

Gifts for Sea Lovers



GLOBAL EDITION
March 2009
Number 28

Russia
Barents Sea

Tech Talk
**Rebreather
Cave Diving**

Profile
NAUI's
Jim Bram

Photography
**Under
the Ice**

Fishy Found
Object Art by
Frank Russell

INDIAN OCEAN

Maldives

COVER PHOTO BY STEVE JONES

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Frederiksberg, Denmark

www.xray-mag.com

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COVER PHOTO: *Dances with Giants*, Madi Varu,
South Ari Atoll, Maldives, by Steve Jones

(CONTINUED ON PAGE 4)



Join Kurt Amsler's efforts to save Indonesia's
endangered sea turtles Sign the petition and
donate to the cause at: www.sos-seaturtles.ch

Nudibranch. Photo by Yann Saint Yves



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Getting the Priorities right

Editorial

In this issue, we have dedicated several pages to the controversial topic of manipulating oceanic plankton as a method of removing CO₂ from the atmosphere. It's a risky attempt to off-setting the anthropogenic contributions of carbon.

An Indo-German oceanographic expedition recently embarked on an 'ocean-engineering' experiment in the water around Antarctica that could have an extremely negative impact. LOHAFEX, as the experiment is known, calls for the addition of nutrients to large swathes of ocean to boost the production of plankton, one of nature's best remedies for excessive CO₂.

While I don't stand entirely with critics opposed to the experiment – I think some valuable lessons were learned – I am in general agreement with those who believe this is very dangerous project. Mankind can not fix global warming by tinkering with complex ecological systems. Because they are complex, the result of this nutrient rich soup is unpredictable. What if something really goes wrong? We can't

extract the nutrients and start over, can we? And, of course, we don't have another planet to perform another experiment on. Secondly, the underlying concept of tampering with a natural, and supposedly healthy, eco-system in order to fix problems elsewhere is flawed. This ocean experiment is a bad way of prioritizing limited resources.

There are easier, and more ecologically sound remedies.

Let begin with stopping the destruction of the forests and wetlands. Don't you think planting trees and cleaning the water will help? The burning of rainforests and other woodland areas add huge amounts of carbon dioxide to the atmosphere, far more than traffic. Every tree we cut down diminishes nature's ability to absorb carbon dioxide. Natural sinks are capable of absorbing nearly 5 billion tons of CO₂ each year, or about 55% of all anthropogenic carbon emissions. Obviously, we have to close that gap.

Natural sinks are worth three quarter trillion dollars annually to the

global economy, if an equivalent sink had to be created using other climate mitigation options. With global economy sagging, isn't it worth making the most of our limited finances?

As far as I am concerned I'd rather buy rainforest certificates, than get a replacement for my dated hi-fi and cathode ray TV. I need the ocean more than I need gadgets. How about you?

As consumers, and advocates, we have power and leverage. We can change things, as we have done in the past. As divers, we may think less often of the jungle, than the ocean, but without a healthy landside environment, there will be no healthy ocean. We need to stretch the eco-buck, not pass it. We need a healthy planet, which means clean air, clean water and an abundance of trees. We need a 'Blue-Green Philosophy.'

Let me conclude on a positive note by congratulating those who have helped with campaigns to stop shark-finning, over-fishing of whales, the killing of seals and leatherback turtles.



With regard to shark-finning, Alibaba.com finally gave in after sustained pressure and removed shark fin products from their portals, as have many others.

Some of the turtle campaigns are now seeing a decline in the once flourishing illegal turtle trade on Bali.

To a large degree, progress is because of the support from readers of this magazine and other those of our partner organizations.

I was in Chicago for the 39th edition of Our World Underwater. Jason Heller of DivePhotoGuide and Wetpixel coordinated the Underwater Film Festival. One of the categories had an environmental theme. It showed images of the senseless slaughter of marine life that most of the audience had never seen. It had impact. That's what I'm talking about - making an impact on the way we see things.

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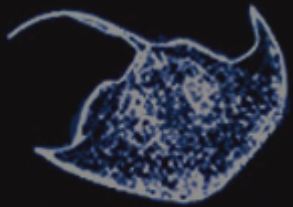
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X-ray mag

News edited
by Peter Symes
& Arnold Weisz

NEWS

Scientific sub makes deep-sea discoveries

Bizarre carnivorous sea squirts, large spider-like creatures and an ancient coral reef have been discovered by scientists during a four-week expedition to explore the deep ocean southwest of Tasmania, Australia, revealed that the area was home to several species of deep sea animals previously unknown to science.

Images courtesy of Advanced Imaging and Visualization Laboratory WHOI

"We set out to search for life deeper than any previous voyage in Australian waters. We also gathered data to assess the threat posed by ocean acidification and climate change on Australia's unique deep-water coral reefs," said Dr Ron Thresher from CSIRO.

The expedition used a remote-controlled submarine to explore the hidden depths of a near-vertical slice of the Earth's crust southwest of Tasmania. Known as the Tasman Fracture Zone, it drops below 4000m. Among the new species was a funnel-shaped carnivorous sea squirt half-a-metre high, and a waffle-like cone-shaped giant sponge. At up to 3000m were thousands of sea spiders, about 30cm in diameter that look like land spiders but are unrelated.

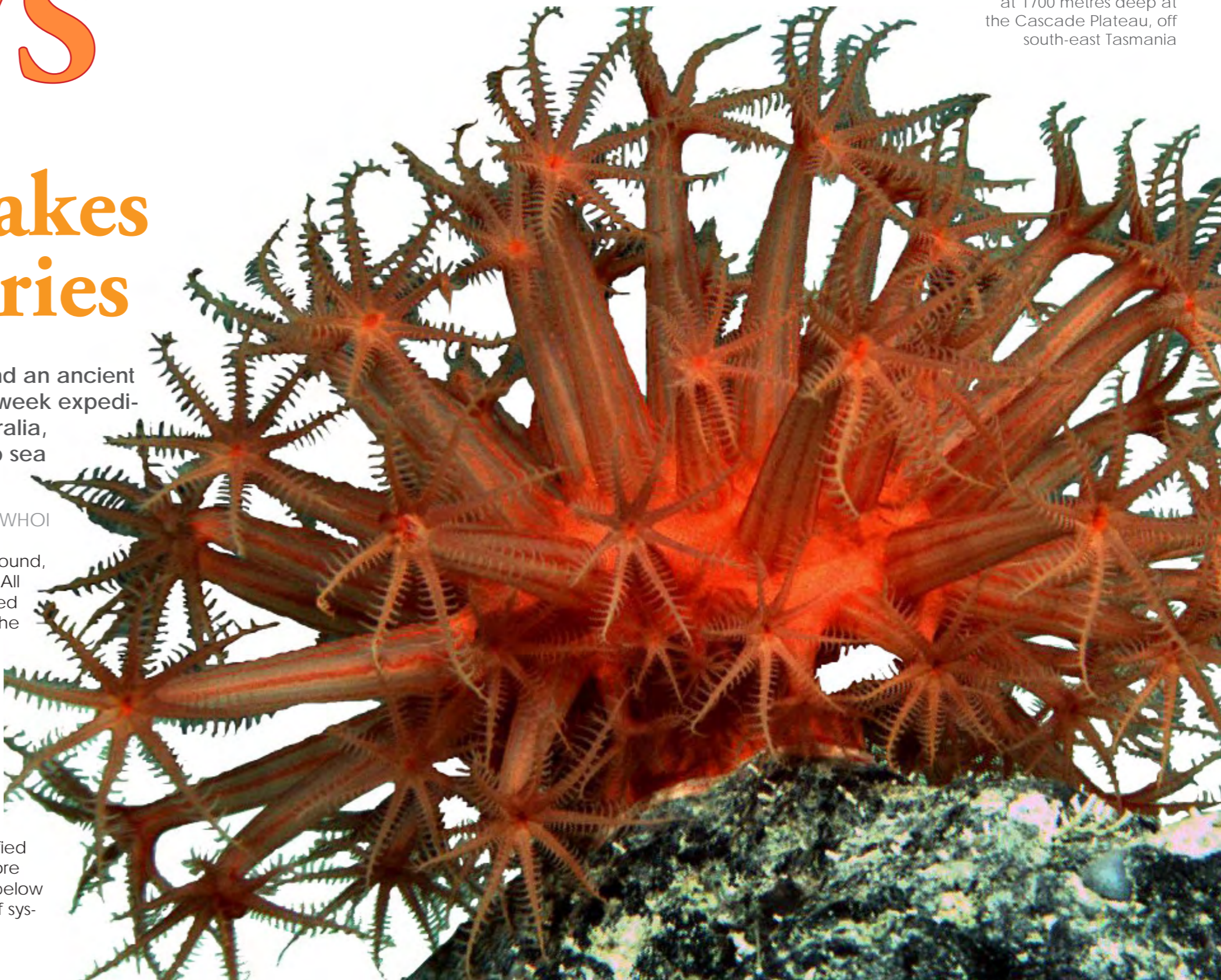
And at 3500m were millions of round, purple-spotted sea anemones. All of these new species are located more than 2000 metres below the surface.

"The entire bottom was covered in these things as far as you can see, and it was just completely unexpected to see this huge dominant community down there," said Thresher.

+10,000 years old

The researchers on the joint US-Australian exploration identified vast fields of fossilized corals more than 10,000 years old located below 1400m as well as a modern reef system.

A bright red, undescribed species of shell-less coral, called an anthomastid or gorgons-head coral, at 1700 metres deep at the Cascade Plateau, off south-east Tasmania





One of Australia's deepest residents—a bizarre carnivorous sea squirt, or ascidian, standing half a meter tall on the seafloor on the Tasman Fracture Zone at a depth of 4006 metres. The animal feeds opportunistically, triggered when a fish or any other swimming organism touches it. The animal is then trapped by the funnel-like front section, which collapses around the prey item

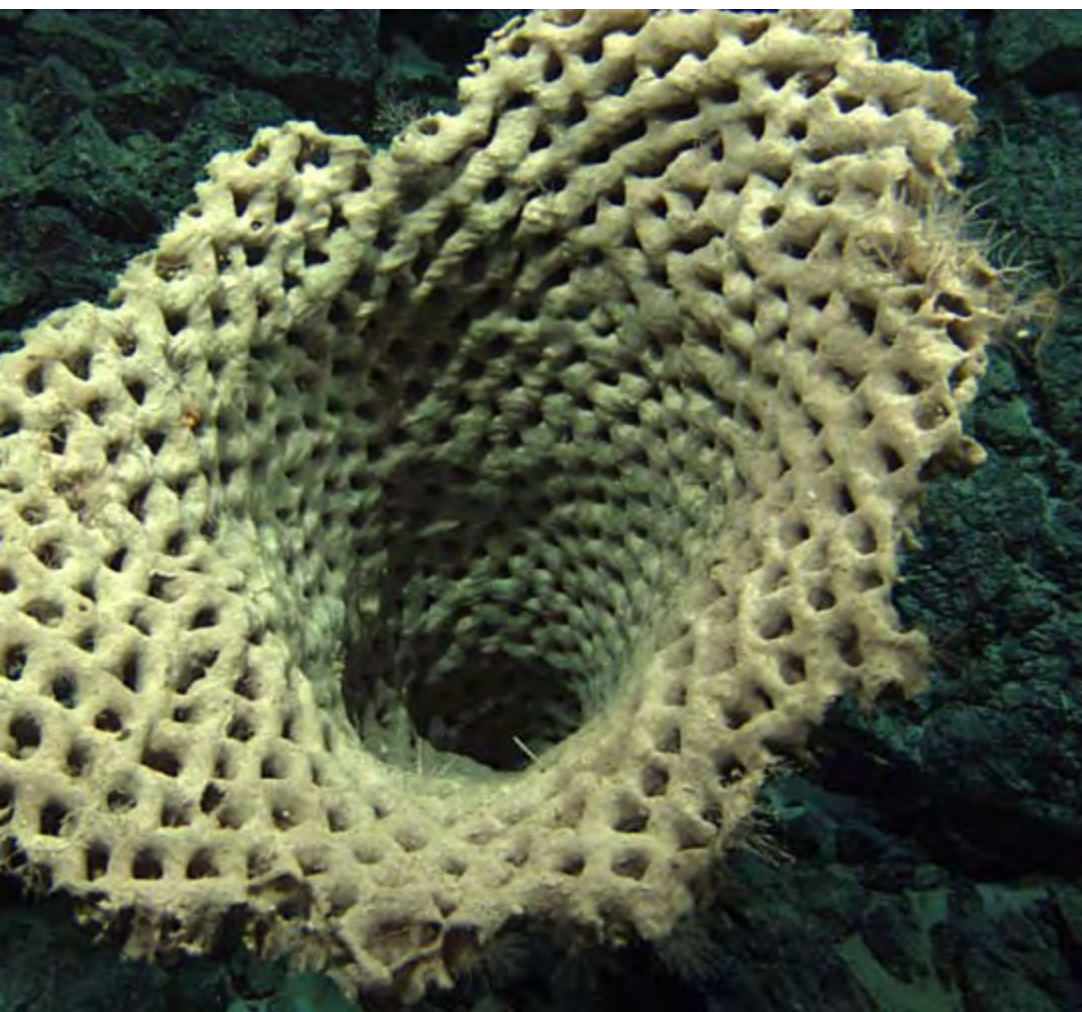
However, Thresher said images taken by the submarine provided evidence that the modern reef system was dying. Most reef-forming coral deeper than 1300m had recently died, and ocean warming and increasing ocean acidity may be the cause.

"We need to closely analyse the samples and measurements we collected before we can determine what's caused this," Thresher said. It could be the result of several factors, such as ocean warming, disease or increasing ocean acidity.

The exploration was funded by the US National Science Foundation, which spent A\$2 million to bring the research vessel *RV Thompson* to Australia, as well as the remote-controlled submarine *Jason*.

The collaborative voyage of US and Australian researchers was led by chief scientists Dr Jess Adkins from the California Institute of Technology and Dr Ron Thresher from CSIRO's Climate Adaptation and Wealth from Oceans Flagships. ■

The half-metre-wide mouth of a 2-metre high "waffle-cone" sponge, found at a depth of 2197 metres in the Tasman Fracture Zone



Deepwater shrimp, small gorgonian fan (also known as sea whip or sea fan), small sea star in approximately 2400 metres of water



In 2007, Google launched an advisory group ('Google Oceans Advisory Council' with 18 elite members, consisting mainly of oceanographers) to discuss creating a 3D map of the oceans. They thought that this could be an underwater version of "Google Earth", which could stimulate a lot of new interest in oceanography for showing sea behaviours, changing temperatures, weather patterns, etc.

The newest version of Google Earth (5) recently released takes previous technology it applied on land and uses it to map the ocean and all its wonders. The

data comes courtesy of the US Navy and a number of partners, including the BBC and National Geographic, and offers information on global fishing statistics, footage of shipwrecks, dive sites, movements of Arctic sea ice and marine animal tracking. When you spot an icon of a sea lion, whale or sea turtle, click on it and you can follow the path of a sea lion that was radio tagged by a scientist with Global Tagging of Pelagic Predators. Some of the links and other information you find on "Ocean" is still a bit "beta" but as users and Google's partners insert more information, it will get better. ■



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Edited by Michael Symes



Spookfish has mirrors for eyes

The mirrors give the fish the edge over its predators because they allow it to detect flashes of light made by creatures in the deep in more detail than eyes with lenses can.

Diverticular eyes. While the spook fish looks like it has four eyes, in fact, it only has two, each of which is split into two connected parts. One half points upwards, giving the spookfish a view of the ocean—and potential food—above.

The other half, which looks like a bump on the side of the fish's head, points downwards into the abyss below. These 'diverticular' eyes are unique among all vertebrates in that they use a mirror to make the image. ■

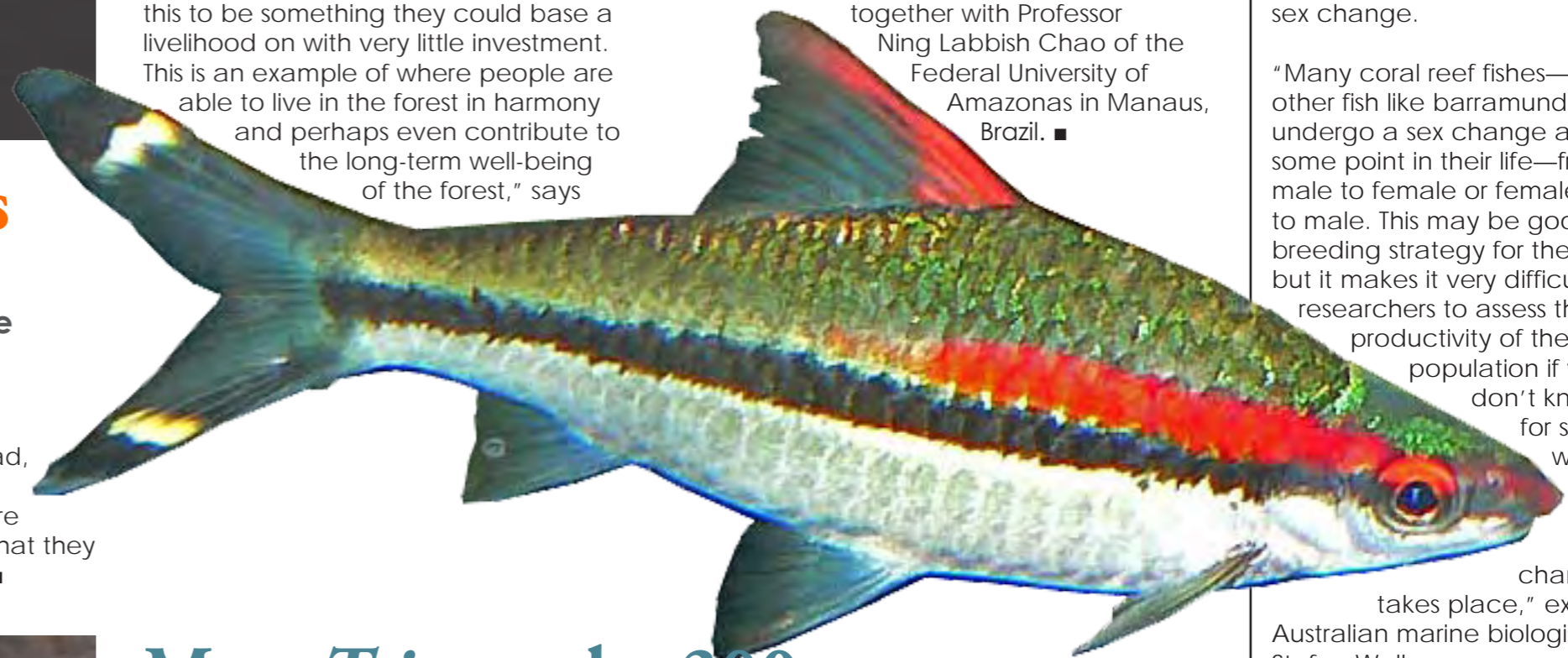


“Buy a fish, save a tree”

The Cardinal Tetra has for the past 50 years defied easy breeding in captivity, and its wild harvest has been supporting a vibrant community of caboclos living along the tributaries to the Amazon River, notably the Rio Negro and Orinoco Rivers in Brazil. Nearly 40 million cardinals are being sustainably caught and exported every year.

“Rural people in this region found this to be something they could base a livelihood on with very little investment. This is an example of where people are able to live in the forest in harmony and perhaps even contribute to the long-term well-being of the forest,” says

Scott Dowd in a recent article published in *Americas* by the Organization of American States. Without a source of income from aquarium fishes, local people might be forced to turn to agriculture, cutting trees and mining, according to local observers. The ‘Buy a fish, save a tree’ campaign was originally set up by Dowd who works for the New England Aquarium together with Professor Ning Labbish Chao of the Federal University of Amazonas in Manaus, Brazil. ■



Meet *Triops*, the 300 million year-old living fossil

This humble tadpole shrimp has outlived mammoths, dinosaurs and trilobites. Notostracans, or tadpole shrimps, have survived at least three such devastating extinctions maintaining a remarkably stable body shape and way of life. Fossils from *Triops*, a type of Notostracan from over 300 million years ago, are identical to living species today, so they are considered one of the oldest ‘living fossils’. Despite its survival throughout the geological ages, *Triops cancriformis* is an endangered species mainly because of habitat loss and pollution.

