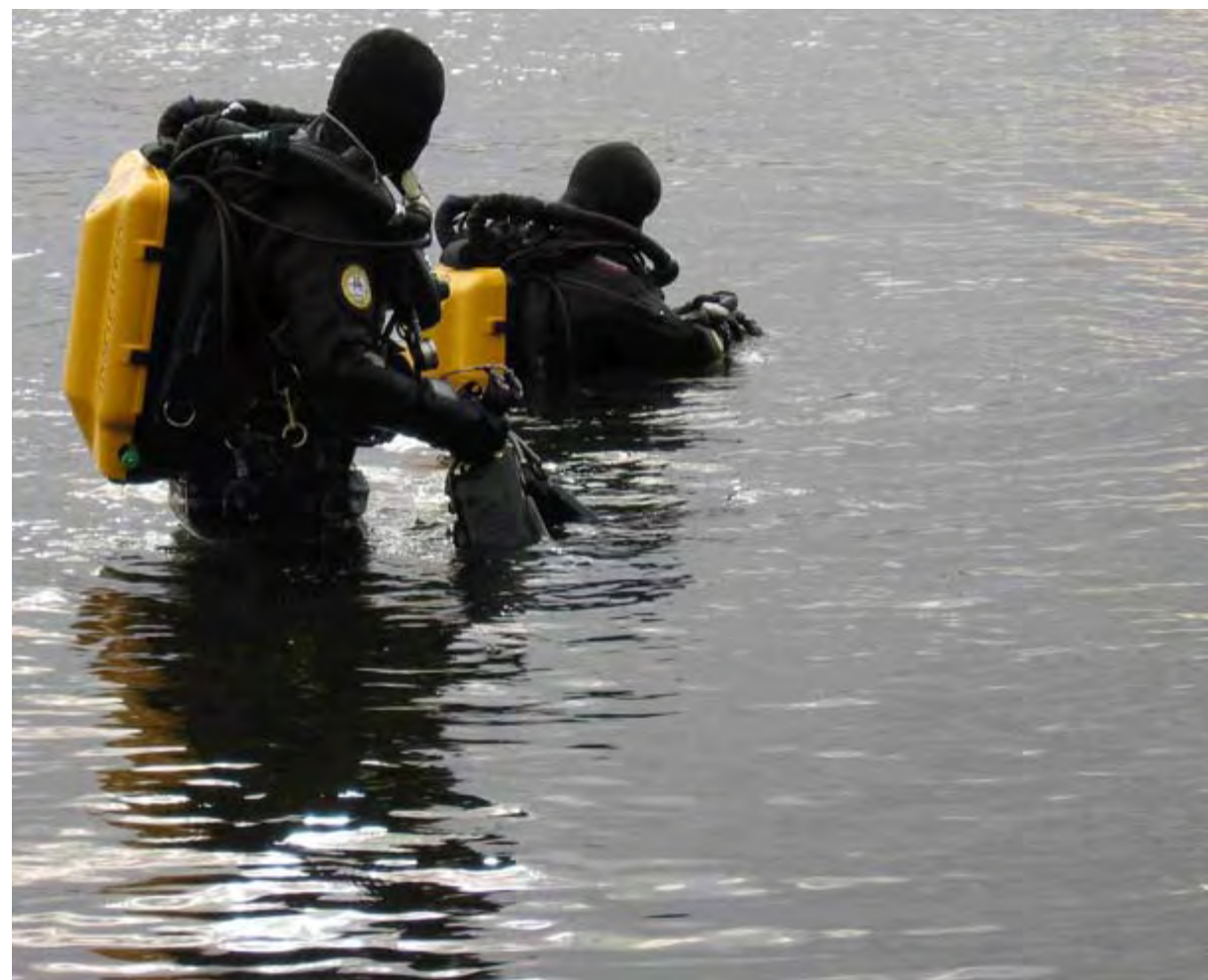
#### Establishing positive buoyancy at the surface

If the loop is not flooded, simply fully inflate the victim's BC should provide enough buoyancy to maintain the diver at the surface. Make sure that the DSV is closed when removed from the mouth. Depending on the equipment or if the loop is flooded, it may be necessary to release some weight or accessories (candle light, sling tank, etc).

It is a challenge to control the ascent rate of two divers



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### Step 4: Providing first aid

This means first care for the victim **and** the rescuer:

- **Call for help.** If no help is available, it may be necessary for the rescuer to stop for a few seconds to keep the stress level reasonable and assess the victim and the resources available at the surface.
- Ensure the victim is breathing or initiate artificial ventilation (as taught in all the basic Rescue Diver courses).
- Hand over the victim to the surface

support or swim to the nearest platform available (boat, shore, etc) in order to provide better care (CPR/first aid/O<sub>2</sub>).

- Arrange for evacuation (nearest chamber/ diving physician).
- The rescuer may perform missed deco procedures if appropriate (without delaying evacuation). ■

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*This document is only a guideline to help developing a widely accepted standard for rebreather rescue. Such a standard doesn't exist in the sport diving industry and may never exist.*



# World Festival of Underwater Images

Good times:  
X-RAY MAG  
writer Kurt Amsler  
(right inset), famous  
Swiss underwater  
photographer and  
keen jazz drummer,  
lives on the French  
Cote d'Azur

Wrong place:  
The celebration  
of the festival at  
the orca basin in  
"Marineland"  
(far right photo)



YANN ST. YVES



YANN ST. YVES

Text by Harald Apelt  
Photos by Harald Apelt, Steve Jones & Yann St Yves

## One step forward, two back?

"Festival Mondial de l'Image Sous-Marine"—it's a name that smells like summer, that tastes like Turkish honey, and it is the name of the photo and film festival that has, worldwide, the highest reputation in the diving scene. The 34rd edition of this festival gathered again photographers and underwater filmmakers from all over the world in the south of France. Antibes is a nice city at the seaside with all the charm that thousands of tourists love year after year during the high season. But in the end of October, during festival time, this tourist centre of Cote d'Azur is one of the loveliest places one could visit at the Mediterranean Sea in autumn.

Daniel Mercier, the 76-year-old founder of the festival, is not only chairman and mentor of this traditional event, he is also the soul of this festival of creativity. He knows most of the exhibitors and participants personally. Nobody really has an idea how many hands he shakes during festival time. And there are not more than ten steps he could take before he stops for the next chat.

Mercier is still living his dream of supporting diving activities world-wide and giving divers of all nations the opportunity to enjoy the beauty of the seas together. His dream grew out of his own experience. Mercier is a highly decorated 3-star dive instructor with more than 7000 dives to his name. His friendly and cooperative character is one of the main brands of the festival.

But within the last few years, something has changed. Everybody is looking for more professionalism, more comfort and optimal conditions. And while everybody is looking for this, something has been lost—the cosy atmosphere of the past.



YANN ST. YVES







HARALD APELT

## Antibes

A present: "Thank you" from Daniel Mercier to Executive Director Cynthia L. Carrion for sponsoring the festival with the Philippines Department of Tourism



STEVE JONES



YANN ST. YVES

ABOVE: The entry tent of the festival. TOP CENTER: Andrea Ramalho-Kiefner (Brasil) and Ralf Kiefner (Germany) got lucky with the public prize in category "Best Film"

"All signs point to success. This 34th festival will remain in everyone's memories—even more festive than ever." This message could be read on the festival's webpage. And indeed, everything was a little bigger than in former years. There was a lot of parking space for participants and visitors cars and enough space for the presentation of the photographs and the films.

The festival took place this year in Marineland, a theme park a few kilometres outside of Antibes. In the centre of this park is a big basin where four orcas are located. A huge oval tribune for about 4000 spectators borders this basin. Several times a day the orcas present their show guided by their trainers, which lead some unusual stunts together with the animals.

Quite a lot of the festival participants and visitors asked themselves if this location is the right place for a divers festival. "This choice of location was not the best one," said one of the contest-winners.

Last year, the festival took place in an improved tent at the old harbour of Port Vauban in Antibes. In prior years, the festival was traditionally located in the heart of the old part of Antibes at Juan les Pins in the congress centre. The location was close to the seaside, surrounded by French life and all the reasons which make so many visitors, exhibitors and participants move to Antibes—the fantastic Mediterranean atmosphere, the bars, the restaurants and the short ways.

Besides the festival, it was a



meeting place for friends, a place of interchange of ideas and opinions and a party place for the diving world.

To be fair, the quality of the presentation and the organisation of this, the biggest photography and film event in the diving world, was nearly perfect as it was in prior years. But for those of us who have known and visited this festival since the early years, we left Antibes this time feeling that something was lost—the atmosphere. Certainly, this is not just a cast of nostalgia, of some old folks looking back fondly on the good old days. Maybe the right solution for the 35th festival in 2008 could be: two steps forward and one step back.

The results of the 2007 competition can be downloaded as a PDF from [www.underwater-festival.com](http://www.underwater-festival.com). ■

It's a fish-eat-fish world. Steven Kovac's photo entry in this year's competition at the festival





Antibes

Not a prize-winner, but a great shot. Festival participant, Felipe Barrio, from Spain took this picture at Djibouti. The whalesharks—here, in a swarm of sardines—are to be seen in Golfe of Tadjora from October to January



BARRIO FELIPE



CHARLES HOOD

THIS PAGE: A selection of photo entries from this year's competition at the World Festival of Underwater Pictures



JEFF YONOVER



ALESSIO VIORA



NOAM KORTLER

# HILARIOUS GIFTS FOR DIVERS

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Edited by  
Kurt Amsler  
& Peter Symes

# Photo & Videography



# Model Photography

Text and photos by Kurt Amsler

Incredible as it may sound, one of the most difficult creatures to shoot under water is a human being. That is, if your goal is to integrate a diver in the underwater environment as a natural, harmonious element. Let's look at some of the more important factors in achieving a great diver portrait.

## Photographing models

The description "model" applies to anyone human in front of a camera young or old, male or female, petite or large. In a underwater environment, for which we're less than adequately adapted, we are at an instant disadvantage compared to the grace and splendour of its natural inhabitants, but looks aren't always everything.

So, we are big, blubbery bulks of neoprene and steel, ungracefully suspended in a medium we weren't made for. That doesn't

mean we couldn't be pictured in an attractive way. Remember: Photography is a more objective form of complete deception.

Being fit and in control of your movements and buoyancy is a good start, and serious divers usually are. However, one aspect often gets overlooked: our model's equipment. Long and narrow fins enhance the outline of the body and make your model look more dynamic as well as slimmer. Single bladder BCs or wings don't add bulk and make the diver look even less stocky.

To enhance your model's visibility and colour definition, avoid dark colours, especially for the suit. "Professional black" only has its place behind the camera, unless you actually intend to depict your buddy Fred as a resident black hole in a galaxy of colour. Whether the model has to be dressed colourful as a butterfly or go with colour coordinated pastel shades is a choice left to

Communing with nature: In this picture, the model's placement behind a school of fish makes her look like part of it

Models make a photograph come alive when their position and focus compliment the architecture of an underwater setting

the photographer's taste and intent—as long as it's not dark. The colours yellow, grey, pink and neon green are best suited because of their high contrast to the surrounding water.

Special attention should also be paid to equipping your model for the dive.

Let's keep everything tight and neat. Old types of BCs like the "horse collar" aka "the rubber toilet seat" variety should be avoided because of their loose webbing and lots of stuff that dangles. Tuck things away neatly but keep safety and functionality under emergency conditions in mind.

## Posing

Much as it may sound like what supermodels do for a living, *posing* is the best way to describe what all kinds of models do in front of all kinds of photographic gear. An absolute prerequisite for success in the field of underwater modelling is communication between photographer and subject. That is before the dive, not 25m down. Efficient work is

possible only if everyone involved (this can include several models and camera assistants) are perfectly clear about absolutely all the conditions of the shoot. Once under water, any attempts at art direction and communication of complex instructions are likely to be a complete waste of time, air and nerves. The likely result is chaos.

Good briefings, especially during the early days of collaboration with a new model, facilitate experience and understanding and ultimately lead to perfect team work. If your model knows your intentions and gesticulations, delays will be at a minimum. A school of fish can easily get centered between model and photographer, or your partner may assume a perfect position at the right distance to camera, or other elements of the shoot can occur, which need signaling.

Mastering buoyancy to perfection and swimming effortlessly against a slight current, the model should be able to remain in position as long as the photographer







# photography



takes to complete a series. Holding on to coral or bearing down on them is completely “verboten”. Both partners need to be conscious of the environment and act accordingly.

And naturally, as in general photography, the model should never look straight at the lens and assume a natural, plausible posture. Point a flashlight or draw the on-lookers attention to the main subject element by clearly looking at it, head posture and all.

## Technical aspects

Model photography uses all kinds of lenses at all distances. The trick is to know what to use for which effect. Half body portraits are best shot using 35mm and 28mm focal lengths. The optical distortions resulting from shorter lenses, the super wide angles, would too severely disfigure the human silhouette.

At short range it is advisable to combine this with the use of a flash diffuser - usually a white plastic cap you put over your flash's reflector to soften the lighting. Diffusers do cut light energy but at short distances it not anything to worry about.

If your aim is to picture the diver in total

Placing the model between you and the light source creates a silhouette effect

Models should draw the viewer's eye to the main subject of a photograph by directing their eyes and streamlining their body towards that subject

or integrate your buddy into a landscape shot, the focal length applied cannot be short enough. Angles between 90° and 180° drastically reduces the distance to subject and consequently the diffusion and absorption of flash light. The result is a clearer, better-defined and sharper picture with improved colour definition. To avoid chalky skin tones it is advisable to minimise flash application and use a strobe yielding a colour temperature around 5100° Kelvin.