The dozen or so Notostracan species live in seasonal, freshwater ponds, in temperate regions, deserts and even the Arctic, and they are commonly found in large numbers. The most immediate feature that appears to help Notostracans’ survival is that they produce eggs that are extremely resistant to hostile conditions. These resistant eggs withstand desiccation; extremely high temperatures, right up to boiling point; freezing; and even digestive enzymes—this lets eggs survive when the adults that carry them are eaten by birds. ■

Coral reef fishes experts at changing sex

The researchers from the ARC Centre of Excellence for Coral Reef Studies and James Cook University have solved one of the major problems confronting fisheries biologists in determining the sustainability of fish populations—not knowing exactly when fish undergo a sex change.

“Many coral reef fishes—and other fish like barramundi—undergo a sex change at some point in their life—from male to female or female to male. This may be good breeding strategy for them, but it makes it very difficult for researchers to assess the productivity of the fish population if we don’t know for sure when the sex

change takes place,” explains Australian marine biologist Stefan Walker.

With almost a third of world fisheries rated as having collapsed and many more under threat, and with coral reefs facing climate and other human-caused stresses, it is vital to assess the productivity of fish populations in order to know how much fishing pressure it can withstand and whether or not it can bounce back. This includes having an understanding of the gender ratios and the age at maturity for females and males. ■

BRITISH ANTARCTIC SURVEY



A new giant Antarctic amphipod crustacean nearly 100 mm long, belonging to the genus *Eusirus*, sampled by baited traps off the Antarctic Peninsula

Antarctic seas richer in life than Galapagos Islands

Researchers in North and South startled to find Polar oceans share 235 species. Changes in species distribution documented as warmer oceans spur migration. United by high-speed current, Antarctic benthos revealed as single bioregion. Smaller species replacing larger ones in some Arctic waters.

'Diving in Antarctica is absolutely remarkable, just so full of life,' reports Dr David Barnes from the British Antarctic Survey

A British Antarctic Survey study has revealed over 1,200 marine species around the South Orkney islands



Seas surrounding an archipelago near the tip of the Antarctic peninsula are richer in animal life than the Galapagos Islands, challenging the notion that warm seas in tropical zones are higher in biodiversity, say scientists from British Antarctic Survey on scientific expedition to the South Orkney islands.

A giant Antarctic barnacle, a cirriped crustacean sampled at the tip of the Antarctic Peninsula

Sea fans are closely related to corals. Although these ones, photographed in the waters of Larsen B, "choose" a large drop stone as a habitat, sea fans can also live on soft substrate.



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Much less is known about the South Orkney islands than the tropical islands that helped to shape Charles Darwin's thoughts about natural selection on his Beagle voyage. But according to a new study just published in the *Journal of Biogeography*, the sea around them is teeming with a huge variety of life. The survey disproves the notion that the waters in chilly polar regions have a much poorer variety of fauna.

The survey recorded 1,224 species in 50 different biological classes. The team discovered five new species and one genus—the biological category that is higher than species—that was new to science. The new species are all sea mosses (bryozoans) or isopods (wood-louse-like animals) but they have not been given names yet.



Sand fleas (amphipod crustaceans) under nearshore ice in the Beaufort Sea. Ice-associated amphipods are a major food source for Arctic cod, in turn the main prey for ice seals

Living at both poles

At least 235 species are thriving in both the Arctic and Antarctic polar seas, according to the Census of Marine Life. Scientists found that species such as grey whales, birds, worms, crustaceans, and angelic snail-like pteropods exist at both poles. Dozens of species were separated by nearly 7,000 miles, they said. The census involved 500 researchers from more than 25 nations, and took place during International Polar Year (from March 2007 to March 2009). The survey recorded 1,224 species in 50 different biological classes. They took data from nearly one million locations. Those places include seafloors exposed to light for the first

Sand fleas such as *Hyperoche capucinus*, are common predators swimming in polar waters. This specimen, about the width of a finger, was photographed during the CEAMARC 2008 expedition aboard the Umitaka Maru to the Antarctic, part of a joint CAML/ArcOD/CMarZ effort

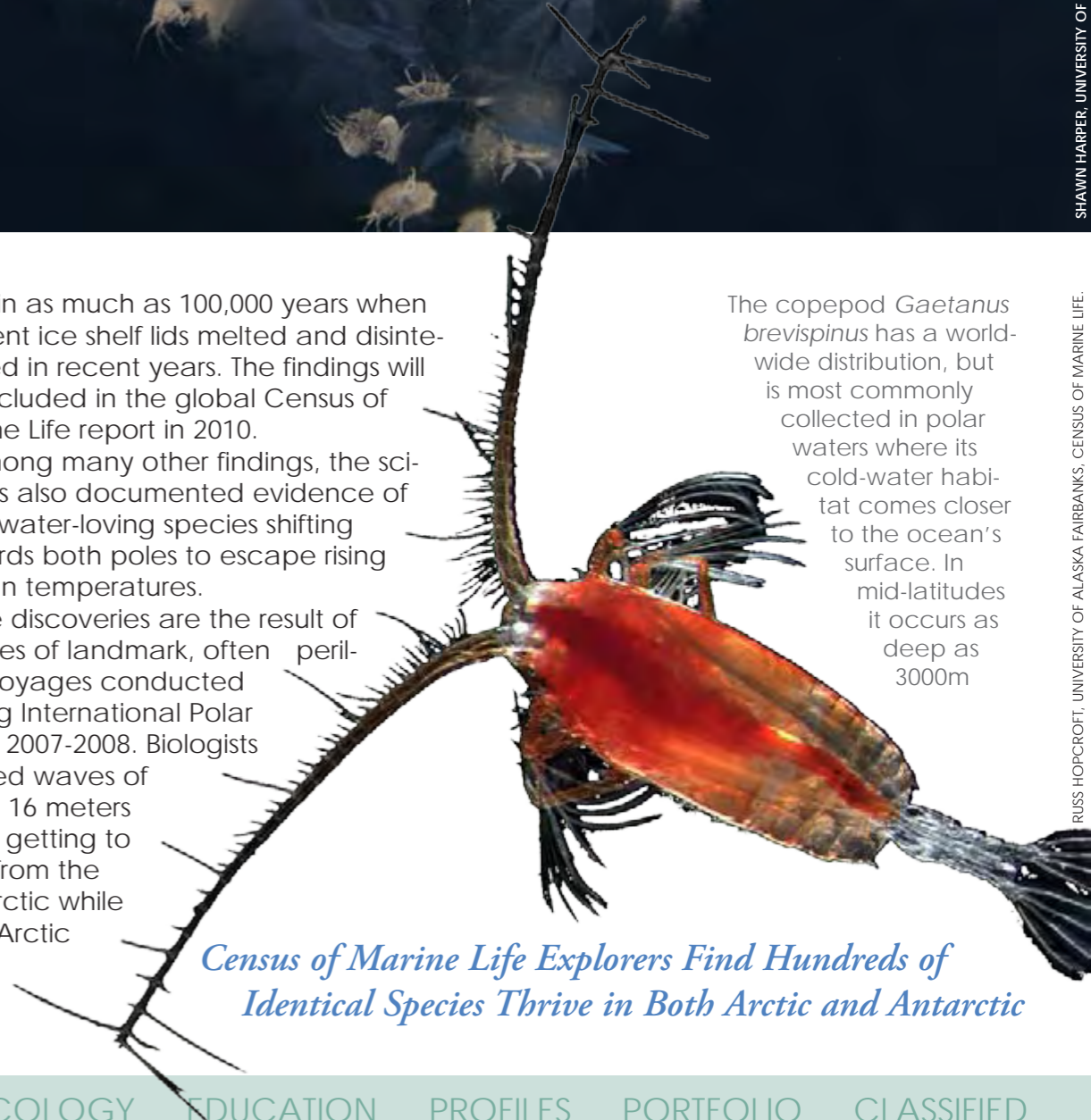


time in as much as 100,000 years when ancient ice shelf lids melted and disintegrated in recent years. The findings will be included in the global Census of Marine Life report in 2010.

Among many other findings, the scientists also documented evidence of cold water-loving species shifting towards both poles to escape rising ocean temperatures.

The discoveries are the result of a series of landmark, often perilous voyages conducted during International Polar Year, 2007-2008. Biologists braved waves of up to 16 meters while getting to and from the Antarctic while their Arctic col-

The copepod *Gaetanus brevispinus* has a worldwide distribution, but is most commonly collected in polar waters where its cold-water habitat comes closer to the ocean's surface. In mid-latitudes it occurs as deep as 3000m



Census of Marine Life Explorers Find Hundreds of Identical Species Thrive in Both Arctic and Antarctic

“Humanity is only starting to understand the nature of these regions.”



A remotely operated vehicle equipped with a video camera was used to record life in the Southern Ocean during an expedition aboard the Aurora Australis. Shown here is scientist Rob Beaman removing the camera from its waterproof case

RUSS HOPCROFT, UNIVERSITY OF ALASKA FAIRBANKS, CENSUS OF MARINE LIFE.

Mimonectes sphaericus is a commensal amphipod crustacean living upon jellyfish and their kin in both the Arctic and Antarctic. The large sword-like antennae only occur on males



This marble-sized jellyfish, *Calycopsis borchgrevinki*, is one of the more common hydromedusae encountered in Antarctic waters



Arctic krill, *Thysanoessa raschii*, was found in high densities under sea ice in the Arctic and its marginal seas, where they feed seasonally on algae associated with the sea ice, similar to the behavior of the Antarctic Krill



RUSS HOPCROFT, UNIVERSITY OF ALASKA FAIRBANKS, CENSUS OF MARINE LIFE

leagues often worked under the watchful eye of an armed lookout to protect them from polar bears. “The polar seas, far from being biological deserts, teem with an amazing quantity and variety of life,” says Dr Ian Poiner, Chair of the Census Scientific Steering Committee. “Only through the co-operation of 500 people from more than 25 countries could the daunting environmental challenges be overcome to produce research of such unprecedented scale and importance. And humanity is only starting to understand the nature of these regions.”

A cold incubator for new species

Previously thought to be low in species diversity and abundance, the researchers have amassed biological data from nearly one million locations. Those places include seafloors exposed to light for the first time in as much as 100,000 years when ancient ice shelf lids melted and disintegrated in recent years.

Research in the 1970s suggested separate bioregions around Antarctica. CAML’s efforts, however, reveal life on the seafloor encircling Antarctica forms a

RUSS HOPCROFT, UNIVERSITY OF ALASKA FAIRBANKS, CENSUS OF MARINE LIFE



This 3cm long ghost-like sea-angel *Platybrachium antarcticum*, flies through the deep Antarctic waters hunting the shelled pteropods (another type of snail) on which it feeds



A midwater Medusa from the Celebes sea

single biological province, even though 8,500km of ocean separates opposite sides of the continent. Scientists are now analyzing hundreds of open ocean (pelagic) samples from all compass points around Antarctica to establish whether, as suspected, marine life distribution has been evened by the churn of the Antarctic Circumpolar Current. That swift-flowing current circles the polar continent twice as fast as the Gulf Stream flows from the Gulf of Mexico towards Europe.

The bean-sized swimming snail, *Limacina helicina*, occurs in both Arctic and Antarctic waters. It spins a mucus-net off its paddle-like foot-wings to trap algae and other small particles on which it feeds



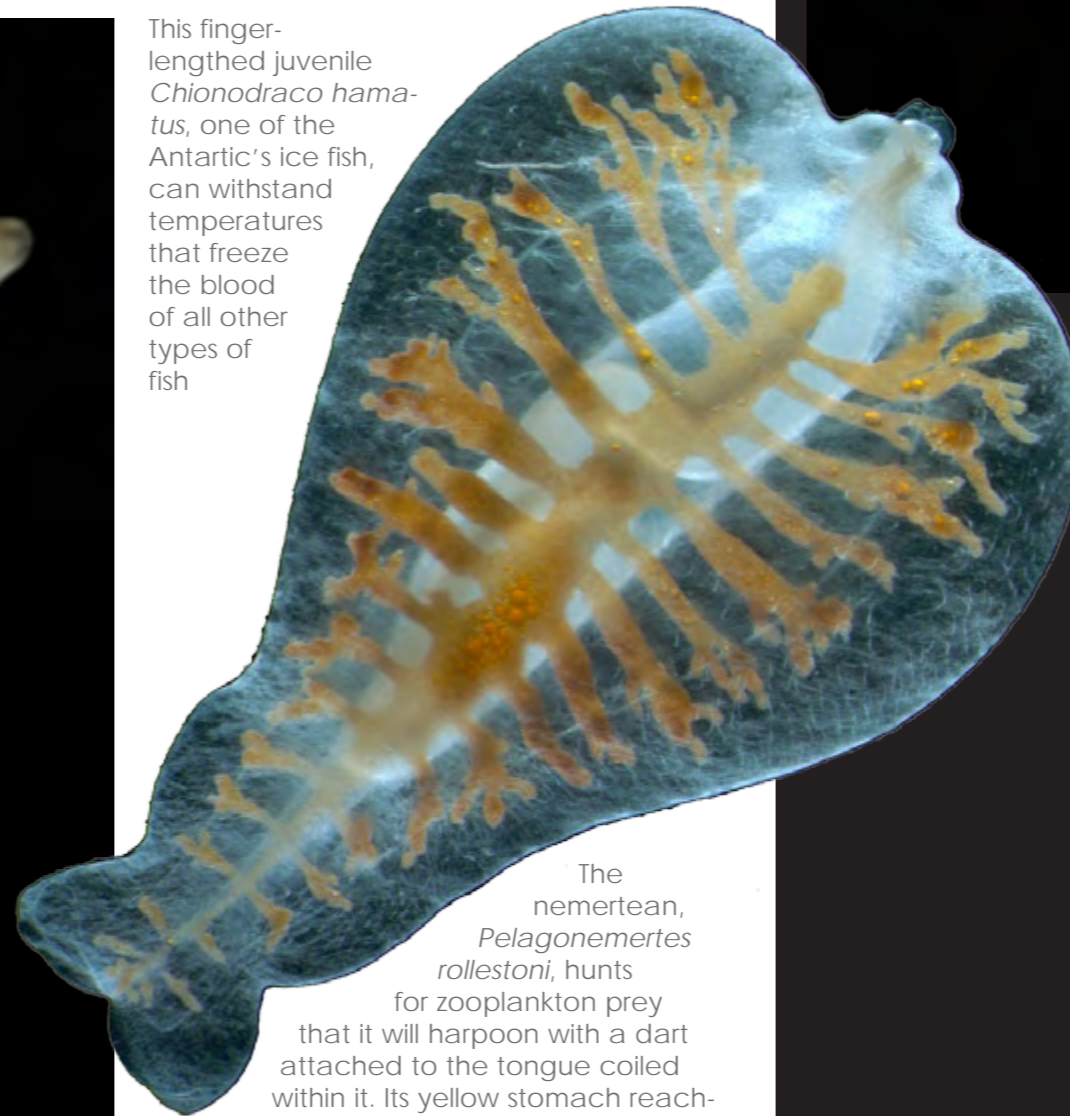
Migrations

And they report species of cold-water snail (pteropods) migrating southward as ocean temperatures rise further north. Meanwhile, the polar marine explorers were startled when molecular techniques revealed that glacial cycles over millions of years made the Antarctic the cold incubator of many species residing today in more northern waters.

Census researchers last year established that several octopus types have repeatedly colonized the deep sea, each migration coinciding with retreating Antarctic ice over 30 million years.



This finger-lengthed juvenile *Chionodraco hamatus*, one of the Antarctic's ice fish, can withstand temperatures that freeze the blood of all other types of fish



The nemertean, *Pelagonemertes rollestoni*, hunts for zooplankton prey that it will harpoon with a dart attached to the tongue coiled within it. Its yellow stomach reaches out to feed all parts of the body—about 3cm long



Elizabeth Siddon dives below the ice in the Canada Basin, tethered to a tender for her safety

SHAWN HARPER, UNIVERSITY OF ALASKA FAIRBANKS



A brightly coloured comb jelly swimming in the Arctic seas off the Canada Basin

Today they theorize that the Antarctic also regularly refreshes the world's oceans with new varieties of sea spiders, isopods (crustaceans related to shrimp and crabs), and others as well. They believe the new species evolve when expansions of ice cloister Antarctica; when the ice retreats, they radiate north-

ward along the same pathways followed by the octopuses.

The abundance of Antarctic marine biodiversity is recorded in the SCAR-MarBIN database, which today contains close to one million marine life observations below the Antarctic Circle. About half of Antarctic species are found nowhere else on Earth.

Says Victoria Wadley: "One hundred years ago, Antarctic explorers like Scott and Shackleton saw mostly ice. In 2009, we see life everywhere." ■

The RV *Polarstern* breaks a path through the Southern Ocean. Operated by the Alfred V. Wegener Institute, the *Polarstern* provides an excellent platform for exploring below the Antarctic ice



J. ZIEGLER, CENSUS OF ANTARCTIC MARINE LIFE.

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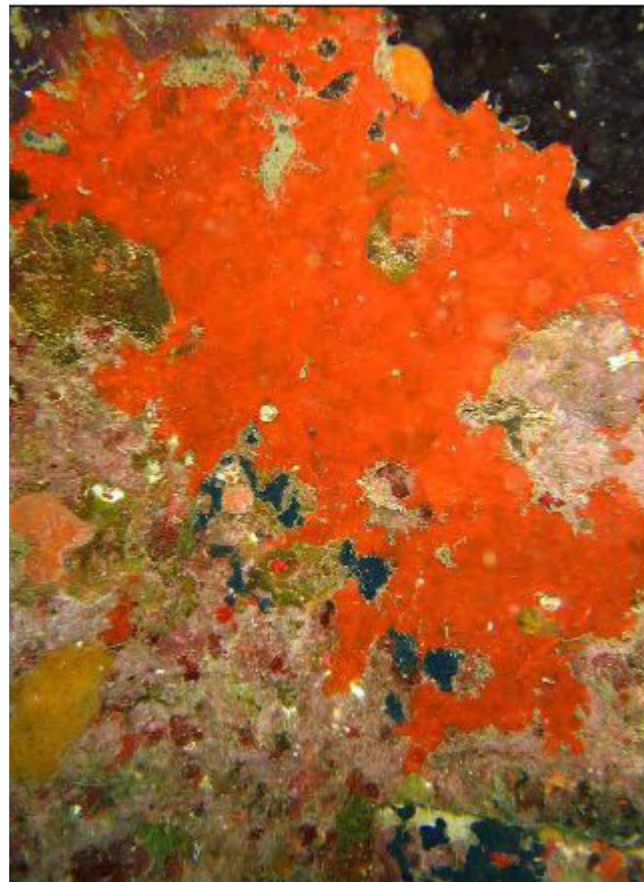
Sponges crucial to reefs' health

Although sponges inside the cavities of coral reefs take up a lot of dissolved organic material, they scarcely grow. However, they do discard a lot of cells that in turn provide food for the organisms on the reef.

Caves in coral reefs are the largest and least well known part of the reef. Until now, it had been assumed that sponges populating these caves could only eat by filtering the non-dissolved particles from the seawater. However, a Dutch scientist Jasper de Goeij's research demonstrated, the caves contain far more dissolved material than non-dissolved material.

The filter inside the reef
Cave sponges take up enormous quantities of dissolved organic material from seawater. The question was, do they also process it? De Goeij was able to reveal that the sponges process 40 percent of the material and take up 60 percent. This should lead to a doubling of the sponges' biomass every two to three days. However, cave sponges scarcely grow. The caves are so densely populated that there isn't much space to grow.

Rapid rejuvenation
Instead of growing, the cave sponges rapidly rejuvenate their filtration cells and discard their old cells. This short cell cycle is unique for multicellular organisms, and to date, was only known to occur in unicellular organisms. The production and breakdown process of the sponge cells mirrors that in the human intestinal tract.