## Vacancy for Aquaman and Mermaid

Professional underwater photography poses even greater challenges to the model as this genre is dominated by reportage style where a series of pic-



tures tells a story. This approach requires a model who can double as camera assistant and is competent in handling the equipment. What you're looking for is a photogenic ace diver with a knack for gadgets and considerable carrying capacity. In other words, an advanced aquatic human being capable of hooking up vast arrays of cable and slave strobes, comfortable with multi-dive profiles on air, Nitrox and Trimix and perfectly focused on the intended outcome of your artistic ambition. (Yep, I'm getting carried away!)

But to be more realistic... It helps if your model enjoys diving and is a com-

petent diver. Photographic experience is an added bonus because the model understands the photographer's intent and needs better. The model who is also a photographer will make sure their eyes are in the same focal plane as that lion fish, keep perfect diagonals in mind as they swim into the frame or point a light, and are generally more patient—unless they, too, carry a camera.

Experienced models will go one step further, alerting the photographer to a flash gun pointing away from the subject, signal in case of flash failure, or remind you to remove the lens cover from that venerable Nikonos V.

## Model tips

- 1 Talking the language of photography; Any person in front of a camera is a model! Depending on the situation and the planned pictures, the photographer decides if a female or male fits better in it.
- 2 A model has to be your regular buddy, or a resort dive master, who does this kind of stuff all the time. Never count on getting good results from asking some random diver on the dive boat to play the model for a few minutes.
- 3 The model should match the under-







# photography



PHOTOS THIS PAGE: Have the model look at the subject



water environment. Modern diving gear can look quite aesthetic if you shorten straps and tuck the hoses and other dangling items away, so the model doesn't look like an "octopus".

- 4 Most of the time, the model swims behind the main subject, and therefore, it is less illuminated by the strobe. If dressed in a black or dark blue wetsuit, the model will disappear in back as a flat object with low contrast. Use bright suits, the best colours are yellow and silver!
- 5 Good diving skills are a prerequisite for both the photographer and the model! Classical diving procedures must be routine and second nature. If there are too many distractions, it ruins the focus and the results will come out accordingly.
- 6 When working with a model or being a model, never forget to be safe. The same rules apply as with any other dive. In many occasions, the model and pho-

tographer will be quite far away from each other and perhaps paying attention to a situation full of action—for example, becoming encircled by a large school of jacks or penetrating a wreck from the side. In all these cases, time, air, depth, currents, distance from the boat and other important facts should be observed.

- 7 The photographers "etiquette" in regard to environment must also be reflected in the behaviour of his or her model. A good model is able to hover above the reef, not pump in it, and respect the animals by not touching, chasing and feeding them.
- 8 A photographer's saying goes: "A good briefing with the model is half the picture!" Underwater, it becomes even more important. Due to the fact that we can't talk matters through down there, everything has to be discussed beforehand. During the dive, a good way to make the model understand what the photographer has in mind is by demon-

strating it, for example swimming along the stern of a wreck, stopping at a particular point and aiming the beam of the torch to a soft coral. The model observes the demonstration from the position the photographer will shoot from.

- 9 Same rule as on land: Models should never look or stare into the camera, except a person in a picture who has to be recognized for some reason. The model must act in a natural way—looking at the main subject, for example a fish. If the model points the beam of a torch or the slave strobe somewhere, the eyes have to be aimed at the same direction.
- 10 The more the model knows about underwater photography, the easier the work becomes and the better the pictures that result. Send your model to a photo workshop to learn the basics. (Your model will surely appreciate it.) Also always discuss the pictures together—perhaps during a nice dinner in an exclusive restaurant. ■

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## UW Exhibit in Eilat

This past October in Israel, award winning underwater photographer, Noam Kortler, exhibited 40 underwater photographs... under water. Displaying color images of sea life printed with the new NUR Tempo Q printer and mounted on PVC boards, Kortler brought a new twist to the traditional underwater photography gallery and raised awareness for the ocean at the same time.

Prior to being submerged under the waves, the images were placed on display on Bar Beach, Eilat, where the mayor of the town officially opened the exhibition. Ten percent of the sales from the event went to cancer research.

Kortler has worked as a professional underwater photographer for eight years and has won several prizes during that time including first prize in the Macro category at the Chicago show, Our World Under Water in 2007 and 2006. He also won first prize in the Best Five Images at the SanDisk Red Sea competition and first prize in the Man and the Sea category of the California show, Under the Blue.

Kortler also owns Nemo Divers in Eilat, and has operated a diving school there for the last 11 years. He is a professional PADI instructor. ■

THIS PAGE: Scenes from Kortler's underwater photography exhibit underwater in Eilat

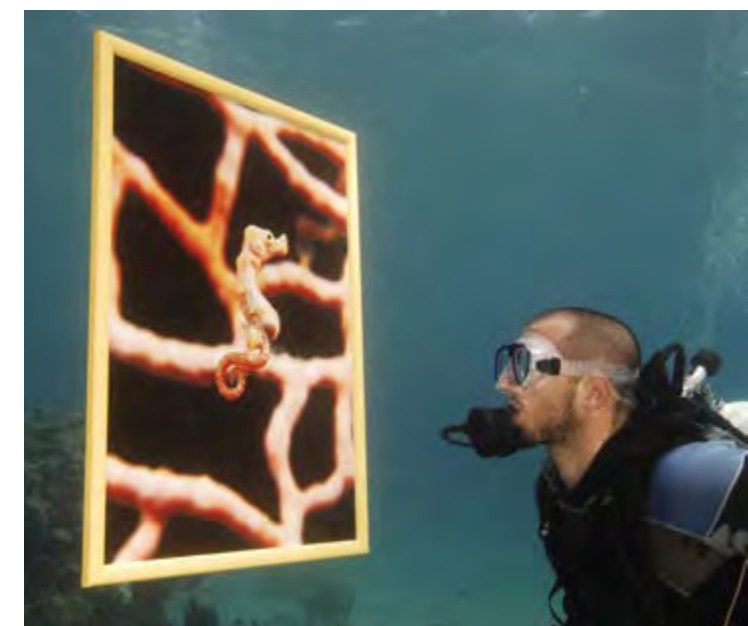


## DivePhotoGuide Wins Web Award for UW Photo & Video

One of the great things about the web is the combination of diversity and relevance that websites represent to those who read them. Interested in wreck diving? Underwater photography or video? Cold water diving? The web offers each niche its own rightful place in the world and brings like-minded people together around specific content and tools like never before. To drive this point home, a search for "scuba diving" on Google returns over 2.4 million web pages, and just "wreck diving" brings back 324,000 web pages.