Dutch researcher, Jasper de Goeij, investigated how caves in the coral reef ensure the reef's continued existence

Eat and be eaten

Coral reef regenerates itself in a remarkable manner. The algae and corals on the reef produce dissolved organic material. Before this material enters the open ocean, it is taken up by sponges that filter enormous quantities of water and convert the ingested dissolved material into particles. These particles are in turn consumed by the algae and corals on the reef. In this manner, the various inhabitants of the reef facilitate each other's survival. ■

SOURCE: THE NETHERLANDS ORGANISATION FOR SCIENTIFIC RESEARCH



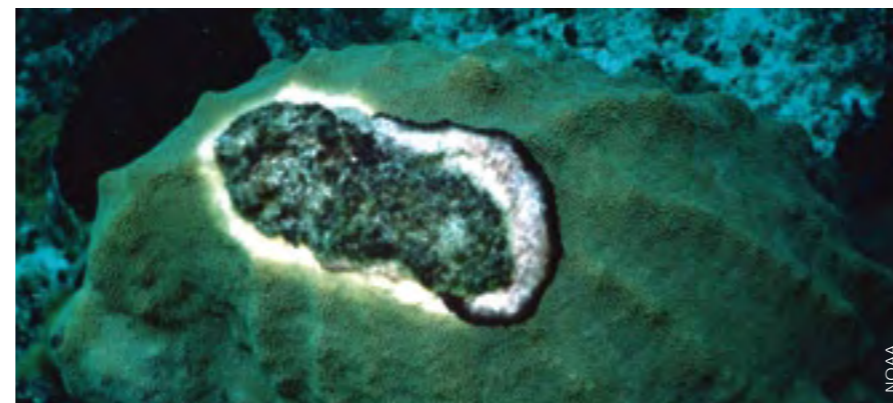
Coral reef growth is slowest ever

Coral growth in Australia's Great Barrier Reef has slowed to its most sluggish rate in the past 400 years. The decline endangers the species the reef supports, say researchers from the Australian Institute of Marine Science.

Coral disease works like cholera

The complexities of coral disease are starting to be unravelled with the key revelation that a similar mechanism that causes cholera in humans may be causing White Syndrome (WS) in coral. A bacterial enzyme carries out a two-pronged attack, first causing whitening of coral tissue as symbiotic algae are targeted, and subsequently causing coral tissue lesions. This two-stage process leads to the distinctive appearance of bands of white coral skeleton typical of the disease.

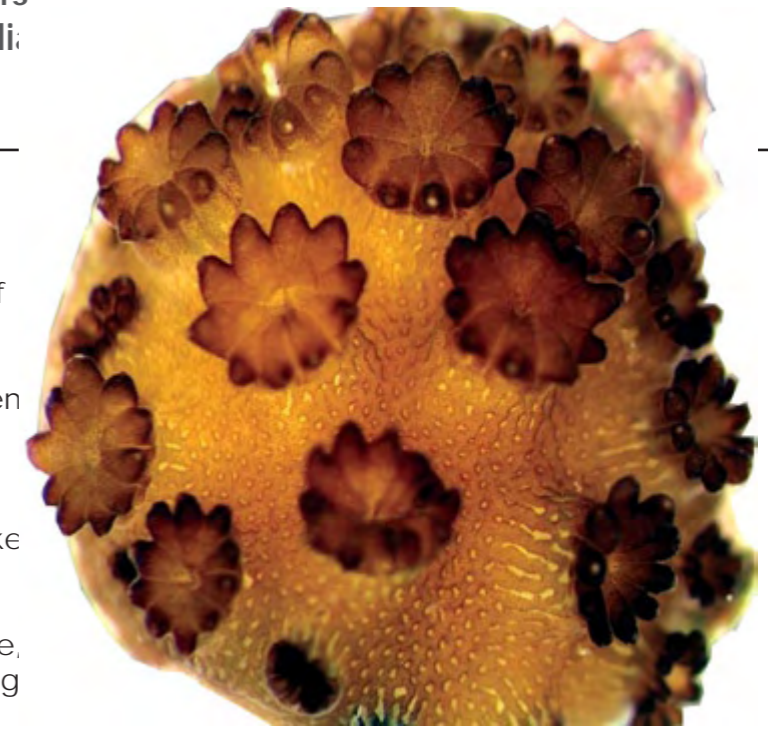
The enzyme disturbs the ability of the symbiotic algae living in coral to carry out photosynthesis and breaks down the symbiosis between the coral and the algae, leading to death of the coral. The bleaching caused by WS is distinct from that caused by thermal stress. Unlike bleached corals that can recover from short-term temperature stress, WS causes the infected coral to die, though lesions may stop progressing if the coral can mount an immune response. ■ SOURCE: PLOS ONE. 2009; 4(2): E4511.



Yellow band disease is spreading

Researchers at the Woods Hole Oceanographic Institution (WHOI) and colleagues have found that Yellow Band Disease seems to be getting worse with global warming and announced that they've identified the bacteria responsible for the disease.

This is the first demonstration that the same bacterial culprits are to blame for the disease throughout the Caribbean as well as half way around the world in Indonesia. ■



SUSSMAN ET AL.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Porites lobata at Neva Shoals, Lisianski Island, Northwestern Hawaiian Islands

Dr Glenn De'ath and colleagues investigated 328 colonies of massive *Porites* corals, from 69 locations. They studied massive porites corals, which are several hundred years old, and found that calcification has declined by 13.3 percent since 1990. Such a decline is unprecedented in at least the past 400 years, they write in *Science* journal.

The researchers warn that changes in biodiversity are imminent, both at the Great Barrier Reef and at other reef systems throughout the world's oceans. The Great Barrier Reef is the largest in the world, composed of over 2,900 individual reefs and 900 islands. The largest corals are centuries old - growing at a rate of just 1.5cm per year. ■



Lotte and Hans Hass being interviewed on the main stage at BOOT in Düsseldorf. Hans Hass just celebrated his 90th birthday

Impressions from BOOT 2009

Europe's biggest dive expo held in the shadow of the credit crunch

As dive show's go, Germany's annual BOOT Expo is the behemoth that stands head and shoulders above everything else on the continent, and probably the planet too. It's size and nine day duration put it into it's own category.

I always have pitied those exhibitors who have to allocate the better part of two weeks when preparations, build-up and moving out is taken into account. But for many international exhibitors, it has become the chosen venue.

Located in Dusseldorf in Germany's industrial heartland, it can be reached in a day by car by the 100 odd million that have German as either their native language or first foreign language. And

many come from other countries thanks to Germany's efficient traffic infrastructure.

Looming crisis

Germany is one of the European countries hit hardest by the state of the global economy, and that was reflected in the attendance that was reported 15 percent down from last year when a whopping 267,379 attendees went through the tillers. A rough calculation makes that some 55,000-60,000 visiting the dive section this year—still a very respectable number.

Europe's biggest dive show attracts a lot of dignitaries. Dr Phil Nuytten from Canada (left) with NAUI Europe's CEO Dick Lucas

ADEX moves to a new venue and new dates

In view of the current economic climate, TMX Show Productions would like to announce that Asia Dive Expo 2009 (ADEX) will be held in conjunction with Boat Asia 2009. Both events will be held from 23 to 26 April 2009 at the world-class Marina at Keppel Bay.

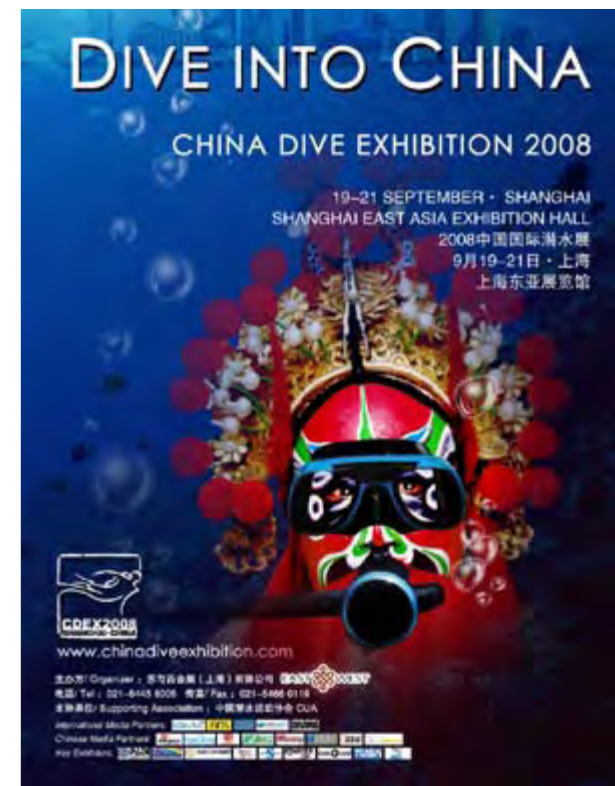
BOOT is not really the place where a lot of new products get displayed first. That honour still falls to DEMA in the US, which, however is not open to the general public. But the newest gizmos will be on display here, too. What sets BOOT apart from other expos is its sheer size, long duration (a total of nine days) and the many destinations and resorts present here. There are many booths from the Mediterranean destinations, and needless to say, many of those overseas destinations favoured by the Germans—the Philippines and Indonesia. Also notable are the many central European manufacturers—predominantly in the areas of photography and lamps—that are rarely

The overall direction of ADEX 2009 and Boat Asia 2009 will remain unchanged. With the synergy of these two events, ADEX believes that the increase in visitor traffic and media buzz will greatly benefit the exhibitors, partners and sponsors. The combination of both events will also serve to increase business opportunities for exhibitors, and visitors can look forward to more exciting activities that the combined events will offer. ■

seen outside Europe, which is a shame really as many of these products are really nice. ■

Our World Underwater Chicago, Feb 20-22.

This exciting expo in the US Midwest was held just as this issue went to press but do see our extensive online reports on our website. There are video interviews, still images and internet radio. Visit www.xray-mag.com/OWU



China Dive Exhibition (CDEX) has closed

East West MICE (Shanghai) Co Ltd have hosted China Dive Exhibition since 2005, which has been an ongoing annual event and opportunity for the international dive community to enter and understand the China dive market. In 2007, it was further reinforced as a platform for the community to share and exchange ideas between the international and local dive sectors to build up the market.

It is with regret that East West MICE announced the official closure of CDEX operations due to the company's strategic refocus into other areas. East West MICE (Shanghai) Co Ltd would like to thank all exhibitors, partners and supporters who have made this a successful and meaningful platform over the past four years and wish you the best in your future endeavors in the China dive market.

Furthermore, if any exhibitors, partners and supporters have already signed any legally binding agreements for CDEX 2009 and made payment in accordance with the agreements, these will be refunded—any prepaid amount—within one month upon issuance of this announcement subject to the terms and conditions of the agreements made between the relevant parties. Please contact them for refunds on such prepaid amounts. For all enquiries, please contact Rebecca Lim at rebeccalim@eastwestmice.com. ■

Britons claim the underwater ironing record

UK divers break world record for the most number of divers ironing underwater at the same time in aid of the Royal National Lifeboat Institution.

A total of 128 scuba divers braved the freezing winter temperatures on 10 January 2009 to attempt to break the world record, currently held by the Australians, for the most number of divers

ironing at the same time underwater. The previous record was 72, but the British divers managed to get 86 ironing within a ten minute period and this also included six freedivers. Water temperatures were in the region of 5°C and air temperatures as low as -2°C. Divers covered the full range from technical diving with trimix to 55m to the shallow end at six meters.

The event took place at the National Diving and Activity Centre (NDAC) near Chepstow, Gloucestershire, and was

organised by Gareth Lock, Morag Ward and John Turnock of the Yorkshire Divers internet forum (www.yorkshire-divers.com). In addition to breaking the world record, the aim was to raise money for the RNLI, the charity of choice for the forum for 2008-2009. At the time of going to press, nearly GBE6000 had been raised from this event through application fees, sponsorship and a charity raffle. ■



Protect the Living Reef of Pulau Redang 2008

As part of the International Cleanup Day, Dragonet Diving and Coral Redang Island Resort organized Protect the Living Reef of Pulau Redang 2008 at Redang Island, Malaysia. An annual Project AWARE program, more than 40 participants consisting of divers and snorkelers did their bit by doing a beach and underwater clean up. "We have a good mix of environmental conservation, education and fun," says Vincent Chong of Dragonet Diving. Divers were given the

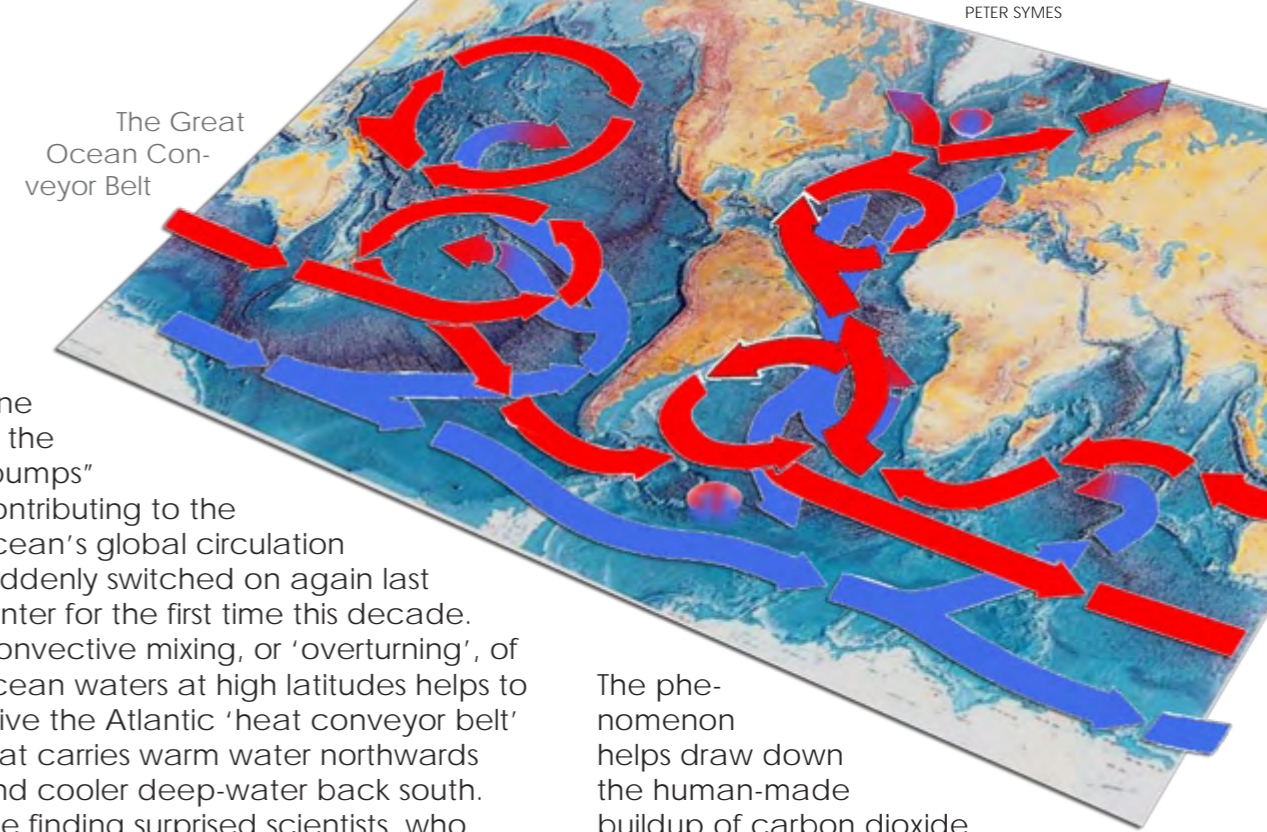
Coral Health Chart, which contained a series of colours representing different stages of coral bleaching. The colour of the corals were compared to the Coral Health Chart, and the data was recorded and submitted to the University of Queensland Australia to be analyzed. Participants also visited a marine turtle research and conservation station on the island to learn more about the threatened hawksbill and green turtles. For more info, visit www.dragonet.com.my. ■



The Royal National Lifeboat Institution is a registered charity that saves lives at sea. It provides the 24-hour on-call service to cover search and rescue requirements out to 100 nautical miles from the coast of the United Kingdom and Republic of Ireland and a seasonal lifeguard service on appropriate beaches in the south and south west of England. The RNLI is independent from government and continues to rely on voluntary contributions and legacies for its income. ■

Diver ironing at 53m as part of the Extreme Ironing record attempt

Scientists have determined that due to a dramatic loss of sea-ice in the Arctic during the summer of 2007, convective mixing in the North Atlantic Ocean, a mechanism that helps to remove carbon dioxide (CO₂) from the atmosphere, has returned after a decade of near stagnation.



One of the "pumps" contributing to the ocean's global circulation suddenly switched on again last winter for the first time this decade. Convective mixing, or 'overtuning', of ocean waters at high latitudes helps to drive the Atlantic 'heat conveyor belt' that carries warm water northwards and cooler deep-water back south. The finding surprised scientists, who had been wondering if global warming was inhibiting the pump, which, in turn, would cause other far-reaching climate change.

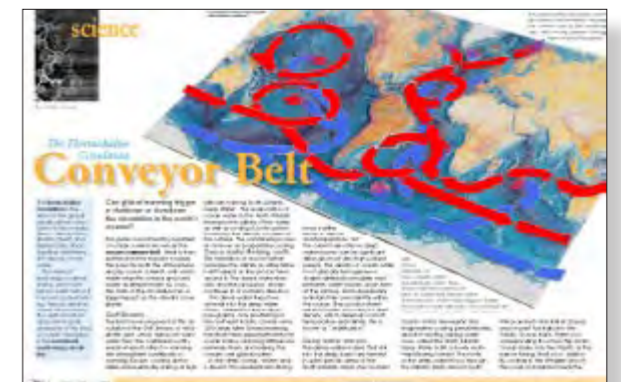
The phenomenon helps draw down the human-made buildup of carbon dioxide from air to surface waters and eventually into the depths, where the greenhouse gas can be stored for centuries and offset global warming. It also transports warm tropical waters northward, where the ocean transfers heat to the air and keeps winter climate in the North Atlantic region much warmer than it would be otherwise.

The "pump" in question is the sinking of cold, dense water in the North Atlantic Ocean in the winter. It drives water down into the lower limb of what is often described as the Great Ocean Conveyor. To replace that down-flowing water, warm surface waters from the tropics are pulled northward along the Conveyor's upper limb. The pump is driven by the contrast between frigid, dry winter air and warm water, which draws heat from the ocean into the atmosphere. That leaves the water denser, and it consequently sinks.

There's been very little convection in the North Atlantic over the past decade, prompting concerns that the impact of global warming was already being felt. Now, according to a report in Nature News, two teams of scientists have independently found evidence that overturning has resumed in the North Atlantic. As air temperatures have generally warmed over the last two decades, the sinking of cold water in these northern

CO₂ removing mechanism resumes in North Atlantic

Get the background info in one of X-RAY MAG's older articles: "Ocean conveyor belt—the thermohaline circulation" X-RAY MAG Issue 12 [Download link](#)



NASA

North Atlantic Oscillation Linked to Climate Warming

Using a 218-year-long temperature record from a Bermuda brain coral, researchers at the Woods Hole Oceanographic Institution (WHOI) have created the first marine-based reconstruction showing the long-term behavior of one of the most important drivers of climate fluctuations in the North Atlantic.

By analyzing the strontium to calcium ratio in the Bermuda brain coral, WHOI scientists were able to reconstruct monthly changes in ocean temperatures and evaluate variability of the North Atlantic Oscillation (NAO) during both cold and warm periods from the Little Ice Age (1800–1850) to modern day.

The research team found the variability of the NAO decade-to-decade has been larger, swinging more wildly, during the late 20th century than in the early 1800s, suggesting that variability is linked to the mean temperature of the Northern Hemisphere. This confirms variability previously reported in past terrestrial reconstructions.