In the US, we share a common language, and there are a handful of large diving related websites competing for different niches in a really big market. In Europe and other parts of the world, several large websites have started to dominate the more fragmented markets in different languages. Our international audience knows this well. Two of the largest diving websites in Europe have collaborated to launch "The Best Scuba Web Awards". Scubaportal.net, which operates both an Italian and English version, and Plongeur.com, a French language website, developed these awards to recognize excellence in various website categories.

DivePhotoGuide is honored to have received the award for Best UW Video & Photo website. We also congratulate the winners of all the other categories and the organizers for putting on a great award program. ■







## Fantasea FS-500

Features on the Nikon FS-500 camera housing include controls for the following features: exposure compensation, flash, self-timer, macro, anti-shake, one-touch portrait, and D-lighting.  
[www.fantasea.com](http://www.fantasea.com)



## Flashy

At DEMA Seacam displayed a prototype of their new Sea Flash 150 strobe, a compact version of the previous 250 model. Harald Hordosch showed us the flexible power settings, and removable battery, and explained that we should expect it to perform as a powerful, high quality, compact strobe.  
[www.seacam.com](http://www.seacam.com)



## Ike's D300

Ikelite had a lot to show on DEMA. Housings for the Canon 40D, and the new Olympus E-410 & E-510 are available now, and apparently they're working on a housing for the Olympus E-3 and the Nikon D300. Historically Ikelite has been great at developing affordable housings for all the new camera models quickly after the models hit the street. Ikelite also had a new strobe on display, the Autoflash AF35 System.  
[www.ikelite.com](http://www.ikelite.com)



## Sonoran

All functions are infrared controlled, only "on/off" is operated by a double O-ring consolidated mechanism. The housing offers a direct and shaded view onto the open camera monitor. The housing has two stainless steel clamps and heightened inner housing borders for accurate guidance of both halves of the housing as well as a flatport with M67-thread to take WW- or macro-lens.  
[www.bskinetics.com](http://www.bskinetics.com)



## Need TLC?

The new TLC underwater Bouyancy Compensation Floats from Aquatica are made of non corrosive light weight material they are supplied with a 1" TLC ball for mounting to either a housing or strobe arm allowing the photographer to perfectly trim the balance of his or her housing. [www.aquatica.ca](http://www.aquatica.ca)

## Remote control

This remote is compact, economical and most important does not require any modification of the Aquatica housing. It can be used with most Nikon and Canon camera having an electronic cable release socket. The Trigger assembly is made of anodized aluminum and is connected to the housing via a standard strobe cable that can be lengthened by adding an extension cord.  
[www.aquatica.ca](http://www.aquatica.ca)



PHOTO COURTESY OF WEIPIXEL





## Seal Check

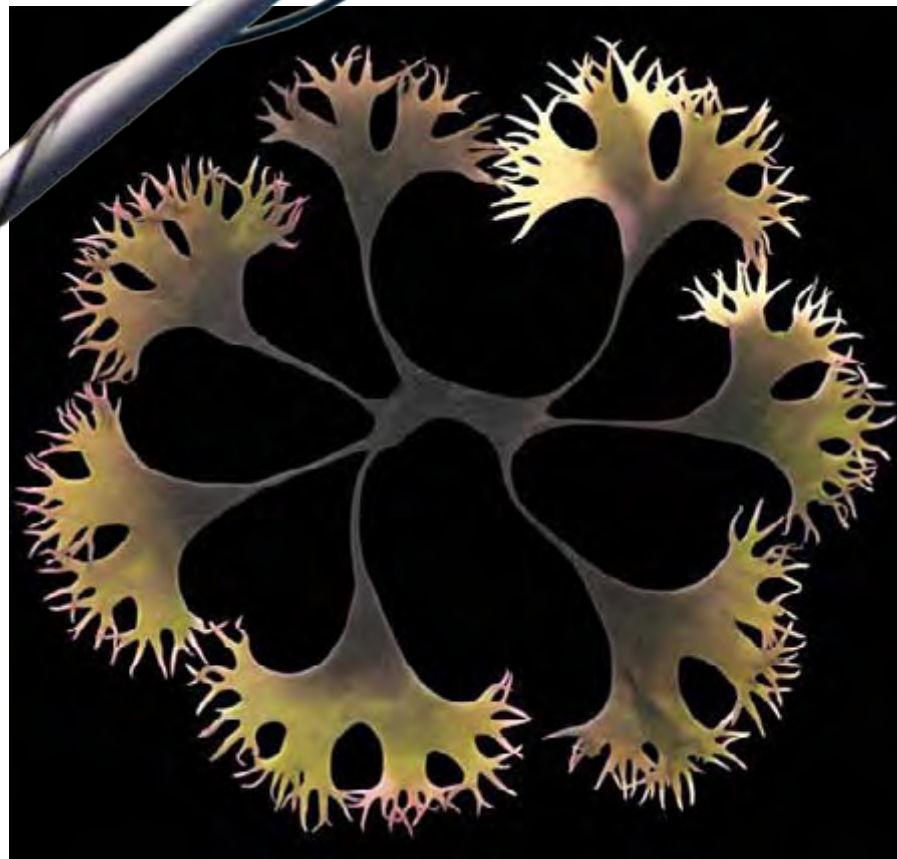
Gates Underwater Products, introduces Seal Check, a new testing product that allows Gates customers to confirm housing integrity prior to water submersion. In the real world housing leaks occur. Damaged o-rings, rushed setup, and unfamiliarity with equipment are the top 3 reasons for leaks and floods. Until now, moisture alarms were the only line of defense against water intrusion, often sounding the warning too late. Seal Check is like a water alarm that goes off before entering the water.



## Seacam shows off

In Antibes, Seacam introduced a fantastic pole-cam package, complete with an electronic eyepiece adapter that feeds into a remote monitor and/or monitor glasses.

The monitor glasses seem to be branded versions of the popular video glasses used to watch dvd's and ipod videos – and they're pretty cool! The remote monitor is the hub of the system, connecting to the pole bulk-head and providing the signal to the glasses. Lastly, Seacam has released a new tripod and monopod.



Andrea Ottesen of the University of Maryland's Department of Plant Science and Landscape Architecture shared a first place prize in the photography category of the 2007 International Science and Engineering Visualization Challenge for the natural light photo. Seen here is Irish moss—*Chondrus crispus*—a common Atlantic red alga that is routinely harvested for its carrageenan. The chemical is used as a thickener in many processed foods. The awards are given out each year by the National Science Foundation and the journal Science for the imagery that best conveys complex scientific information and concepts.

## Tips and Tricks

### Split Photography

Split photography is a technique that allows combining an underwater view and an above-water view in one shot.

Although this technique is one of the most challenging, it is also favoured by many underwater photographers. You'll need a housed camera with a wide-angle lens and a dome port.

It also requires certain good weather and water conditions and some photographic skills. Good results are largely dependent on whether the water is still and transparent enough and lighting is natural. You can't keep the camera still in wave action.

A fish-eye lens has a very large depth of field! If you shoot at f8 or less, both an underwater and above-water parts can be in focus simultaneously. It is recommended that you use the bigger spherical ports, if you can afford them, as the simultaneous focus of the above and underwater parts of the image is easier.

Focus on the underwater part. It is usually the most important part in the composition, while the above-water view, which usually is the background, can stay a little blurred.

Keep in mind that wide-angle and fish-eye lenses always will distort the image to some degree. This is most apparent in compositions involving straight vertical and horizontal lines above surface. Underwater there are less known references.

To avoid visible drops on the port, some photographers use a tiny amount of detergent to remove any surface tension and prevent drops from clinging on.







# Lake Lyngstøl Lyngstølsvattnet & the Nordang Valley



## *Unique Dive Site*

Foundation walls can be seen from the main road

Norway. The Norang valley is clothed in pale green birch leaves and sprouting grass, and the mountains rise majestically up in to the clouds. The mountain tops are completely snow covered, and at the foot of the mountains are large masses of stone from both new and older landslides. A small red car with four divers drives slowly down the valley stopping excitedly at each small lake to check the visibility and condition of

the bottom. – It looks good! The last stop is at the well-known house foundation walls in the Lyngstøl lake, quite visible at a couple of meters depth by the coast. Small trout swim undisturbed above the meadow areas where the farm girls previously looked after and milked the farm animals in the early work of spring. Our thoughts pondered the life in these small farms as we got ready to dive down into the scenery of a bygone life.

Text by Inger Lise Monse  
Translated by Michael Symes  
Photos by Espen Rekdal



## Unique Dive Site



Lyngstølsvattnet

The foundation walls from the old huts are still standing to this day. On one of the huts the roof has fallen through whilst the roofs on the two others floated up when the lake was formed

As early as the 1880s the Norang valley was a popular tourist magnet among the European aristocracy and upper classes, authors and mountaineers. The expeditions of the latter often had the aim of being the first to climb the surrounding mountains. It often happened, though, that the great climbers (after several attempts using different routes and many hours hard work) finally reached the summit – only to find small cairns which the local youth had already built long ago.

In the summer the water-plants grow well in the clear water

### The formation of Lyngstøl lake

The grandiose nature attracts many tourists through the valley but among we divers it is best known for the Lyngstøl lake. It was formed on the night of 26 May, 1908, when a large landslide occurred from the mountain Keipen (1218 meters above sea level). The mass of rock filled a large area 2-300 meters wide and "several men" high. The event was highly dramatic, down in the village the next morning a cloud of stone dust was seen to emerge from

the valley opposite. The villagers had already packed and were prepared for the annual spring climb to the nine farms in the upper pastures of Lyngstøl. Luckily nobody had yet gone up there. The stream had been blocked by the landslide and within one day everything on the bottom of the valley was covered with water. The farms lay just across from this land-slide area, and after the flooding there were only the roofs of the huts and some trees sticking out of the water. The roofs have fallen in long ago and the trees in the shal-



## Unique Dive Site



The clearest water is to be found in Solahølen. The horizontal visibility is often more than 40 meters. The snow-drifts wreath parts of the pit in the spring and early summer. These can be seen through the surface

low water have fallen over; however, in the deeper water the forest of trees still stands quite upright. At a few places in the water one can see how the trees have hung out over the old course of the stream. The old road, the stone walls, bridge and one of the road markers lie exactly as they did 95 years ago. Farming in the Norang valley finally ceased in the fifties when food concentrates became available.

### Diving around the house foundations

We have parked at the north end of the water (nearest to Øye). The amount of lead has been adjusted and found to be well suited to the reduced buoyancy in fresh water. The dive reveals little more round the house foundations than can be seen from the road on a wind-still day but of course it is much more interesting to see it at close range in a diving suit. In the upper part there appears to be an old home made ladder laying along the wall, but we leave it alone in order not to destroy anything.

A small fresh-water snail was observed on top of the foundation wall. We don't know so much about these, but we easily recognise the small trout and char that swim quickly past. Some also lay hidden down in the grass.

The meadow is bounded by a small stone wall, and the road passes by just below it. Unfortunately the well-known gate is no longer intact. Perhaps a diver has tried to open it. Or perhaps all those years under water have had their effect. After having had a little look around the meadow, the greater part of the dive was devoted to photographing the house foundations. This is not

## Lyngstølsvattnet



Lyngstøl lake seen from above. If you look carefully you can just glimpse the old road which passes through the lake

taken from one of Walt Disney's tales. From the branches of the grey trees hangs something which, at a distance, looks like a thick layer of cobwebs and other strange stuff. It looks like the forest round the house in Hansel and Gretel! The green grass on the hill looks as if it is melting together with the "heavens" in a beautiful green "sunset". The atmosphere is quite trolld-like, but with these colours and the play of the sunbeams in the water it is not at all sinister, just fantastically beautiful. Closer up, it can be seen that the growth on the trees is algae which appears to be thriving well, together with a small amount of dead grass which the current has carried down through the water. For a short while among the trees it is certainly quite a special feeling to hover weightless round in the tree tops – together with small fish!

### Freshwater growths

The branches are partially covered with different fungi/algae, some in an old-rose tint, some brown and others more transparent. On a few broken pieces we see fungus-like growths with orange "flowers" and green

pletely overgrown by green grass. Beneath it, like the rest of the bottom, is a thick layer of mud. For successful diving (and photographing!) good control of buoyancy is therefore required. Care is also necessary when considering the fragile trees which still stand upright. They can tolerate very little and therefore break and crumble away if the diver gets too close. Not really so good, for in fact it seems a miracle that they are still standing upright after 95 years under water.

### The old road and bridge

The old road which now lies on the lake bottom of Lyngstøl was, in fact, the new road when the land-slide occurred in 1908. It was established because of the big problems with rock- and snow-slides from Keipen. Construction of the road was carried out by workers brought in from outside. Maintenance of the road was thereafter carried out by the farms to each of which was delegated a portion of the road which had to be kept free from rocks and secured against slippage of the road itself. After the last big land-slide a new route had to be carved out, and it is here that the road still remains. There are screes, stick-fencing and



## Unique Dive Site



## Lyngstølsvattnet

### Solahølen

Before returning home we decided to take a dive in the deep Solahølen (in English: the sunhole). It has got its name from the sun which, in the summer, appears here early in the morning. The cows have also realised this: they often overnight here, perhaps in the hope of enjoying the morning sun? They look at us, these crazy people who clumsily waddle down to the water. Passing tourists stop to see what is happening, but we can see that they are smiling a little to themselves.