“When the Industrial Revolution begins and atmospheric temperature becomes warmer, the NAO takes on a much stronger pattern in longer-term behavior,” said Goodkin. “That was suspected before in the instrumental records, but this is the first time it has been documented in records from both the ocean and the atmosphere.” ■

seas has been either shallow or absent. But new data from a fleet of robotic floats showed that in the winter of 2007-2008, cold water sank significantly beyond 1,000 meters deep in northern seas for the first time in eight years and for only the second time since the mid-1990s. Beyond that depth, waters can be swept into lower limb of the Conveyor and carried around the world.

The lack of substantial sinking throughout the decade meant that there was no “preconditioning”—that is, colder waters could not build up from previous winters to a point where they are easily pushed over a density threshold and sink the following year, the research team said. That made the sudden reappearance of sinking in 2007-2008 all the more surprising.

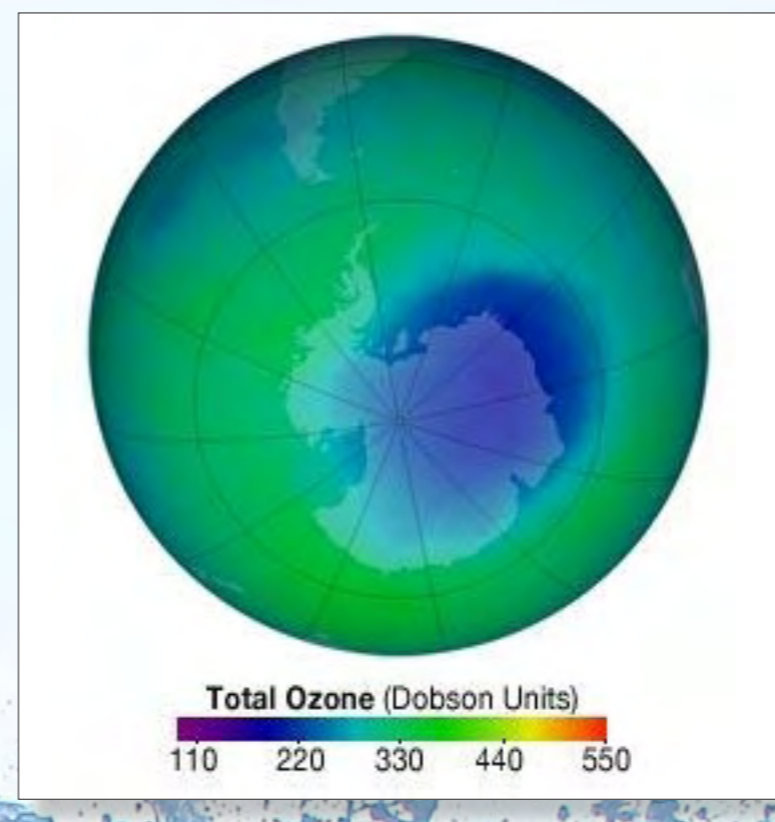
Analyzing satellite and in-situ ocean data, the researchers said a large amount pack ice and fresh water was exported into the northwest Labrador Sea in the summer of 2007. This froze the following winter, significantly extending the ice edge farther offshore. As a consequence, cold air from the North American continent traveled farther over ice, instead of warmer ocean waters, remaining cold until it hit warmer open water in the middle of Labrador Sea. The resulting temperature contrast helped trigger the sinking process.

The scientists noted “that the increased liquid and frozen fresh-water flux into the Labrador Sea was probably tied to the large export of sea ice from the Arctic Ocean that contributed to the record minimum in sea-ice extent observed in the summer of 2007. Ironically, this disappearance of Arctic sea ice, which has been linked to global warming, may have helped trigger the return of deep wintertime [water sinking] to the North Atlantic.” ■

Ozone hole weakens oceanic carbon sink

A new model links stratospheric ozone depletion to ocean acidification.

The hole in the ozone layer over Antarctica may be impairing the Southern Ocean’s ability to mop up carbon dioxide from Earth’s atmosphere. Earth’s oceans are the largest sink of carbon dioxide, with the Southern Ocean accounting for more than 40 percent of the annual oceanic uptake of the greenhouse gas, says Andrew Lenton, a marine biochemist at the Pierre and Marie Curie University in Paris. In theory, seas should soak up more carbon dioxide as levels of the gas in the atmosphere rise. ■



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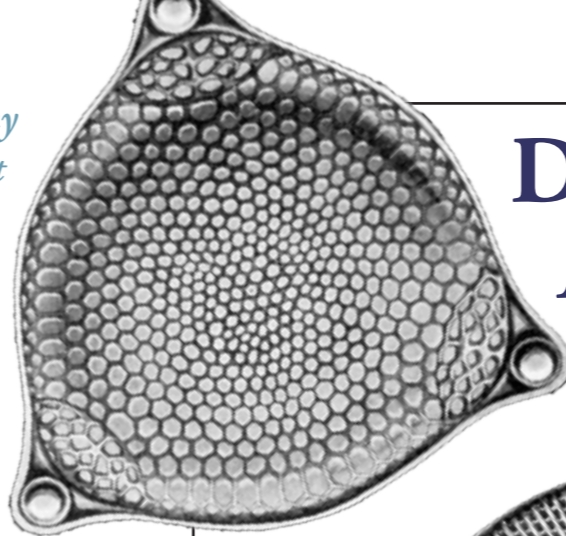
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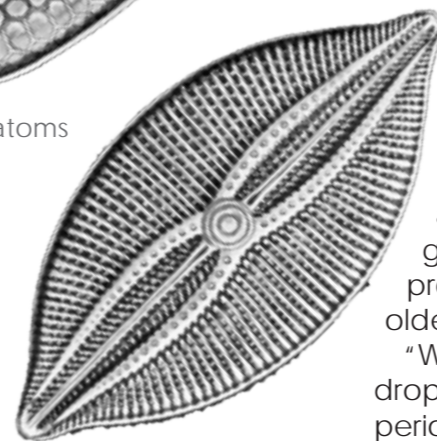
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It's tempting to speculate that these tiny plankton, by taking carbon dioxide out of the air, might have helped trigger the most severe global cooling event in the past 100 million years."



Diatoms



Did Plankton trigger Ancient Global Cooling?

The evolutionary history of diatoms—abundant oceanic plankton that remove billions of tons of carbon dioxide from the air each year—needs to be rewritten, according to a new Cornell study. The findings suggest that after a sudden rise in species numbers, diatoms abruptly declined about 33 million years ago—trends that coincided with severe global cooling. The research casts doubt on the long-held theory that diatoms' success was tied to an influx of nutrients into the oceans from the rise of grasslands about 18 million years ago. New evidence from a study led by graduate student Dan Rabosky takes into account a widespread problem in paleontology: that younger fossils are easier to find than older ones.

"Why diatom diversity peaked for four to five million years and then dropped is a big mystery," Rabosky said. "But it corresponds with a period when the global climate swung from hothouse to icehouse. It's tempting to speculate that these tiny plankton, by taking carbon dioxide out of the air, might have helped trigger the most severe global cooling event in the past 100 million years." ■

Scientists urge caution in CO₂ capture schemes

This winter the Indo-German Lohafex ocean fertilization experiment created a lot controversy. Engineering the vast icy oceans surrounding Antarctica to soak up carbon dioxide to mop up mankind's excess CO₂ to fight global warming may seem attractive to some, but to many scientists and many nations the whole concept of using nature to is fraught with risk and uncertainty.

An analysis by a leading Australian research body has urged caution and says more research is crucial before commercial ventures are allowed to fertilize oceans on a large scale and over many years to capture CO₂.

Sprinkling the ocean surface with trace amounts of iron or releasing other nutrients over many thousands of square kilometres promotes blooms of tiny phytoplankton, which soak up carbon dioxide. When the phytoplankton die, they sink to the seabed, along with the carbon locked inside their cells where it is potentially stored for decades or centuries in sediments on the ocean floor. Much of the Southern Ocean is depleted of iron and experiments have shown even small amounts of the nutrient can trigger phytoplankton blooms that can last for up to two months.

Risking profound changes
The problem is no one knows exactly how much carbon can be

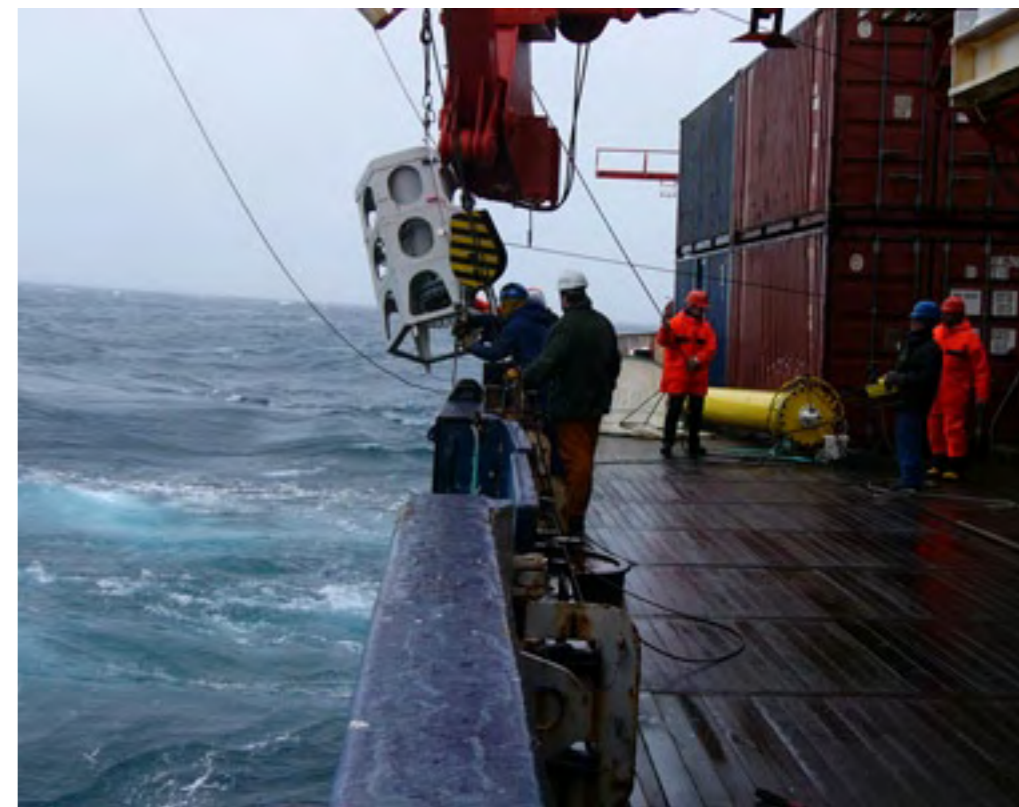
Fast growing animals, as these ascidians, were found at Larsen A. This can be an indication of a first step towards a biodiversity change

captured and stored in this way, for how long, or the risks to ocean ecosystems from such large-scale geo-engineering. Some scientists fear such schemes could change species composition in the oceans, increase acidity or cause oxygen depletion in some areas, even promote the release of another powerful greenhouse gas, nitrous oxide. Furthermore, the potential for negative impacts is also expected to increase with the scale and duration of fertilization. There are doubts that any damaging effects could be detected in time.

"Ocean fertilization may cause changes in marine ecosystem structure and biodiversity, and may have other undesirable effects. While controlled iron fertilization experiments have shown an increase in phytoplankton growth, and a temporary increase in drawdown of atmospheric CO₂, it is uncertain whether this would increase carbon transfer into the deep ocean over the longer-term," said one of the report's authors, Tom Trull, Ocean Control of Carbon Dioxide program leader at the Antarctic Climate and Ecosystems Cooperative Research Centre in Hobart.

"I don't think the scientific community has even sat down and made a list of the things we need to check before we feel comfortable that this would be a low-risk endeavour. We never even designed measurement programs to look at ecological change and the risks."

"It is very important to recognise that if deleterious effects increase with scale and duration of fertilization, detection of these cumulative effects may not be possible until the damage is already done," said John Cullen, professor of oceanography at Dalhousie University. "It is extremely important to look at the ecological risks of this kind of activity." ■



Sinking algae are sampled by means of a sediment trap

ALFRED WEGENER INSTITUTE

Scientists to restore Japan's largest reef

Japanese scientists embark on an ambitious project to restore the country's biggest coral reef by planting thousands of baby corals growing on tiny ceramic beds. Thousands of corals are to be planted in the Sekisei Lagoon, Okinawa, which has suffered major bleaching due to rising sea temperatures.

Corals in Sekisei Lagoon stretching between the Okinawan islands of Ishigaki and Iriomote have plunged by 80 percent over the past two decades due to rising water temperatures and damage by crown-of-thorn starfish. In a joint project with Japan's environment ministry, scientists will plant some 6,000 baby corals in the

seabed over a 600m² area. The corals are 18 months old and grow on round ceramic beds that measure four centimetres in diameter. Researchers working on the joint project first implant fertilized coral eggs into ceramic beads. Once the eggs have grown into larvae one to two centimeters in diameter, they take the ceramic beds

to the lagoon and attach them to rocks in the seabed.

A first

"No projects in the world have ever restored a coral reef artificially," said Mineo Okamoto, associate professor at the Tokyo University of Marine Science and Technology. Most projects are instead focused on attempting to improve conditions, or transplanting corals to a new location.

It follows the implantation of 5,300 baby corals in 2006.

Only one-third of them have survived, with many dying off or damaged by dead and collapsed corals stirred up in the sea by typhoons.

"We have learned lessons from the previous planting regarding what are the best places to plant and other conditions for survival. We'll make a fresh try," said Okamoto.

Ten year plan

The project aims to "restore the lagoon in some ten years". If successful, the team hopes that the method can be replicated elsewhere, with preparations already under-

"No projects in the world have ever restored a whole coral reef artificially"



www.tasikria.com

way for a similar project in Indonesia. The Sekisei Lagoon, which extends between Ishigakijima and Iriomotejima islands, is located about 450 kilometers west of the prefecture's main Okinawa island and is the country's largest coral reef. The lagoon area also includes the smaller islands of Taketomijima and Kuroshima.

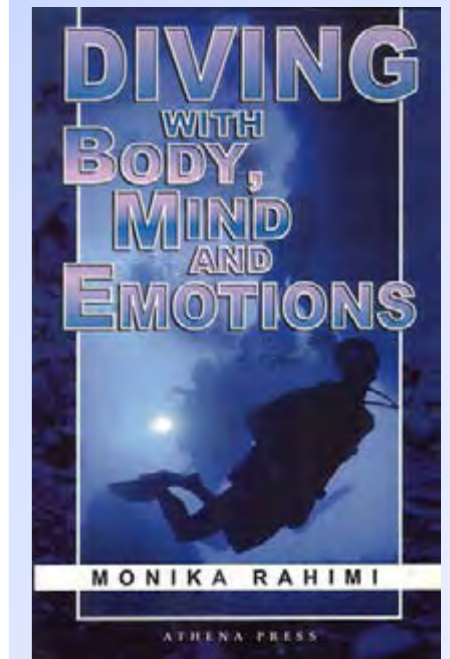
Since the project began in fiscal 2004, about 7,500 baby coral have been transplanted. In some areas, scientists have found staghorn coral of about ten centimeters in height where they planted baby coral last year. ■

SOURCE: JAPAN'S ENVIRONMENT MINISTRY

Recent mass generation of Acanthaster starfish and coral bleaching in the area have caused catastrophic damage to the lagoon. Because of the damage, the reef has diminished to about 20 percent of its largest recorded size

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Near the southern island of Okinawa, a baby coral grows on an artificial ceramic bead. Mineo Okamoto and his team are in an unprecedented project to restore Japan's largest coral reef by planting thousands of baby corals

TOKYO UNIVERSITY OF MARINE SCIENCE AND TECHNOLOGY

NASA



Edited by
Mathias Carvalho



The telltale bronze canons lying visible on the sandy ocean floor

Admiral Balchin was blamed for wrecking the ship on the Casquets due to faulty navigation



Controversy

Odyssey Marine Exploration has sparking huge controversy from marine archaeologists, with several wreck finds behind them already, who are concerned that Odyssey may put their commercial interests ahead of a thorough and responsible salvage operation. Odyssey salvaged the Civil War era shipwreck of the *SS Republic* in 2003 and recovered over 50,000 coins and 14,000 artifacts from the site nearly 1,700 feet deep. Odyssey has several shipwreck projects in various stages of development around the world, including the code-named Black Swan Project. Spain has launched legal action over this wreck, which has been described, speculatively, as a 17th century vessel found off the coast of England. Odyssey's co-founder, Greg Stemm, has denied any wrongdoing. ■

Peru also puts Odyssey through the legal wringer

A public decree issued by Peru's Foreign Ministry orders Lima's ambassador in Washington to hire attorneys to try to recover 17 tons of coins.

Peru claimed the treasure in U.S. District Court in Florida last year, arguing that the coins were made from Peruvian silver and minted in Lima.

Spain's government is also suing Tampa-based Odyssey Marine Exploration for the loot, which was found off Portugal in 2007.

Peru was a Spanish colony at the time the ship sank. ■

HMS Victory found

Text by Arnold Weisz

Illustrations courtesy of Odyssey Marine

In the beginning of February, media around the world reported that the ship which inspired Nelson's Victory, *HMS Victory* lost in 1744, was found. The wreck was found by the Florida based Odyssey Marine Exploration.

HMS Victory was located already in 2008, by Odyssey Marine Exploration, a company that specializes in deep sea exploration and recovery. Odyssey went on investigating the underwater remains in secrecy. The identity of the find was confirmed through a close examination of 41 bronze cannons visible on the

sandy ocean. The company lifted two of the cannons and gave them to the British Ministry of Defence, and is now negotiating with British authorities on the disposition of the artefacts and treasure before it attempts further recoveries.

"Finding this shipwreck has solved one of the greatest shipwreck mysteries in history. Having discovered it in deep water far from where history says it was lost has served to exonerate Admiral Balchin and his officers from the accusation of having let the ship run aground on the Casquets due to faulty navigation," said Greg Stemm, Odyssey's Chief Executive Officer.





Calls for preservation

"Rather than staying frozen in time beneath the waves, this unique shipwreck is fading fast," warns marine archaeologist Dr Sean Kingsley, director of Wreck Watch International said in a statement released by Odyssey.

The *Victory* lies in an area of intensive trawling, and her hull and contents are being ploughed away by these bulldozers of the deep day in, day out. Leaving the *Victory's* rich archaeology so

vulnerable to the ravages of man is like allowing a motorway to smash straight through a historic site on land without excavating it. The archaeological recovery of the artefacts from the site should begin as soon as possible or the story of England's most important lost man-of-war may not survive to be told.

UNESCO has called for measures to preserve the *HMS Victory*. UNESCO stressed the need to safeguard such a historically significant find, in light of its Convention on the Protection of the Underwater Cultural Heritage, which entered into force this January.

"I am delighted that such an exceptional example of underwater heritage has been located. The cultural and scientific value of this artefact is considerable," declared Koïchiro Matsuura, Director-General of UNESCO.

Unsolved mystery

The finding of the *HMS Victory* is solving one of the greatest mysteries in naval history. Odyssey discovered the wreck west of the Casquets, a group of rocky islets near Alderney, the most northerly of the Channel Islands. The site is nearly 100 km from where the ship was historically believed to have been wrecked on a reef near the Channel Islands.

HMS Victory was launched in 1737 and became the flagship of the Channel Fleet under Sir John Norris in 1741. She was the last British First Rate to be armed entirely with bronze cannon. She was wrecked with the loss of her entire crew while returning to England as the flagship of Admiral Sir John Balchen after relieving Sir Charles Hardy, who had been blockaded in the Tagus estuary by the French Brest fleet. As the fleet reached the English Channel on 3 October 1744, it was scattered by a large storm. The screaming winds, the stinging rain and the towering storm-waves were remorseless: every one of the 1,100 officers and men on board drowned. ■

Dutch set to return shipwreck relics to Australia

The Dutch government has offered to hand over artefacts from the *Batavia* (1629), *Vergulde Draeck* (1656), *Zuytdorp* (1712) and the *Zeewyk* (1727). The artefacts, including a cannon, elephant tusk, amber, German stoneware, lead ingots, coins and porcelain from the 17th and 18th centuries as well as rare objects owned by crew and passengers such as navigational instruments and ornaments are currently stored in the Netherlands. The 1326 artefacts and 633 coins will be relocated as close as possible to the West Australian shipwrecks—the *Batavia*, the *Vergulde Draeck*, the *Zuytdorp* and the *Zeewyk*. Previously, pieces of the wrecks have been located in both countries, under a 1972 agreement with some of items placed in the care of the Western Australian Museum. ■

Why a Ship is a "She!"