In Solahølen we experience a fantastic visibility. Snowdrifts which hang out over the water form a beautiful frame round the stony bottom. There is only a thin

the lake indicates that this has not happened for some time). The sun and light conditions will also affect the visibility in the water, either by directly influencing the growth of algae or by illuminating the particles in the water.

We have dived here in conditions of both good and bad visibility but as a rule it has been clear either over or under the cloudiness. A couple of times we have also seen clouds of silt floating in thin horizontal layers between the trees. I think that is incredibly charming as it gives the diving place greatly different atmospheres – and thereby gives me different impressions.



Below Solahølen the river cuts its way through the snowdrifts from the previous winter. Be careful if you go here because it is difficult to say how stable it is

road-edging stones to be found along the road in Lyngstøl lake. Right across from the bridge we also found a mile-stone. It is still standing as it was originally, and the text is still quite legible "RodeNo3". The stone marks the boundary between the responsibilities of two farms for their respective stretches of road. After having studied the stone for a while I look at the sediments on the road – was there something moving there? A three-centimetre long tube moved slightly again. A closer look showed it to be the house of a larva of one of the large spring-flies. The larva glues small stones together to form a thin tube which it drags around everywhere it goes. This house makes a good protection in the form of camouflage against the mud of the bottom. However, the small tracks it makes is a little give-away!

We swim further under the bridge which is built of large, flat stone blocks. Under the bridge we see

that our bubbles break against roof and trickle up between the stones. Coming out again from under the bridge we enjoy the sight of how the sun's rays make a shiny carpet of the small bubbles which float quickly to the surface. We swap places to swim under again just to see it once more.

### Misty waters

The visibility in Lyngstøl lake is very variable. The amount of precipitation plays a part but the greater part of the flow of water is filtered through the mass of stones on the bottom of the valley. This makes the water much clearer than one would expect for freshwater in a "normal" valley. With a large amount of precipitation the more rapid flow of water will cause mud to be dragged up from the bottom and spread up into the lake. Material from land-slides can also hit the water and spread mud-clouds (even though the vegetation along





## Unique Dive Site



## Lyngstølsvattnet

Skruven, Keipen, Littlehorn, Jakta and Smørskredtindane are all tempting objects for trips, even if some of them require some experience of climbing and that one uses the proper safety equipment. Relatively easy glacier trips can also be undertaken, but a local guide should be engaged.

### Under the open sky

For our visit to the Norang valley we choose to overnight in tents, as it gave us the best opportunities to follow the changing light conditions. This is of



layer of mud on the mass of stones. This is probably due to the fact that there is a good through-flow of the water: a small stream runs in from Ura lake in addition to the flow through the rock-slide. An enormous large rock lies in the middle of the deep hole. We hope that a similar one will not come rushing down when we are down there... For the hole has been continually formed by new rock-slides. These rush down to the bottom and hit against the other side

of the hole. Much of this new material in this way has then piled itself up against the road.

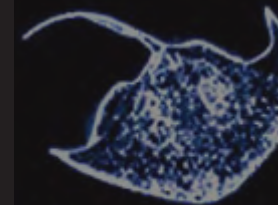
By following the stream further down over towards Stavberg lake we arrive at a snow-bridge. This can be experienced every year, but melts away during the Summer. In the shadow opposite, however, lies a miniature glacier which survives every summer. After a short side-spring we can boast of having been on a 'glacier trip'!

### Trip possibilities

We still return to the Norang valley. It is especially the diving that is of the greatest interest, but I greatly look forward to the day when we have time to investigate the surrounding mountains. Slogen,

course important for the photographer in that different motives appear at their best under different light conditions. After spending a pleasant evening in sleeping-bags around the camp fire we decided to sleep outside. Not long after the chatter had died away we heard small squeaks above our heads, and it was first shortly after that we could see dark shadows dancing across the heavens. It was small bats! A short moment after that little surprise we fall asleep at last, where we continued to dream of the forest and farms beneath the water. ■

# fact file



X-ray mag

## Bonne Terre

The greatest depth is about 14 meters. It is diveable the whole summer.

Visibility is probably best in periods with little precipitation.

The uppermost lake of the valley is called Geilskred, thereafter follow Djup lake, Ura lake, Solahøl, Stavberg lake and Lyngstøl lake. If you come from Hellesylt, Lyngsøl lake is the only one on the right-hand side of the road.

The road through the valley, RV655, is closed in the winter. Information can be obtained at Norfjordeid traffic station: 815 44 010 or [www.vegvesen.no](http://www.vegvesen.no).

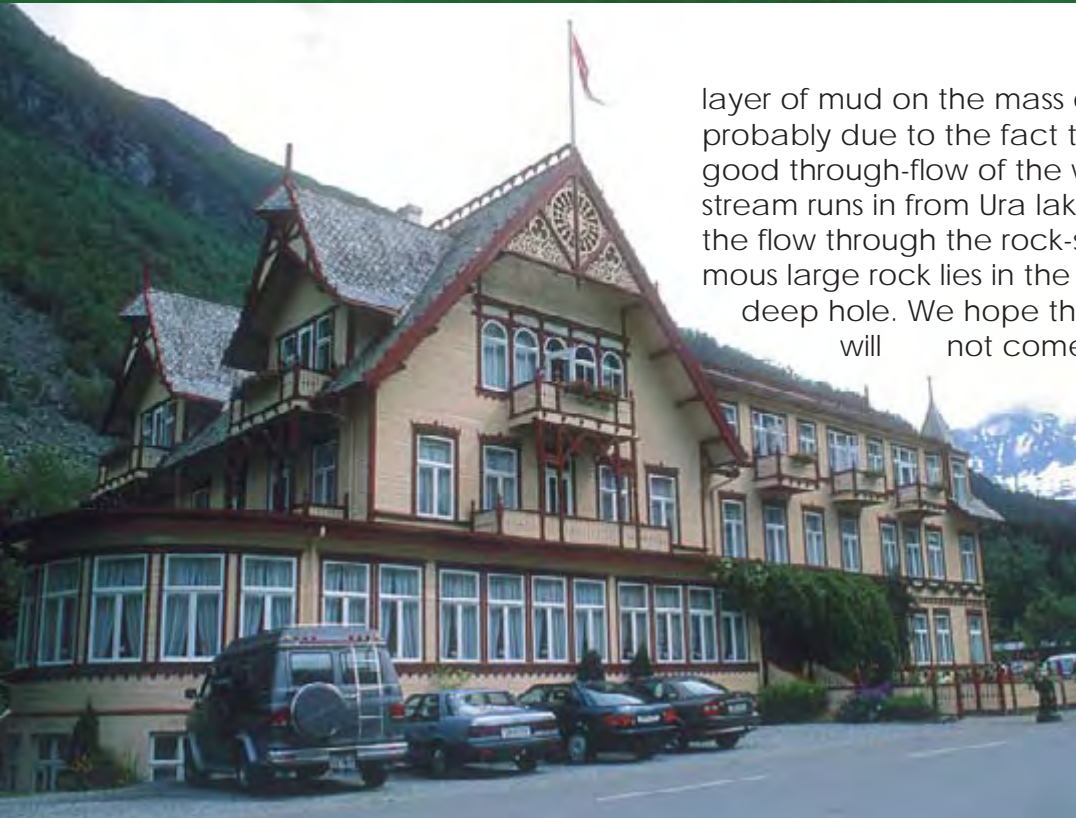
Information can also be obtained here about possible new land-slides if they cause the road to become impassable.