While other languages, such as French, Spanish and German, assign masculine and feminine articles, the English language only assigns gender to humans and animals. So, why is a ship a *she*?

There's a couple of reasons, says historian Silvia Rodgers. "Two images predominate—the all-powerful mother who nurtures and offers womb-like protection and the enchantress of whom a man can never be certain."

It's also about the reality of the sea, Rodgers explains. It's a hostile environment where sailors are vulnerable. It's this vulnerability that could account for the partnership of an all-male crew with a feminine ship, she writes.



The figurehead of schooner *Recouvrance* in Brest



Figurehead of the sailing vessel *Christian Radich*

But, the association between women and the mystical isn't anything new! The feminine has always been held to be supernatural—as demonstrated in the archaeological record. The ancient Romans, Greeks and their predecessors all carved or painted feminine symbols on their vessels.

From the Middle Ages onward, superstition amongst sailors held that a ship's figurehead had eyes to find her way through the seas and that her bare breast would shame a stormy sea into submission.

Towards the end of the 18th century, English ship owners took to commissioning figureheads after wives or daughters and naming the vessels in their honor. Another superstition holds that it's bad luck to have a woman aboard ship. No sailor wants to risk the jealous wrath of his first love!

When the question was put to the late, great US admiral Chester Nimitz he replied, "A ship is always a 'she' because it costs so much to keep one in paint and powder."

But, time has caught up with tradition. As of 2002, Lloyds no longer refers to ships in the feminine. The registry now refers to all ships as 'it'!

— Rob Rondeau
Marine Archaeologist
www.procomdiving.com





HM Colonial Schooner *Mermaid* Archeological Site Protected

Archaeologists from Australia's National Maritime Museum have found the site of an historic shipwreck on the Great Barrier Reef. Based on metallic objects, including heavy copper sheathing, as well as other clues found at the site, they concluded it was indeed the government schooner *Mermaid*, which was used to map

large areas of the north Australian coast in the late 1820s, captained by Lieutenant Phillip Parker King.

The ship sank in 1829, south of Cairns, while attempting to deliver a dispatch to disband the fledgling Port Raffles community in what is now Australia's Northern Territory.

Her skipper, at the time, was a man by the name of Captain Nalbrow who, according to specialists, made the decision to sail too close to the reef, acting against the wishes of his junior officers and against the direction of the colonial government, and was later accused of being drunk and irrational.

The archeological team has also identified clues as to the crew's effort to salvage the ship.

According to Kieran Hosty, Curator of the Australian National Maritime Museum, the crew tried to get the vessel off the reef, by deploying a kedge anchor and trying to drag the vessel off over the site. Hosty says the ship's location in the reef explains why it has taken so long to find it.

Protection

Environment and Heritage Minister Peter Garrett announced that the site will be protected:

"Although much of the small survey ship has long disintegrated into the ocean floor, a small kedging anchor, anchor chain, compass components and iron barrel rings continue to mark the presence of this great ship. The protected zone put in place under the Australian Government's Historic Shipwrecks Act 1976, will control access at this site, so that it can continue to be a part of Australia's heritage." ■

Mermaid at anchor,
Endeavour River 1819,
by Phillip Parker King



Trajan was a stately 125-foot bark

Lime Bark *The Trajan* Found 141 Years After Sinking

New England, USA. Modern divers will not make much of the barnacle, seaweed and anemone riddled pile of timber, starting at ten meters in Newport Harbor and strewn all the way down to the bottom at 25 meters. It is, however, no ordinary pile of scuttled material.

Thanks to two wreck divers and a handful of maritime historians, it was established that this pile of underwater junk is, in fact, the remains of the long-lost *Trajan*, a 125-foot wind-sailed bark, loaded with lime, that went down on 17 August 1867. The find was the rightful reward of years of research, hard work, and a trifle more than their due share of luck.

Illustrious but forgotten

one of many vessels that transported freight along the East Coast, Cuba, New Orleans and

beyond, the fate of the *Trajan* is part of an important, yet less popular than part of Rhode Island maritime history and it's importance to the local—and New England's—economy at the time. Revolutionary times' vessels are far more extensively researched than commercial ones, although the latter played a significant role on the Revolutionary Wars.

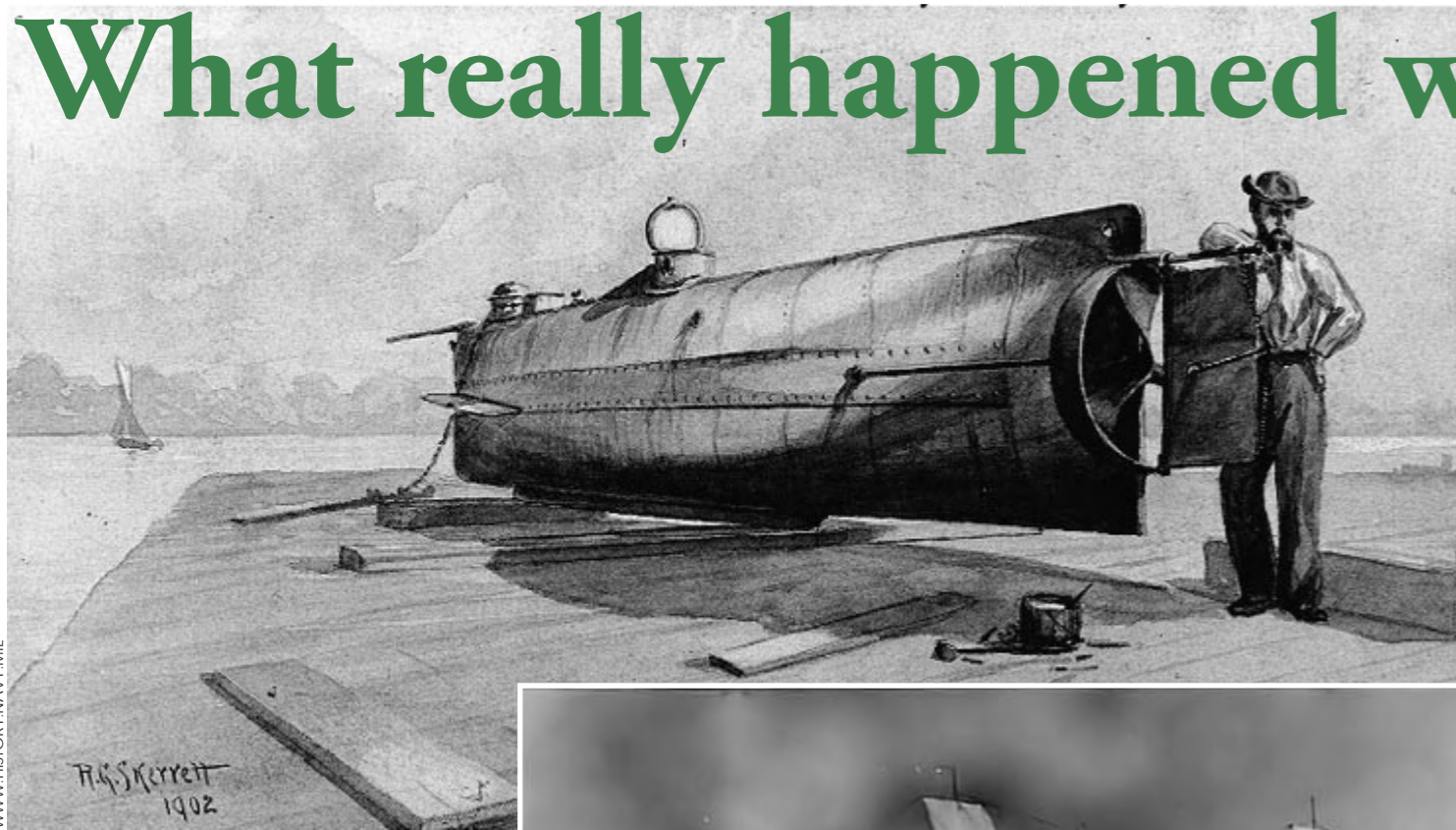
The *Trajan* was named after the Roman emperor, built in 1856 by the H. Merriam shipyard builders in Rockland, Maine. When she was lost, the *Trajan* was carrying barrels of lime from Rockland to New Orleans, which was extensively used in plaster and mortar, consisting of a dangerous cargo. When wet, it may catch on fire. Water won't put it out, so lime captians' only hope of saving their vessels was to snuff the flames by closing the hatches

and killing the oxygen supply. That's exactly what happened as the *Trajan's* cargo began to ignite. An account written in 1871 by Thomas Higginson, author of the local history *Oldport Days*, its crew steered the vessel into Newport Harbor and waged a fruitless battle to save her. "In the coming years, the vessel's hulk would be dynamited, partially salvaged and, ultimately, forgotten," he later wrote.

According to Rhode Island law, the divers won't salvage anything from the wreck. They videotaped the dive, instead, studied it, and now hope to share their information with fellow Rhode Island maritime heritage enthusiasts and scholars, including the Rhode Island Marine Archaeology Project (RIMAP) and the Rhode Island Historical Preservation and Heritage Commission. ■



What really happened when *Hunley* sank?



WWW.HISTORY.NAVY.MIL

Confederate submarine *Hunley* was a first of its kind. Drawing based on a photograph taken in 1863 by George S. Cook

In February 1864, during the Civil War, the hand-cranked confederate sub *Hunley* became the first military underwater vessel to sink a ship in battle—in this case, when it rammed a black powder-loaded spar into the Union blockade warship *Housatonic*.

The sub then disappeared and wasn't located until 1995. In 2000, the wreck of the sub was finally raised from the ocean floor. It became a 136-year-old time capsule holding the remains of the fated crew, as well as answers to very old questions.

Investigation

Since its recovery, a team of experts has strived to determine the identity of the eight members of the crew and why they volunteered for such a dangerous mission, from which there was no return. The project drew expertise



The USS *Housatonic*: The First Ship Sunk by a Submarine

Hunley suspended in a supportive cradle following its recovery from Charleston Harbor in 2000.

from a number of scientific fields, such as forensic anthropology, underwater archaeology, forensic artistry and genealogy. Since then, questions began to emerge. The actual hull design was different from what scientists expected, and there were only eight crewmen, instead of the documented nine.

The first conservation phase consisted of documenting and studying the hull's outside. Several iron

hull plates were then removed, allowing scientists to enter the crew compartment to remove sediment, human remains and artifacts.

The next phase consists of cleaning the outside of the hull and putting the sub into a chemical vat, thus removing encrusted salt deposits. When the procedure is completed, the *Hunley* will eventually be displayed in a new North Charleston museum.

Underwater crime scene
From the position of the crew's bodies, found at their duty stations, scientists believe that there was no emergency when the sub sunk, so an attack or a fire accident seemed to be unlikely. And the controls on the bilge pump were not set to pump water, suggesting there were no considerable leakages.

But what actually caused the sub to never surface again? Several

theories were presented since her recovery.

Hypothesizing

One speculates that, after the attack, the *USS Canandaigua* rushed to the aid of the *Housatonic*, and it might have grazed the *Hunley*, disabling her. Another hypothesis is that, as the *Hunley* needed to wait for the incoming tide to return to shore, it is possible that the crew waiting down miscalculated their air supply and blacked out. A grappling hook, believed to serve as her anchor, was found near the wreck. The hull may produce evidence of a rope, indicating the sub was indeed anchored and waiting for the tide to change.

Several other theories will be tested against hard evidence to be found in the coming months. It is hoped that clues to solving the mystery will soon be found. But the archeological crime scene has some conflicting evidence that might keep scientists busy for quite a while. ■

Unknown 200 year-old schooner discovered in Lake Ontario

Two local shipwreck enthusiasts discovered a 200-year-old dagger-board schooner in Lake Ontario, about ten miles offshore of Oak Orchard, Orleans County.

Jim Kennard and Dan Scoville found it on early September 2008, while conducting a deep water sonar survey using an ROV designed and built by Scoville. The shipwreck was found upright and in remarkable condition, considering that it rests at a depth of over 500 feet (152 meters).

The ship's origin or name remains unknown, but the amateur explorers have been in contact with the Great Lakes Historical Society and various maritime sources about their find.

Sailing vessels of that type were in use during a brief period of time in the very early 1800s. This ship is the only dagger-board schooner known to have been found in the area.

The schooner might not have been scuttled—as it has apparently been stripped of its upper deck structure long before it sank. It may either have broken loose from moorings, or it might have been under tow when it broke away and sank. ■



U.S. ARMY ENGINEER INSTITUTE FOR WATER RESOURCES (IWR)



Diving *Graf Zeppelin* — Hitler's Aircraft Carrier

The wreck of the *Graf Zeppelin* will soon be visited by a team of German divers. Kept secret by Soviet authorities, Nazi Germany's only aircraft carrier, the *Graf Zeppelin*, was only located in July 2006, 49 years after being sunk the Baltic Sea, near the Bay of Gdansk.

Standing at a mighty 262 meters long and 30 meters wide, the *Graf Zeppelin* had a range of 8,000 nautical miles, equalling the best of the Allied carriers of the time. As the tides of war had already changed when she was launched, the *Zeppelin* never made it into active service, and was scuttled in April 1945 by German troops fleeing the relentless advance of the Russian armies. Lying in shallow waters, near Szczecin, it was easy

for the Red Navy to recover her after capturing the Polish port. In the 1960s, the Russians repaired the ship and then used it for target practice at Leba, by Soviet dive bombers simulating attacks on US aircraft carriers. The wreckage was located by the Polish Navy in 2006 resting at roughly 87m (250 ft). She starts at 55 meters making technical training a requirement to dive the wreck.

Documentary

On 21 March 2009, Deep Wreck Project embarks on an expedition to explore the *Graf Zeppelin*—the only German aircraft carrier ever built. One of the main purposes will be the production of a documentary, *Flugzeugträger, Graf Zeppelin—Hitler's Traumschiff* ('Dreamvessel'—ed.) Divers will explore the wreck down to a depth of 80 meters supported by ROVs and a submarine.

Unique wreck

What is so special about this wreck? First of all, its whole existence has been shrouded in mystery both during the war and afterwards. Secondly, her technical construction is extraordinary. In her time, she was viewed as the most sophisticated aircraft carrier. Yet, the whole concept was strangely incoherent. There were no support vessels planned nor aircraft designed for used on aircraft carriers. Hitler's dream of a huge indestructible aircraft carrier was never completed.

The expedition aims to answer two general questions: First of all, is the wreck in Baltic sea really the *Graf Zeppelin*? And secondly, would she have been able to affect the outcome of the war had she entered active service? The Polish vessel *IMOR* will be used for research, while the 75m *Cdt Fourcault* will be used for all dive operations. During the daytime film crew, scientists, historians and journalists will be aboard the *IMOR* from which

ROVs and other scientific equipment will be lowered down to the *Graf Zeppelin*. Accommodation will be on the *Cdt Fourcault* from which all diving will take place. Working depth will be between 80 and 50 m. There will be no salvage of any part of the wreck. The documentation and research will be non-destructive.

About "Deep Wreck Project"

The company was founded in 2008 by Dr Andreas M. Stolpe, Bernd Očić M.A. and Christian Schramm. The combined competences from diverse business fields such as public relations, marketing, off-shore-technology

as well as underwater search technique-development optimises the chances for a positive growth of the company.

Stolpe has conducted several dive expeditions in general in cooperation with the Maritime Museum in Danzig. He is member of the German Society for Underwater Archaeology (DEGUWA) and a NAS-certified tutor for underwater

Outline of the Graf Zeppelin



Bernd Očić at the recent BOOT expo in Germany





Divers will be accommodated aboard the *Cdt Fourcault* in one- and two-person cabins

archaeology. Očić is a marine geologist, researcher and specialist in underwater-documentation of off-shore sites and an ROV-operator.

Schramm is a developer and manufacturer of underwater technology, in particular underwater, lighting-systems. His qualifications include underwater archaeological techniques, and he is member of the DEGUWA, too.

Purpose

The main goal of Deep Wreck Project is to describe the history of a sunken ship and show the audience what a "time capsule" she is. People must appreciate the value of their cultural heritage and understand the necessity of protecting their wrecks. Beside the formal professional qualifications, this team is specialised in working at greater depths. This is necessary if one wants to have good visibility during film productions.

The wrecks resting at greater depths are often in a better condition due to environmental conditions at depth and the absence of scuba divers. Since the team aims at the deeper wrecks, they get many opportunities to document the culturally and historically important shipwrecks. In the past, wrecks in greater depths have not been filmed easily by divers.

The documentary about *Graf Zeppelin* is not the team's only film project. Several other projects are already in progress.

The aim of their work is not only to produce a documentary, but also to send a message to scuba divers and audiences that the wrecks are immensely valuable as part of our cultural heritage. Undisturbed wreck sites can provide scientists with invaluable information. But as soon as a wreck site is disturbed, the information may possibly be lost forever.

Documentary

The main priority of the expedition is to produce the documentary about the *Graf Zeppelin*. But diving the wreck has a second priority. As this story goes to press, several TV channels have become involved: ARTE, ARD/MDR and National Geographic, with a number of others showing interest. The documentary will probably be broadcast internationally by National Geographic America and BBC.

Diving

The vessel's hull rests on the seabed at 80m. The upper parts of the ship reach 50 meters. The superstructure, such as the bridge and other significant parts of the wreck, will be illuminated. Parts of the wreck are covered by fishing nets, which pose a danger for divers, submarines and ROVs.

While divers are in the water, RIBs will be on standby. There is a decompression chamber aboard the vessel and an emergency chain established to Europe's most sophisticated and modern decompression chamber. In parallel, a large scientific study will take place to compare micro bubbles in mixed gas divers using closed versus open circuits.

Crew

The crew consists of dive instructors, diver, underwater archaeologists, camera teams, an historian, ship crew, a technician, ROV-operators, an operator for submarine and people from the press.

Schedule

The scientific part of the expedition starts on the March 21 from Gdynia, Poland, and ends on April 7. Guest divers will board April 1.