### Accommodation:

Hotel Union Øye, tel: 70062100. Restored to its original style (1890). 5 km from Lyngstøl lake.

Acts as a contact centre for information on guides for mountain trips, trekking and mountain climbing.

Grand Hotel Hellesylt, tel: 70265100: about 25 km from Lyngstøl lake. ■







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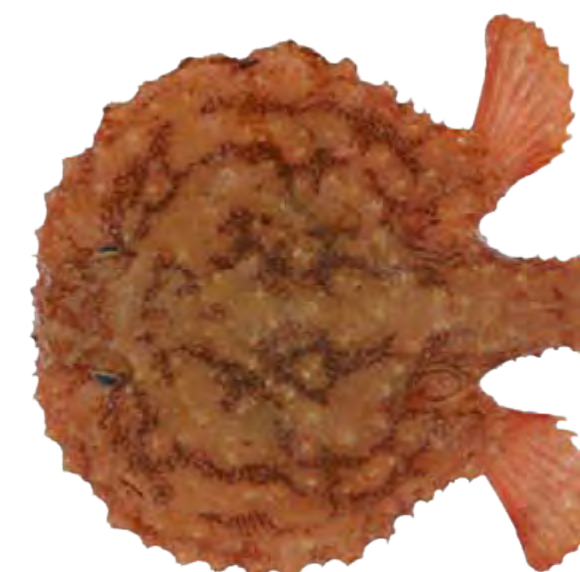
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# Micheline Lamarre Hadjis



P O R T F O L I O





PREVIOUS PAGE:  
*Marvel of the Ocean*, Commission for Muraleunique,  
32x42 inches, acrylic on canvas, \$3000

CLOCKWISE FROM FAR LEFT:  
*Conférence Sous la Mer*, 24x30 inches, acrylic on canvas, original sold, available as an archival signed limited edition print  
*Le Capricieux*, 11x14 inches, acrylic on canvas, \$250  
*Symposium*, 30x24 inches, acrylic on canvas, original sold, available as an archival signed limited edition print

All images by Micheline Lamarre Hadjis



Text edited by Gunild Symes  
All images by Micheline Lamarre Hadjis

**Canadian artist, Micheline Lamarre Hadjis, loves color. Her paintings are rich with vibrant hues. The images draw the viewer into another world where light and shadow, contrast and form burst from the canvas with vitality and luminosity.**

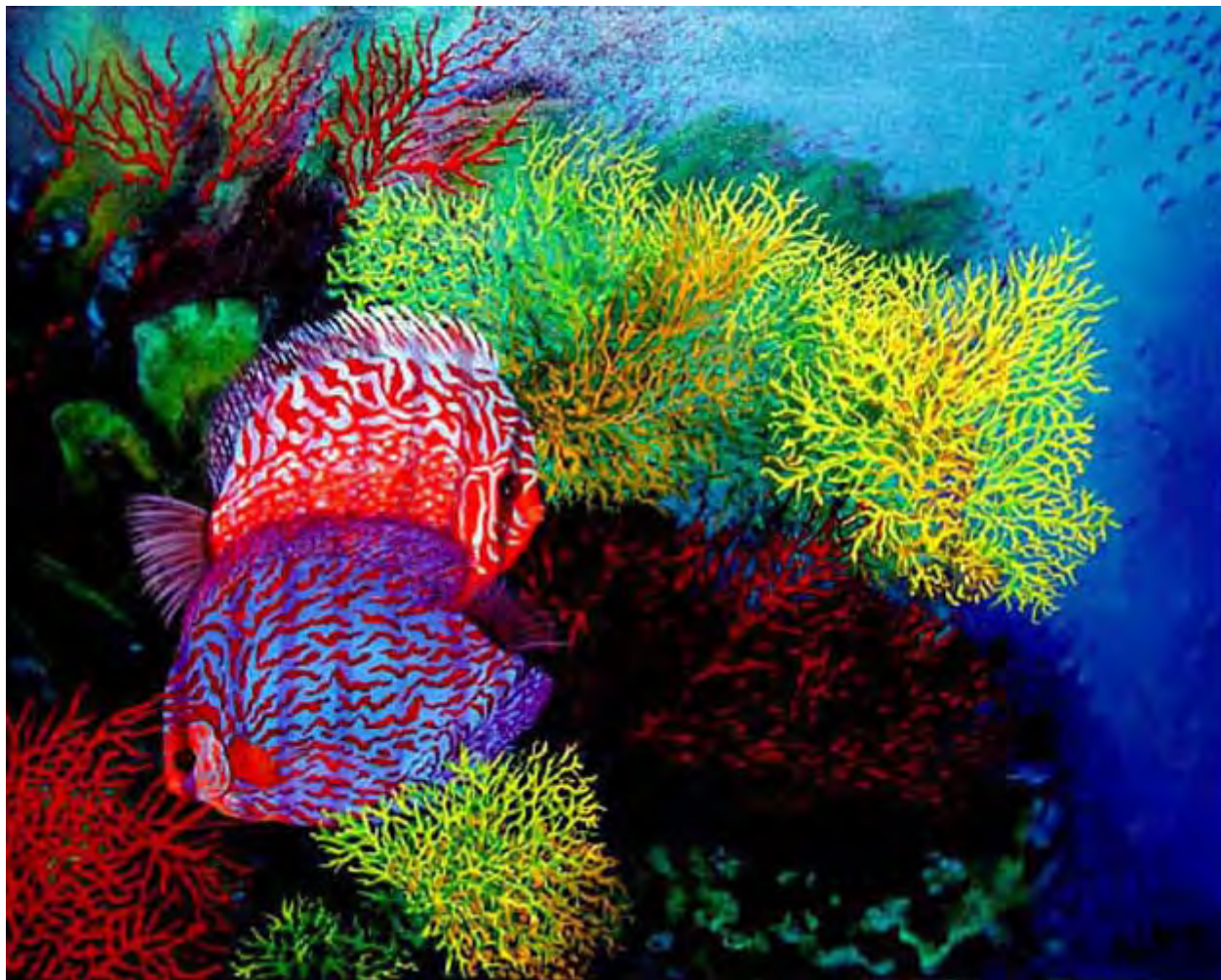
Hadjis worked with bright colors, textures and shapes in her former occupation as a fashion designer. Then, she investigated translucence and light as a stained glass artisan. She then developed precise feathered brush techniques and played with concepts of depth

and perception as a porcelain painter and ceramicist. Finally, she brought these elements to the canvas armed with courses taken involving the use of mixed media. In an interview with Gallery Direct, she said, "...that was an eye opener as well as liberation from the constrictions of figurative painting with all the details."