Approximately two weeks will be spent for the expedition per i.e. departure to the *Graf Zeppelin* and search, exploration, boarding the guest diver and



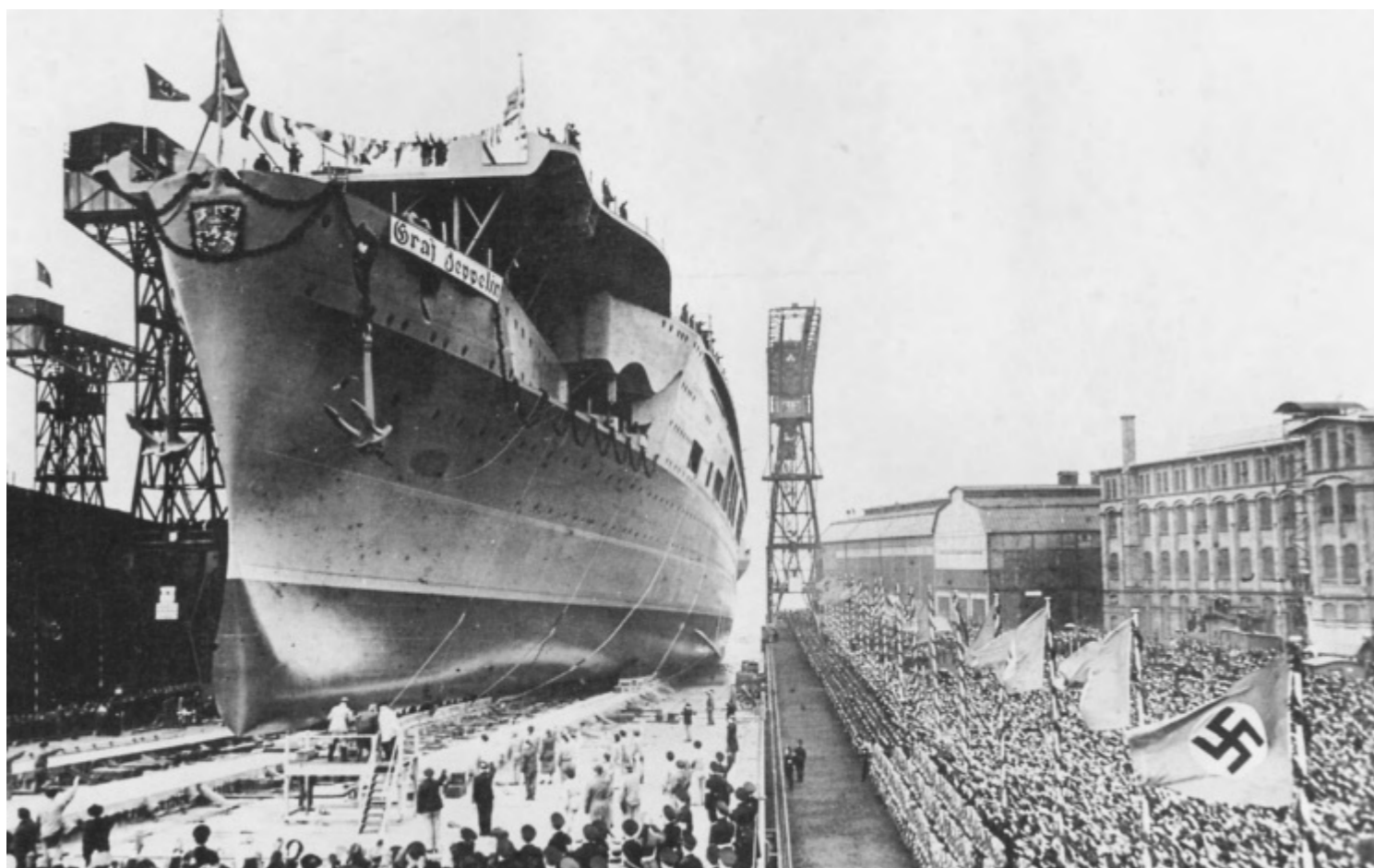
heading back to Gdynia. Due to the fact that the expedition is dependent on weather conditions, four days reserve has been planned.

Accommodation

Accommodation and food is included. Diver and personel will be on the *Cdt Fourcault* in one and two-person cabins. Gas fills have to be paid separately. Sofnolime will be free.

More information

www.deepwreck.de ■



The launch of *Graf Zeppelin*

The research vessel *IMOR*



Edited by
Scott Bennett



2009 outlook for the travel industry

The slow down in advanced economies, which are facing a contraction in gross domestic product for the first time since World War II, is already spreading to major emerging markets such as China, India and Brazil.

The World Tourism Organization (UNWTO) expects 2009 international tourism to be in the range of zero percent to a two percent decline. Along with the Americas, Europe will be the most affected region in terms of overall tourism results, as most of its source markets are already in, or entering into, recession.

In Asia and the Pacific, results are expected to be positive, although growth will continue to be much slower compared with the region's performance in recent years; the same applies to Africa and the Middle East.

Notwithstanding this assessment, UNWTO highlights the fact that the softening of international tourism growth follows four historically strong years:

- Plus seven percent a year on average between 2004 and 2007, or well above the four percent long-term trend;
- 2008, with an increase of two percent based on a strong first half performance. ■ SOURCE: UNWTO

Grenada's undersea sculpture park replaces devastation

Jason de Caires Taylor has created a sculpture garden with a difference.

Internationally renowned sculptor, Jason de Caires Taylor, who was featured in X-RAY MAG #18 has crafted a stunning and unique underwater sculpture park in the shallow waters of Grenada.

The result is a series of beautiful seascapes that have formed a series of artificial reefs, drawing new life into areas of this Caribbean island, which have been damaged by both the forces of man and nature. Positioned in clear, shallow waters, the sculptures are easily accessible by divers and snorkellers. Those not wanting to get wet can peruse his creations in glass-bottom boats.

The work is continually in progress, as living coral builds

layers onto its surface and marine creatures take up residence in its tiny nooks and crannies. The direction and strengths of currents ensure that some sections of the work become covered or lost. At other times, figures emerge and are fully visible.

There are currently a total of 65 stunning installations in place. Most are in Grenada, with additional projects in the UK and Europe. Contracts have been agreed for the first phase of a new underwater project in Mexico, placed within the National Marine Park of Cancun, Isla Mujeres and Nisuc. Taylor works out of his studio in London. ■



His love of the underwater realm coupled with the desire to create striking and meaningful art forms has led Taylor to explore the intricate relationships between art and the environment



WHALE QUEST KAPALUA

Whale Quest Kapalua Invites Guests to Dive into the World of the Humpback

Each year, Maui's balmy climate draws a multitude of tourists from around the world eager to escape the winter cold. However, the island's most famous and longtime visitors are humpback whales, which make their annual pilgrimage to Maui's waters each winter.

Celebrating their arrival is the fourth annual Whale Quest Kapalua to be held at the Kapalua Resort. Running at The Ritz-Carlton, Kapalua, the three-day symposium will grant thousands of Hawaii residents and visitors the chance to get up close and personal with these exceptional creatures. "Kapalua Resort believes in the importance of preserving and sharing our island's unique environment and wildlife with our guests," said Nancy Cross, Kapalua Resort's vice president of events management.

Festivities commence on Friday,

February 13, with a special welcome ceremony by Charles "Flip" Nicklin, whose underwater photography of marine mammals has graced numerous articles in National Geographic. This will be followed by a 45-minute seminar by Jason Sturgis from Whale Trust on humpback whale underwater cinematography.

Speakers will include Bruce Mate from Oregon State University; Hugh Pearson from the BBC; award-winning National Geographic photographer Brian Skerry; wildlife filmmaker Adam Ravetch; and Dr James Darling, a specialist in Humpback whale behavior.

Attendees will also have an opportunity to observe these gentle giants in their natural habitat by signing up for a two-hour whale watch excursion. Guided by a representative Whale Quest Kapalua, the trips will present a wealth of interesting facts and knowledge about the whales. Excursions will run daily at 7 am and admission is US\$40 plus tax.

For additional information, visit kapalua.com ■

Enhanced security hampers Indian diving

Grande Island, with its rich marine biodiversity, has turned into a dive site, but divers and operators say that the local dive industry, already suffering from neglect, has been further affected by security hassles.

Following the recent Mumbai attacks, patrolling along the coast by the Indian Navy, coast guard and marine police is common. They also routinely check tourists and scuba diving enthusiasts taken to the island by operators. "Often, they are stopped and subjected to checks en route three times a day by all three," sources from the Association of Dive Centres of India tells Times of India.

Conceding that the exercise is inevitable in view of grave security concerns, the sources said it should not be such that it is construed by tourists as harassment. "These knee jerk reactions and sometimes rude treatment of tourists is affecting tourism badly," the sources added.

Water sports operators refrain from making an issue out of it fearing victimization. "Initially, during December, the authorities often made the boats turn back, and even if operators refunded their money, tourists were unhappy about wasting a whole day," a water sports operator said. ■

SOURCE: TIMES OF INDIA

Edited by
Scott Bennett

Flower Power?

Air New Zealand completes two-hour test flight partly powered by fuel derived from a tropical fruit.

Air New Zealand hailed the flight as a "milestone" in the development of sustainable fuels that could be instrumental in the reduction of airplane emissions.

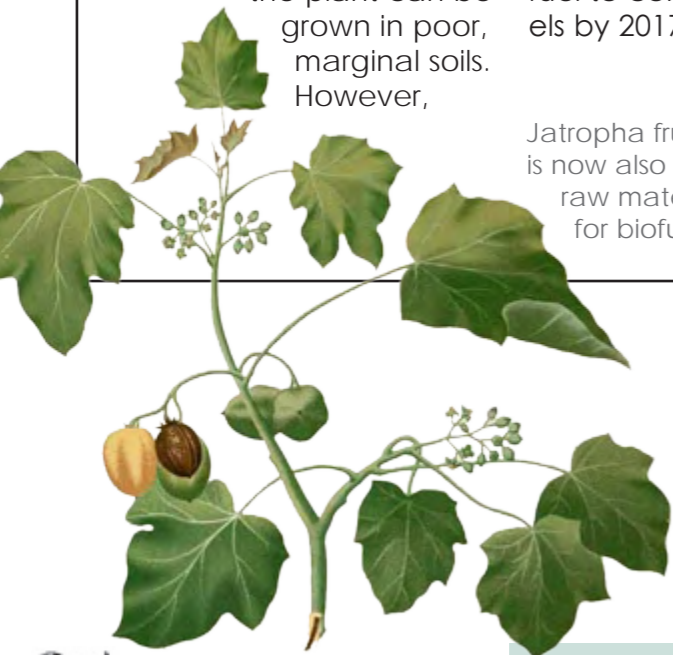
One engine of the Boeing 747-400 was powered by a 50-50 mixture of jatropha plant oil and standard A1 jet fuel. According to Air New Zealand chief pilot David Morgan, oil from the plum-sized jatropha fruit performed "well through both the fuel system and engine".

The fruit from jatropha trees is toxic to humans and the plant can be grown in poor, marginal soils. However,

questions have been raised about the plants' suitability as a biofuel. Harvesting the fruit is labour intensive, and the yield quality can be inconsistent. Critics argue against turning over arable land to the cultivation of biofuels at the expense of growing food.

Although this was the first time the fuel had been used partly to powering an aircraft, Asia has been powering cars and trains with biodiesel for a number of years. The International Air Transport Association would like tenth of aviation fuel to come from biofuels by 2017. ■

Jatropha fruit is now also the raw material for biofuel



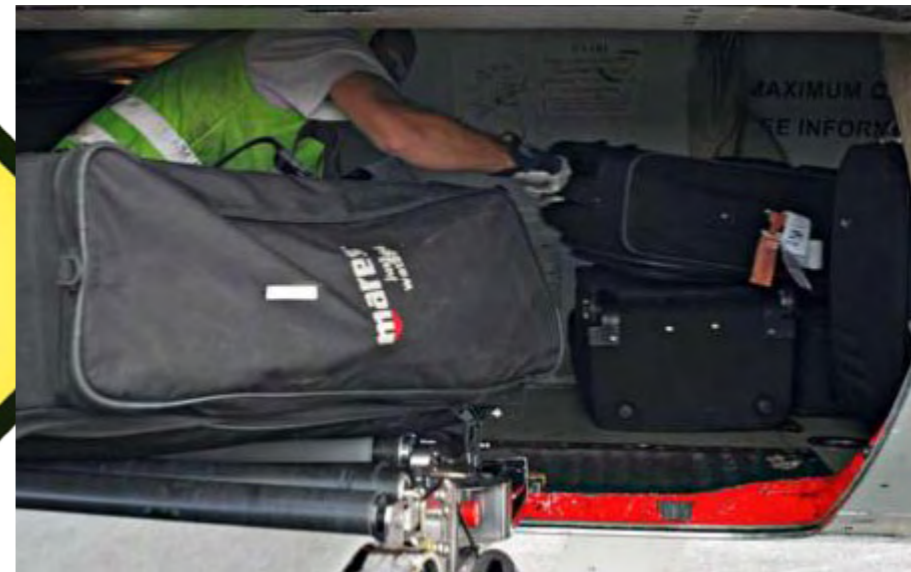
Pack Less — and help save fuel and CO₂

Copenhagen Airport launches initiative to make you pack lighter to save fuel and to prevent back injuries among the luggage handlers.



- Leave your alarm clock at home. Your cell phone has one built in.
- Sun lotion, mosquito repellent, Frisbees and beach towels can be bought on location
- Bring your literature in the carry-on. This way you also have access to entertainment during the trip. Use a light rucksack instead of a handbag.
- Even compact washing powder is heavy—a standard pack weighs 900gram (2 pounds). Pack only the amount you expect to use in plastic bags.
- A little liquor may be good, but leave it at home. Trying out the local brands is part of the adventure.
- Buy shampoo, toothpaste and shaving foam in small sizes for travel, or pour them into smaller containers.
- Bring only clothes for the number of travelling days and only light garments. It weighs less, dries faster and can easily be washed.

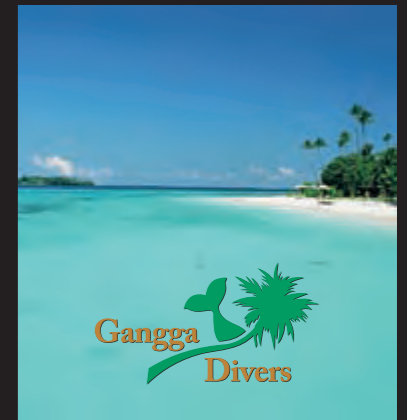
If the luggage is still too heavy, then distribute it in two smaller bags. ■



That looks like a mighty heavy dive bag being loaded

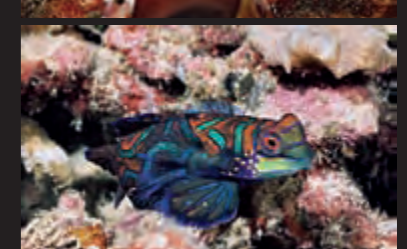
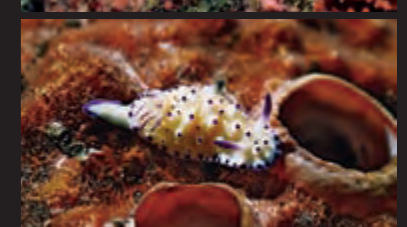
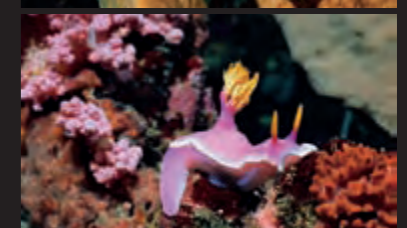


Luggage handlers say that bags weighing 15-20 kgs are rarely a problem, but bags over 25 kgs put them at risk for back injuries



Dive the best of North Sulawesi With "Gangga Divers"

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www.ganggaisland.com



Bahamas shark diving still under review

The Bahamas government says it is still considering what steps it will take, if any, to regulate shark-diving after a tourist was killed in 2008. The fatal attack occurred along a reef where the crew of a Florida-based dive boat chummed the water with bloody fish to attract sharks. Divers entered the water without the protection of a shark cage.

Since the incident occurred, cage-free dives continue despite calls for a ban.

The Bahamas Ministry of Tourism has yet to issue any regulations. "I can assure you this is still under review," said ministry spokeswoman Anita Patty. "What you're talking about is changing policy. We will definitely stay on top of it."

The subject of shark feeding has always been a topic of controversy. Environmentalists and shark experts disagree about the wisdom of the dives. Proponents claim they help further education about sharks, while critics claim they are nothing more than a cash cow for the Bahamian tourism industry.



Lemon sharks were hit hard by construction work according to Professor Gruber and four colleagues who published a scientific paper last year showing that dredging in the North Sound for the resort construction in March 2001 had cut the first-year survival rates of juvenile lemon sharks there by more than 23 percent

Bahamas create new marine sanctuary in North Bimini

The Bahamas government has created a marine reserve off the island of North Bimini, preserving critical mangrove habitat and a shark nursery that had come under threat from a resort there.

The reserve, which will be protected from most fishing and other "extractive activities," is home to endangered species such as the Nassau grouper and the Bimini boa, as well as a vibrant nursery for lemon sharks.

The decision which was approved by the Bahamas cabinet on Dec. 29 is a setback for the Bimini Bay Resort and Marina, which has been clearing some of the island's mangroves to build a hotel, a golf course, a casino and two marinas, some of which have already been constructed.

Backed by the PM

Prime Minister Hubert Ingraham had initially considered establishing the reserve in the late 1990s, but his party lost power in 2002, and the development proceeded. Ingraham's party won back control in 2007.

Philip Weech, director of the Bahamas Environment, Science and Technology Commission, said the government concluded that the mangroves on North Bimini's North Sound contribute to the nation's fisheries as well as tourism.

"It is vital for the fisheries in the area to retain the ecosystem in that area," Weech said, adding that the reserve "helps us also to deal with the issue of climate change, flooding, storm surge and the biodiversity that's there." ■

GET CLOSER

WETPIXEL EXPEDITIONS 2009

////// BAHAMAS EXPEDITIONS //////////////////////////////////////

Feb 07-14, 2009 Tiger Sharks and Great Hammerheads
May 05-13, 2009 Oceanic White Tip Sharks
May 16-24, 2009 Oceanic White Tip Sharks
Jul 13-20, 2009 Sharks and Dolphins

More information: <http://wetpixel.com/links/bahamas>

////// OTHER EXPEDITIONS //////////////////////////////////////

Mar 07-Mar 22, 2009 Sorong, Halmahera, Ambon, Indonesia
Mar 25-Apr 09, 2009 Ambon and the Banda Sea, Indonesia
More information: <http://wetpixel.com/ultimateindo>
Nov 24-Dec 06, 2009 Eastern Fields, Papua New Guinea
Dec 08-Dec 19, 2009 Eastern Fields, Papua New Guinea
Contact Wetpixel for details: <http://wetpixel.com/contact>



silver



www.seacam.com

Maldives *Sea Safari*

An indepth guide

Text and photography by Michael Aw





CLOCKWISE FROM FAR LEFT: Close up of sea anemone; jewel islands of the Maldives; three spot angelfish hovers over lush pink corals; luxury live-aboard dive boat; sea turtle swims through sun rays

One thousand and 192 islands, islets and sand cays string the 26 atolls of the Maldives; from the air they float like emerald necklaces flung upon a cobalt blue sea. Sitting right on the trade route of the early Arab merchants, the human history of these islands dates back some 15 centuries. The Maldives archipelago comprises of uncountable submerged reefs call thila in 'dhivehi'—the local language—stretching 760km north to south and 120km from east to west. This natural barrier of walls beneath the sea has evoked fear among even the most seasoned of seaman since time immemorial; for them, it is a place to be avoided—a place where careless ships go to die.

The islets with names such as Kuda Huraa, Maayafushi, Kurumba, Ihuru, Kanifinolhu, Nakatchafushi and Feshu are themselves exotic, magical, romantic, only limited to one's imagination of fantasy that may become reality. The atolls, each composed of uncountable submarine reefs and islets fringed with glistening white sand beaches.

No other tropical isles or dream-like atolls rival these remarkable gems of the Indian Ocean. Some islands are adorned with lush foliage of coconut palms and banyan trees while others are just powdery white sand islets with waving palms.

Well-traveled writers describe the country as sexy, exotic and alluring; a setting for the romantic, the adventurer and the explorer—an expanse of sea, of open sky that canopies one of the richest celebrations of life beneath the seas.

For the intrepid diver, a live-aboard trip is the obvious option to explore the best dive sites of underwater Maldives. In 1996, for the Rainbow Sea project, I embarked upon my first live-aboard or safari as is commonly known in this country of infinite horizon. With friends, we started our sojourn from Male across to Rashdoo, Ari Atoll then back to, Felidhoo, South and North Male atolls onboard a replica of an 18th century galleon. For the entire expedition



PREVIOUS PAGE: Underwater photographer and school of bright yellow Blue-striped Snappers



Maldives

6.5 billion people inhabit 30% of the planet's surface...

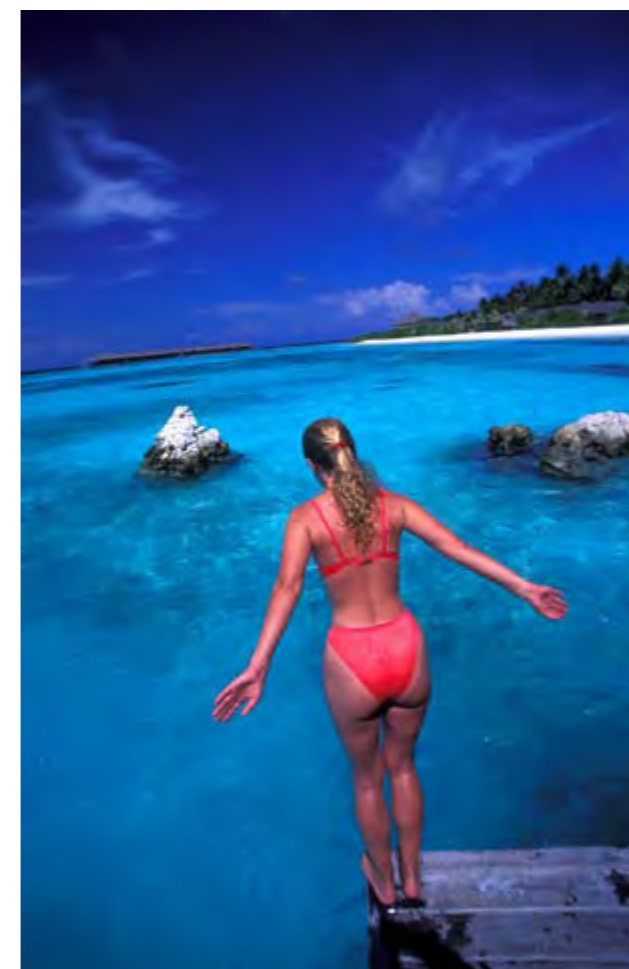


the rest is for us!

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we were blessed with mirror flat seas; we dived into a school of hammerheads, swam with two giganormous whale sharks, played with spinner dolphins, spent three hours with mantas, tunas—big tunas—turtles, napoleon wrasse, boisterous reef sharks, snappers and more snappers in uncountable numbers were sighted on almost every dive.

The highlight was, of course, the orcas that came alongside our boat one early dawn in South Male atoll, the first recorded sighting of a pod in the Maldives. Sightings over our 11-day expedition were extraordinary. Our experiences were the stories divers' dreams are made of.

Since then, I have been back for several more safaris on a few different boats to produce feature documentaries, videos or just a feature assignment for diving magazines. I was fortunate that all my safaris in the Maldives were productive, pleasant and memorable. However, I have had reports from many first timers that their trip was far short of expectation.

For us folks from the Asia Pacific, we must first understand that in the mainstream of

divers visiting the Maldives, the European rules. Apart from the Red Sea, the Maldives is their escape from the maddening crowds. Blue water, spectacular marine life and ease of diving have made the Maldives the Mecca for the European.

Supported by 95 dive resorts, and just about the same number of live-aboard dive vessels, there are options to suit every whim and fancy. Much like the resorts, standards on safari boats varies considerably. While the quality of diving may differ dramatically from atoll to atoll and island to island during the year, the standard and skills of the diving operations are varied suiting the type of clientele they service best. Obviously, choosing the 'right' live-aboard is an important issue, which may turn one's dream holiday into a nightmare. Careful planning is essential.

Though there are now quite a few that are locally owned and managed, the majority of safari boats have a definite European flavor, dedicated entirely to serving either the German, Italian, Swiss or French clientele. While some are relentlessly Western, others offer local Maldivian curry



CLOCKWISE FROM ABOVE: An adorable little orange blenny, about the size of a green pea, peeps out of its hole; diver and huge Napoleon wrasse; vibrant pink, purple and yellow soft corals decorate the reefs of the Maldives; jumping into paradise from the pier



Beware, the Maldives is like eating M&Ms—addictive—once is never enough.

BELOW: Bigeye fish

Dive safari boats are particularly “photographer friendly”. They will dive the well-known sites at times when there are never any other divers around



solely for variation sake. Don't expect authenticity, quality varies from canned food or basic buffet to fine dining.

Many boats are small; cabins are at best toilet-sized cubicles, but there are always generous sun decks for those who insist on returning roasted.

Except for a few vessels that make the effort to market to the USA and Asia, the majority are dominated by client of one nationality—though this tends to be a result of marketing, rather than coincidence. As I mentioned earlier, book into one that is not your kind, and though mostly unintentional, discrimination can be obvious.

These days, the safari boats range from cattle class converted from fishing boats, locally built cruisers, to the

opulent class specially built live-aboards like that of the Four Season's *Island Explorer*. Expect to pay about USD 190 for an above average class boat; pick one of any less, and you will be likely to find yourself sharing space with a boat load of laid back European taxi drivers.

Remember, you will only get what you are paying for. Again, I emphasize generally the concept and style of service is predominantly European, with a laid back attitude amidst a relaxed atmosphere of sun, beer and sleep, and if the spirit moves, maybe one or two dives per day. If you are a die-hard diver, these are the boats to avoid.

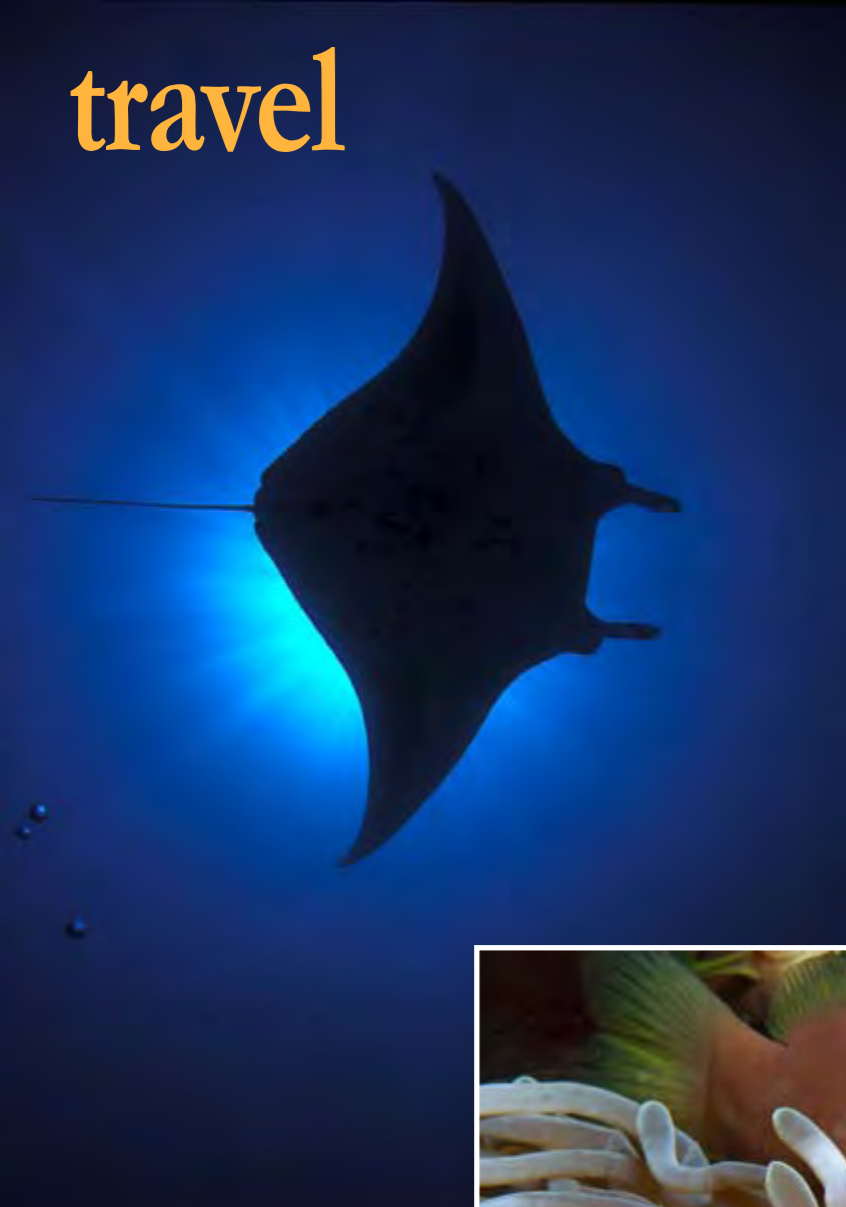
However, if serious diving is of primary concern, a diving safari through the Maldives is definitely the way to go.

In the past few years, the number of boats offering extended trips around the atolls has increased exponentially. Luckily, there are now a few good ones dedicated to serve the serious divers. With careful planning and by asking the right questions before committing to one, you can be sure of a memorable safari adventure in the Maldives.

I have personally tested the *MV Guilla*, *Island Explorer 7*, *MV Sea Queen*, *Sea Spirit*, and *MV Manthiri* and find that they are most suitable for the enthusiastic divers. A Peter Hugh boat has just recently begun operation this season.

Life on board these boats are the typical cliché when talking about world class live-aboard diving—dive, eat,





CLOCKWISE FROM BELOW: Clown fish in anemone; Manta ray silhouette; coral reef garden with anthias; View of the Maldives from transport boat on arrival; Water planes are available for transfers



sleep, dive, eat, sleep... After the first dive is a hot breakfast, a quick 40 winks, a dive at about 11am, followed by lunch, a longer snooze, a dive at about 2:30 pm, followed by a snack, and if you feel up to it, a night dive before dinner and back to bed.

These vessels are neatly furnished, with the comfort of en-suites, individual control air conditioning, hot water, and offer everything from fine wine and palatable Western cuisine to Asian delights.

These boats are also particularly "photographer friendly" by diving the well-known sites at times when there are never any other divers around. I am also sure non-photog-

raphers appreciate not having to share the reef with "ferry" loads of divers from other boats and resorts.

Rinse tanks for cameras are sensibly positioned along side an outdoor shower. Work area and storage areas for cameras are lavish and one can choose to recharge batteries in the cabins or in the saloon. The better boats are now installed with a digital studio and some extend to

offer video and E6 processing service.

If you ever feel like indulging in the lifestyle of the rich and famous, book the Four Season's *Island Explorer*. The cabin of the vessel boasts hotel-sized rooms measuring 20 square meters

lavishly furnished with contemporary teak wood and complemented by soft furnishings of of subdued tones. All cabins are air-conditioned and feature twin beds (that can be converted to a king bed), couch, writing desk, mini bar, satellite TV, VCD and music system, telephone, in-cabin safe and en-suite bathroom with large bath tub/shower, and double vanity.

The elegant Explorer Suite boasts expansive panoramic windows, measures 45 square meters, featuring a king bed, daybed and indoor dining area. Of course, all these come with a price tag to match.

One unique approach that is common to all live-aboard boats in the Maldives is that the diving is always done off a traditionally-crafted dhoni boat, which follows the main vessel like a puppy dog.

Compressors, tanks and dive gear stay on the dhoni for the entire trip. They serve strictly as a dive platform, as well as a pick up boat. This is an excellent idea and a hard act to follow elsewhere; compressor noise is not exactly music neither to ears nor lullaby for that all-important snooze between dives.

Unless otherwise pre-arranged, most dive safaris begin and end at the airport. For those flying out in the evening, the afternoon may be an ideal chance to visit Male. Transfer by dhoni to Male, the country's Capital Island, from the airport costs US\$5 and is well worth a visit if you have a spare afternoon.





The myriad of life in every imaginable and unimaginable colour and form is signature of underwater Maldives rivaled nowhere else in intensity.

The bazaar of downtown Male offers souvenirs catering to every tourist's fancy and delight; hand painted T-shirts, fish designed playing cards, fish guides, cheap sculptures, postcards, coconut monkeys and silverware are all on bargain as long as the exchange is for Uncle Sam's dollars.

If you are arriving early for a safari trip, overnight stay at the airport hotel or one in Male may be required. Note: do not bring any duty free alcohol into the Maldives—it will be confiscated on arrival. You will not find a single bar or bottle shop in Male either. But don't despair, most safari boats are licensed to sell beers and fundamental liquor mixes.

To make the most of every diving day on a safari, it is a good idea to stay for a day or two in one of the resorts near Male to off gas as well as to practice the art of doing

nothing on one of the most idyllic islands on earth.

Insight into Safari Diving

Though many of the dive sites in the Maldives are suitable for inexperienced divers, raging and unpredictable down currents have through the years been responsible for many diving accidents.

A safety sausage with an 8m line attached to the opening should be a mandatory accessory for all divers. Especially diving in area known for boat traffic, you should first deploy the safety sausage 5m from the surface. This will warn boaters of the presence of divers in the water, as well as attract the attention of the pick up boat.

With the exception of a few sites, most of the diving in the Maldives is drift dives that

can be classified into two groups: dives outside the atoll and dives inside the atoll.

Dives outside the atolls are generally done during an outgoing current, where visibility is better than inside the atoll. Typical terrain is a steep slope that goes down in steps or a wall that plunges into dark abyssal depths. These are the sites for great pelagics, hammerheads, eagle rays and whale sharks. Stick close to the reef unless you wish to hitch a ride to Burma or Africa—both are a long way away.

Dives inside the atoll are on the inner reef and submerged reefs dives. Generally, they are safe and easy diving for all levels, especially when they are not in the vicinity of a channel and are dived with an incoming current. Reef fishes in

unbelievable abundance are predictable at these sites and as most are territorial species, familiar faces are found in each place year after year unless otherwise exploited by selfish and bad human beings.

Diving in the channels are high-pressure

dives. The ocean flushes into the atoll and out again through these channels. Like a great plumbing system, each incoming tide brings clean, nutrient rich water while outgoing tides wash out the dirty water. Obviously, the best time to dive these

channels is during incoming tide when visibility is at the optimum to watch pelagics, tunas, jacks and sharks hanging out to feed at the mouth of the channels.

The best staging area to watch the show is close to the reef but away from the mouth of the channel at a 20–30m depth. If caught in the incoming current too soon, especially in shallower depths, you will miss the show entirely but the ride is guaranteed to give the adrenaline a work out.

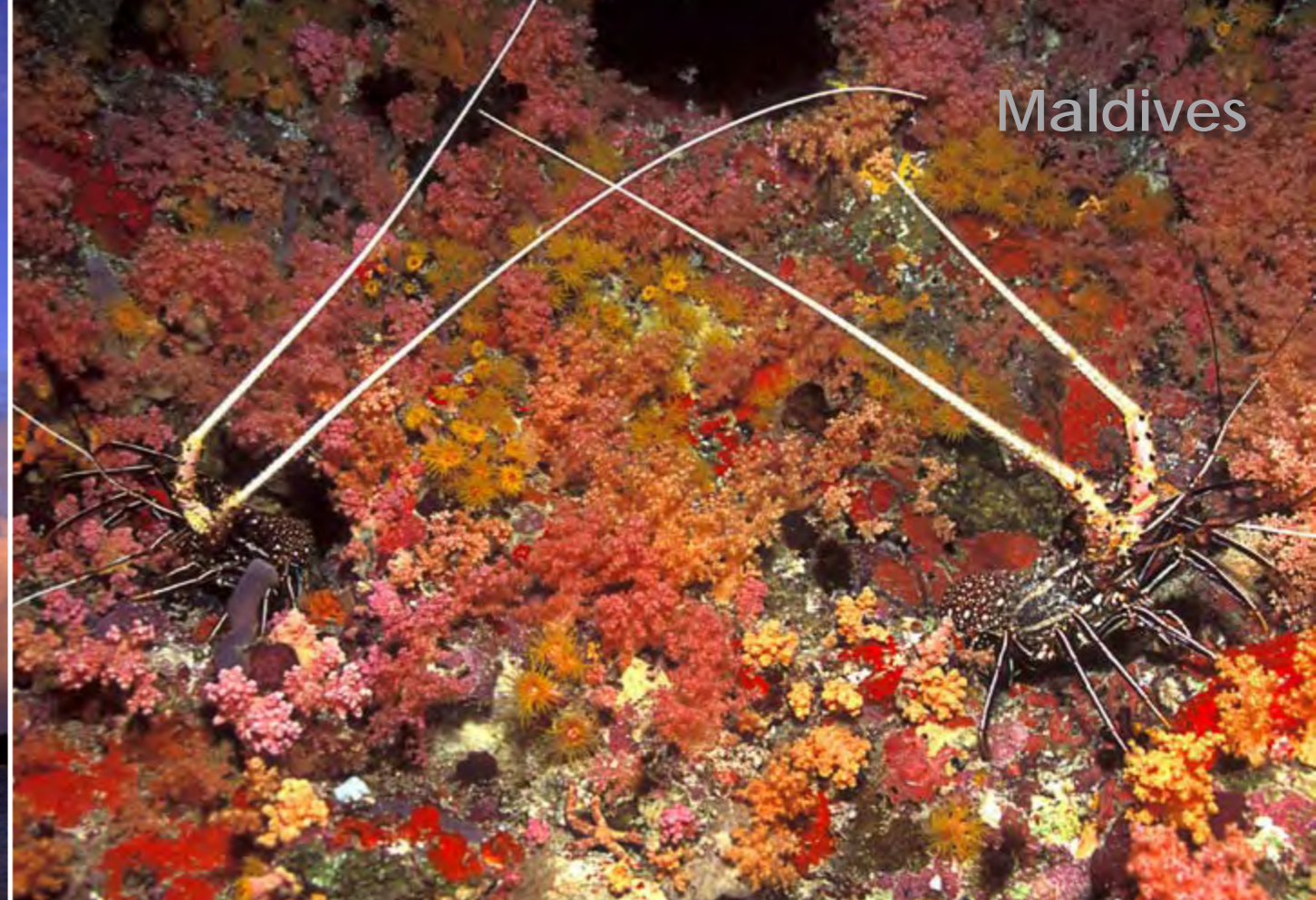
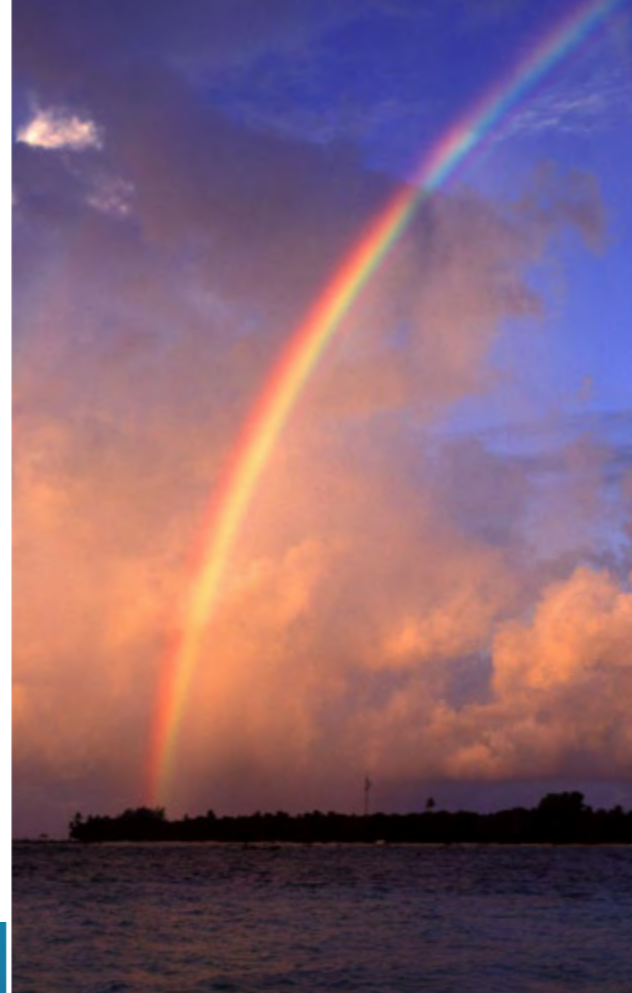
The currents in the Maldives defy even the most experienced oceanographer. The theory of the 'seven and a quarter hour' tidal change cannot be used to predict the time for slack water and change of

Rainbows above the sea rival rainbow reefs below the waves; Lobsters guard their vibrantly coloured territories; BELOW: Two remora fish catch an easy ride on the underside of a Manta

current direction.

On one of my trips, a Maldivian divemaster predicted incoming tides for all the three channel dives within a ten-hour period for the next day of diving. A law professor challenged the briefing. His ego was reduced to a smitten the next day after the third dive. There is a moral somewhere in this story—listen to your divemaster, especially if he is Maldivian. Inside the atolls, water often runs in or out long after the tide has turned. Precise and long term data on tidal ranges, flows and patterns are non-existent in the Maldives.