Hadjis says that her most difficult and creative paintings are her marine scenes. Although she does not take the plunge into the ocean every time she needs to study a fish, she does browse books on marine life, sea anemones, corals, exotic fish and marine vegetation in order to compose a totally original scene. Hadjis says that her composi-



CLOCKWISE FROM FAR LEFT:  
*Up We Go!* 30x24 inches, acrylic on canvas, original sold, available as an archival signed limited edition print; *Side by Side*, acrylic on canvas, original sold, available as an archival signed limited edition print; *Curious Discus*, 30x36 inches, acrylic on canvas, \$3000; *Coraux & Discus*, 24x30 inches, acrylic on canvas, \$1800 framed; All images by Micheline Lamarre Hadjis



tions are always based on colors.

She says, "...painting colorful and exotic paintings brings me to another realm where I forget our long and cold winters. Not being able to experience the sight, smell and beauty of... the fascinating tropical fish in their habitat all becomes an evasion of the senses."

Hadjis likes to paint on canvas wrapped with 100 percent unbleached cotton. She then prepares the surface with a medium acrylic. This prepara-

tion allows her to get the fluidity of the paint she prefers on her backgrounds. She then paints the figures with fluid acrylics in an opaque layer over the background. The desired effect takes many hours to achieve. On occasion, Hadjis will incorporate molding paste, iridescent acrylics, granular gels and gold mica into her paintings.

She says, "Abstracts are a challenge but very therapeutic in their own way as you can only control the pigments to a certain degree; it is like working with a





*Influx* by Micheline Lamarre Hadjis  
Acrylic on canvas, 13x10 inches, original sold  
Available as an archival signed limited edition print



*Fonds de Mer*  
by Micheline Lamarre Hadjis  
Acrylic on canvas, 13x10 inches, \$200



*Submersion*  
by Micheline Lamarre Hadjis  
Acrylic on canvas, 13x10 inches, \$200

partner, he gives, then you give.”

Her preferred environment in which she enjoys working is a vast room with a lot of light that is quiet with no music or television blaring in the background—just peace and solitude without any distractions.

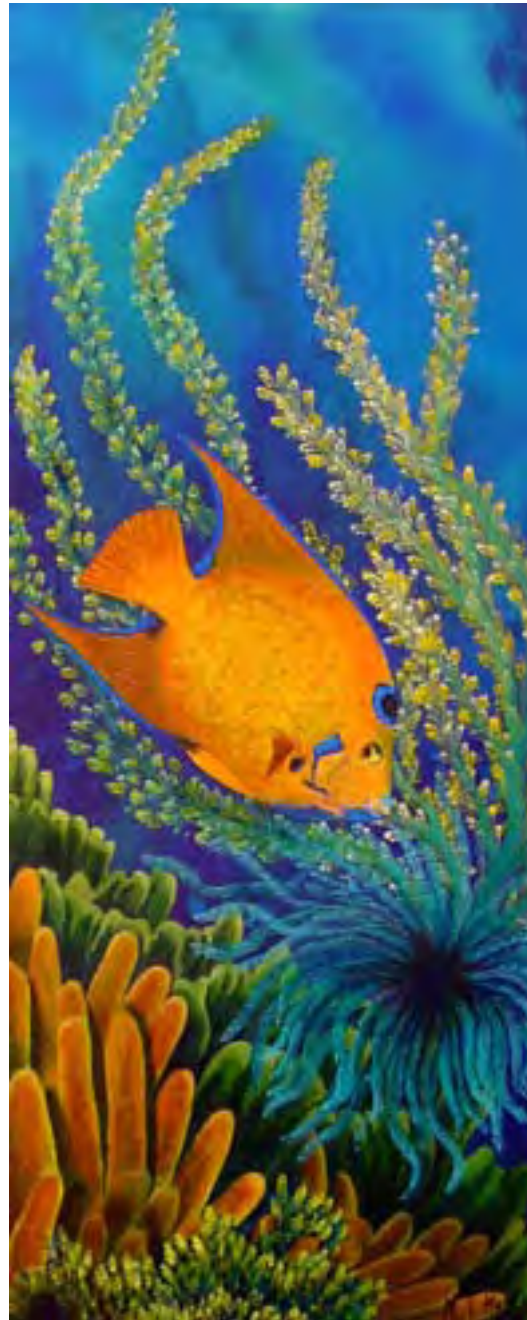
Hadjis has experienced the ups and downs of the

art world—great successes, such as a gallery coming over to her house and buying a whole load of paintings, as well as rejections. She has accumulated wisdom and advice for painters dealing with rejection. She told Gallery Direct, “There are always aches when you are rejected with different events or galleries but

you learn that it is not necessarily your work but the parameters of their needs.”

The artist has exhibited extensively in Canada including galleries in Montreal, Pointe-Claire, Trois-Rivieres, Beaconsfield, Lancaster in Ontario and Kirkland. In the spring and summer of 2007, she was





*Goldie*  
by Micheline Lamarre Hadjis  
Acrylic on canvas, 30x12 inches, \$500



*Le Fugitif*  
by Micheline Lamarre Hadjis  
Acrylic on canvas, 30x12 inches, \$500



*La Poursuite*  
by Micheline Lamarre Hadjis  
Acrylic on canvas, 30x12 inches, \$500



*Les Coraux Bleus*  
by Micheline Lamarre Hadjis  
Acrylic on canvas, 30x12 inches, \$500

featured in an exhibition entitled "Fantasea" that ran for six months at the Arizona Museum for Youth in Mesa, Arizona.

Hadjis has been commissioned for murals and unique pieces. She works closely with interior designers on custom projects that strive to meet the needs of clients. She has a license agreement with Artwork on Tiles in North Carolina, which uses her images to

reproduce murals in ceramic, porcelain, glass and marble.

Hadjis is listed in the Répertoire Biennal des Artistes Canadiens en galerie 2006-2007 de MagazinArt et présidente de l'Association des Artistes de Beaconsfield, Quebec, Canada.

What Hadjis loves most about being an artist is the satisfaction she gets from the appreciation she

receives from people all over the world who buy her paintings and enjoy looking at them.

*Hadjis prints and greeting cards will soon be available for purchase at **The X-RAY MAG Store** and **Ocean Arts Gallery**. For more information or to purchase original art work or archival signed limited edition fine art prints directly from the artist, please visit her website at: [www.michelinehadjis.com](http://www.michelinehadjis.com) ■*

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