Beware, the Maldives is like eating M&Ms—addictive—once is never enough. The myriad of life in every



Maldives



imaginable and unimaginable colour and form is signature of underwater Maldives rivaled nowhere else in intensity. If I had to choose three words to describe the diving in Maldives, they would be "predictably great" and "abundance".

Underwater Maldives is remarkably different from the surface—a metropolis of never ending reefs composed of ridges, mountains, valleys, and fjords, columns and chasms extending right out to the edge of the atolls. Outer atoll slopes or walls plummet steeply to oceanic mountains, and the mountains themselves drop to abyssal depths of 2km and beyond.

Because the Maldives sit in the middle of the Indian Ocean, great migratory currents flow through the atolls, leaving behind rich plankton to procreate. Like an oasis in a desert sea, pelagics often drop in to check out the local scene. Hammerheads, whalesharks, tunas and Oceanic white tips are frequent visitors.

Tidal currents flushing through the channels brings a constant food source into the atolls, sustaining spectacular soft coral growth, which in turn supports

a realm of reef fishes in extraordinary abundance. I call the Maldives the fish pond of the Indian Ocean. Since 1996, I have made at least one yearly pilgrimage to the Maldives, and I will not hesitate a second time each year.

Once DIVE, a UK-based dive magazine, asked me to name the top ten dive sites in the Maldives. It was a huge task! After much deliberation, I chose ten sites that I will religiously turn to each year, as I can predictably say that I will find mantas, huge Napoleon wrasse, sharks, sea turtles, lush soft corals at these sites, and where I am not sure of the number of whale sharks have swam right pass me when my focus was on shooting an orange blenny the size of a green pea!

Top 10

Following are ten dive sites not to be missed on a Maldives Safari trip.

Rainbow Reef or HP Reef

North Male Atoll. Nearest Resort: Maldives Four Seasons at Kuda Huraa. My assumption is that HP is short for 'high power' as the dive has a lot to do with

the name. Because of the profusion of multi-coloured reef life on this reef, it is also commonly known as the Rainbow Reef. Between the tides, an enormous flow of water oozes through this thila. Jacks, Blue striped (*Lutjanus kasmira*) snapper, groupers and fusiliers indulge in a sea of nutrients. Lurking amidst the corridors of a luxuriant coverage of iridescent corals are red coral groupers, giant cods, Napoleon wrasse, and scorpionfish. Eagle rays are often seen soaring majestically near the surface, undeterred by swift moving water. This is one of my favorite dives in the world!

With swift currents, the substrate on the reef top is typical of such environs, hard corals abound with anthias frolicking among stumps of green coral trees. From 15m to 25m, carpets of red, yellow, iridescent purple soft corals, orange sponges and cup corals cover the outcrops and overhangs, from wall to wall, from floor to ceiling. The plethora of soft corals in purple, yellow, orange, pink, red, white and blue explodes like paint splash over three enormous coral heads and overhangs. With such a profusion of corals



LEFT TO RIGHT: Lobster; Schools of barracudas and jacks are predictably found between coral heads; Divers inspect lush overhangs laden with coral; Diver finds a group of Oriental Sweetlips hovering in a cave

OKOBE Thila

North Male Atoll.
Nearest Resort: Bandos
This site comprises of three coral heads, the largest—an ox-bow shape—is 265 ft (80m) in length, separated from the two smaller mounts by a 100ft(30m) wide and 80ft (25m) deep canyon. A family of three Napoleon Wrasses are

resident on this reef. Apparently, German divers seeking soul mates in a most unlikely place befriended this family by feeding them hard-boiled eggs. The feeding of any marine animal has since been banned by the authorities, but these gregarious fish still see terra firma beings as a source of a free hand out. They are known to follow divers for an entire dive. To get them close, really close, just hold out your hand and wave secretly with cupped hand before hiding it again. We were contented to once again

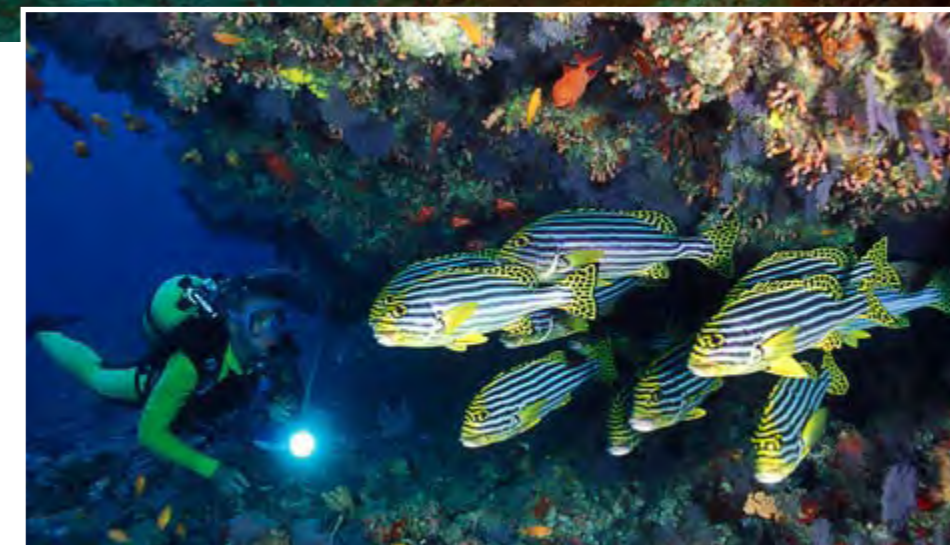
realise that animals of the ocean have indeed a memory, and are capable of responding and playing just like any of us. If left alone, these fish live up to 50 years in the wild.

A cavern beneath the most easterly coral head is home to a resident group of 20 or so Oriental Sweetlips. Schools of barracudas, batfish, surgeonfishes and jacks are predictably found hovering between coral heads. The flow of nutrients feeds the reef; green tubastrae coral branch out among outcrops of luscious soft coral highlighted with tapestries of orange, purple and green Anthias fish, covering the walls of the canyon in entirety. Not all dives at Okobe Thila are great—some are only good.

Rasdho — Madivaru Corner

North Ari Atoll. Nearest Resort: Kuramathi
This site has its fame amongst seasoned

divers of the Maldives. Just before the sunrise, schooling hammerhead sharks (*Sphyrna lewini*) emerge from the depths to this corner on queue each morning. Chances of seeing them are good, but without daylight, it makes publishable images tough. They are known to turn up in big numbers. Big Dog-tooth tunas (*Gymnosarda unicolor*) and Dolphinfish (*Crayphaena hippurus*) also lurk at the reef edge together with schools of black snapper to feed in the morning current. There are many other Hammerhead points in the Maldives, but Rasdho is the most well known.



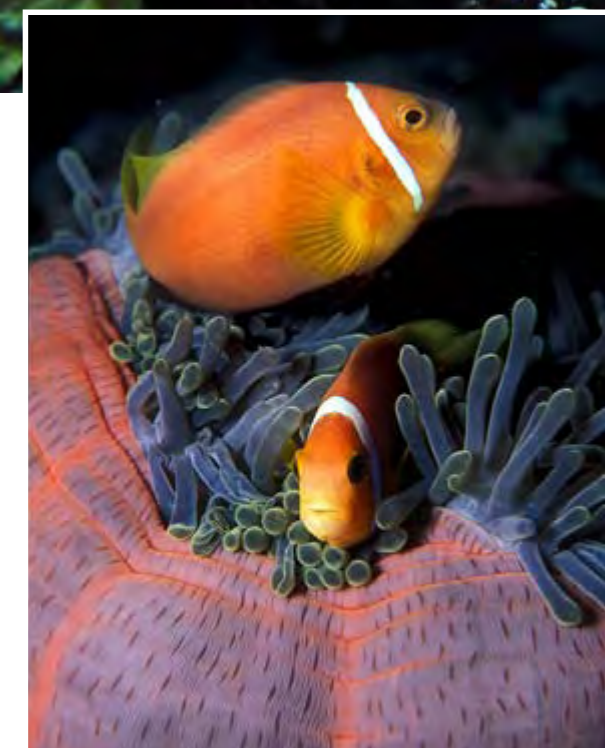
Nassimo Thila

North Male Atoll. Nearest Resort: Paradise
The main attraction of this thila is the series of large pinnacles scattered just off the reef on the northeastern side. Purple and yellow soft corals like marshmallows cover the surface and overhangs in entirety. Napoleon Wrasse and jacks are frequently found swimming in unison among corridors full of Squirrelfishes and Orange Fairy

in kaleidoscopic colours, Rainbow Reef is aptly named.

However, it is after dark that the reef really shows its true colours; the orange and yellow tubastrae blooms along side plethora of soft corals in every conceivable colour with their tentacles outstretched to feed in the night current. While parrotfishes sleep, the nocturnal morays are seen on the prowl for an unwary fish or lobster. If I were to do one last dive in the Maldives, it would be a night dive on Rainbow Reef.





Scorpionfish are found in abundance. Nassimo Thila is another one of the best dive sites in the Maldives. Drop me there any day, I may just find my camera.

Guraidhoo Kanduu & Embudhoo Express

South Male Atoll. Nearest Resorts: Fun Island, Kandooma and Embudhoo Village. With 4-6 knot current conditions, these sites are for experienced divers only. Beware, the current boils on the surface on both channels. Must be dived during incoming current to see the pelagics.

Embudhoo Express and Guraidhoo Kanduu are easily the most exhilarating dives in the Maldives in terms of pure adrenaline rush. Both dives are a challenging experience, testing skills in current conditions to the extreme, but the reward is some of the best

pelagic action in the sea. The staging area is outside the atoll. Drop into the reef slope to about 25m and head towards the mouth of the channel cautiously. Believe me, you will know when you get there. Best viewing area: hang out at about 28m and watch the greatest show on Earth.

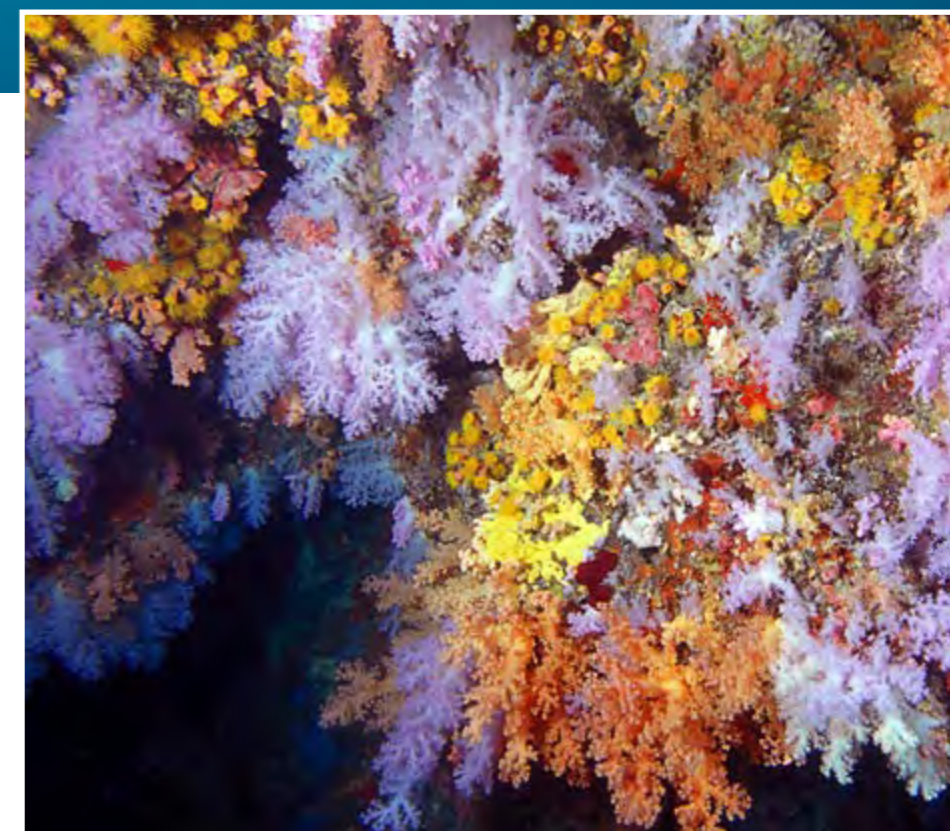
Flocks of eagle rays soar like Stealth bombers, grey and white tip sharks in uncountable numbers whiz back and forth the entrance while jacks, tunas, rainbow runners and fusiliers engage in a chaotic melee right in front of you. Look out for a couple of large tame Napoleons, they are so to speak local identities at the site—familiar faces that you can look upon for comfort when the going gets tough. Masks are known to have flown.

Once bored with the show or when air is down to 100 bars, take off for a ride of your life. Embudhoo Express

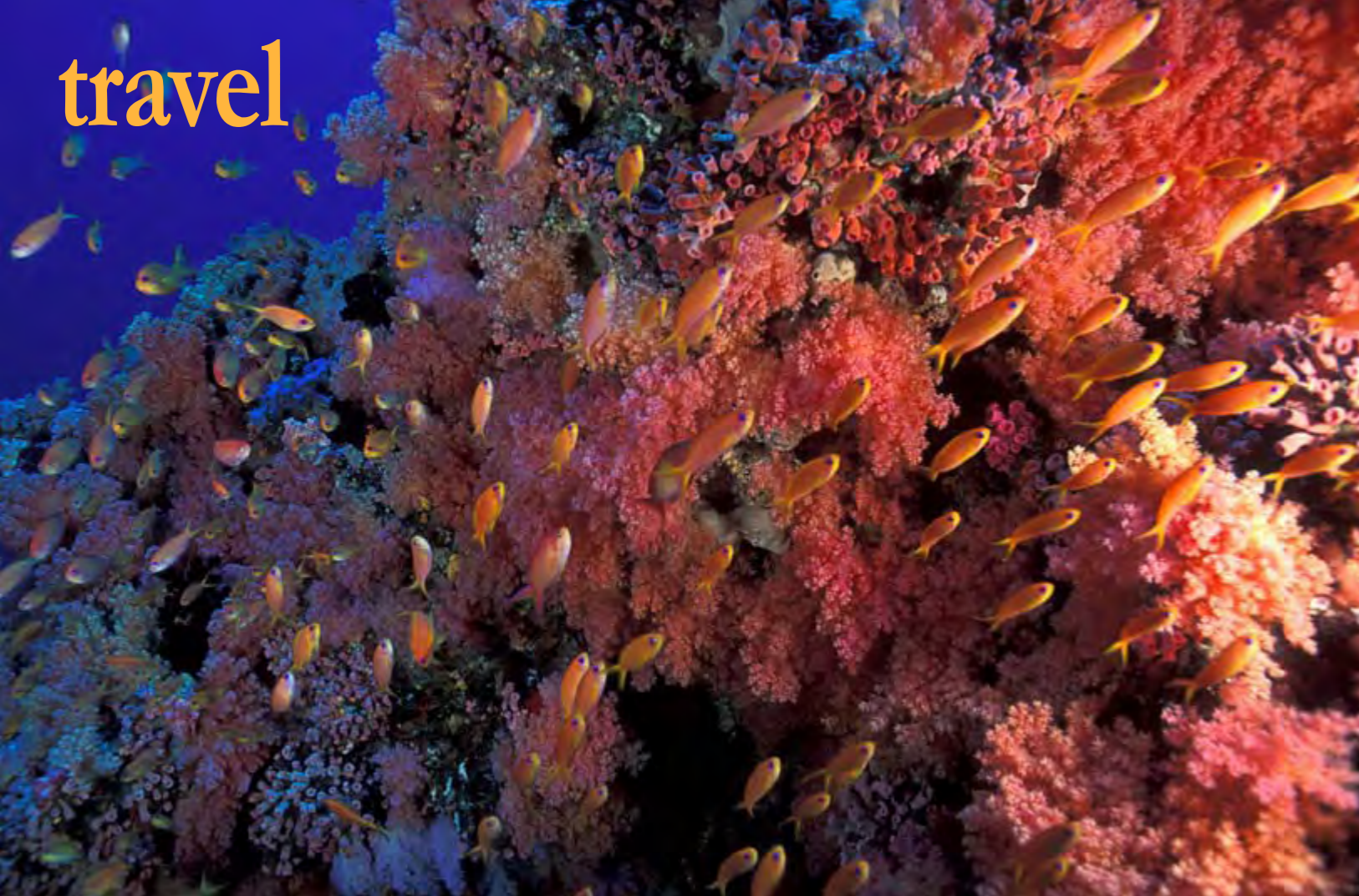
offers a swift 2km ride into the channel in 3-4 knot current. Guraidhoo offers more of a roller coaster ride; a whirlpool effect cause by numerous overhangs tends to drag divers up and down during the journey into the atoll—stay close to the reef at all times.

Kuda Giri

South Male Atoll. Nearest Resort: Palm Tree Island This is an excellent dive site for both day and night dives. Situated on the leeward side of a large reef, there is little current. This coral head is almost perfectly round with a vertical wall reaching a depth of 30m. Kuda Giri is one of my personal favorites for many reasons; there are a few swim through caves between 10-15m with their entire wall covered with yellowed sponges, soft corals, oyster



LEFT TO RIGHT: Clownfish guard their anemone home; hard corals decorate the reef; underwater photographer visits with Manta ray; beautiful bouquets of white, orange and yellow soft corals dangle from an overhang



LEFT: Neon orange Anthias are abundant on the coral reefs
BELOW: Bright yellow, red, pink and orange soft coral display

abundance on this reef is incredible. The thila is about 80 meters in diameter and can be easily circumnavigated in one dive—that is if you can resist other distractions.

The top of the reef starts at six meters, sloping to 12m, before dropping to beyond 30m. Caves, overhangs and ledges are found all along the reef wall. Though solidly built, Grey Reef sharks are common, but it is the number of White-tip sharks that are impressive. They are everywhere.

Millions of anchovies disperse and regroup to form a variation of shapes stealing the show from the Grey sharks and their companions, the Rainbow Runners.

While schools of Snappers and Batfish hover beneath coral trees, lone Great Barracudas play havoc with the fusiliers. Blue-faced angelfish, Clown triggerfish, Blue triggerfish, Dog-tooth tuna, Hawksbill turtles, jacks, moray eels, stonefish, and Anglerfish are all part of the ensemble that make this reef one of the greatest in the Maldives.

The best action is always found on the side that faces into the currents. Beg on your knees to do a night dive on this reef—it is a highlight of anyone's diving career.

In terms of action, Maaya Thila is dramatic after dark. Sharks seem to zoom in from every direction. Their sense of urgency and hungry

search for prey is felt in wave after wave of electrifying melee. Even the bold divers are on guard.

Moray eels are seen leaving their holes to search for unsuspecting prey. Octopuses are sighted in ambush position for a shellfish in passing. Marble Rays appear out of the dark to sweep on sand patches for shellfishes, bloating up occasionally when they land on an ill-fated prey.

I was so impressed with Maaya Thila that I have selected the site to be the location for my first feature documentary—a 24-hour documentation about life on a coral reef system. Maaya Thila is a marine protected area.

shells and are home to numerous Big-eyed soldier fish. Some of most photogenic clownfish I have ever seen live at the mouth of these swim-throughs. Most of them are of the *Clarkii* species, but their choice of home (anemones with white tentacles), makes them look like playful ermines in snow. Beware, ill-tempered moray eels live among them.

Around the giri, groups of friendly batfish are predictably found hovering near the surface. Turtles, Nurse sharks and White-tips take refuge within the many caverns around the giri. If you like wrecks, there is a very well behaved steel wreck in perfect condition, sitting upright from 20 to 35m. Kuda Giri is an extremely productive site for underwater photographers.

Fotteyo

Felidhoo Atoll.
Nearest Resort: Alimathaa

Best dive during in-coming current; if caught in an outgoing, surface close to the outer reef. This dive is a real treat, regarded by many as the best in the Maldives. I have dived this site six times and have fought to absorb each impression. Immense has a whole new meaning.

Fotteyo has many possibilities; schooling jacks, tunas, sharks, turtles, Napoleon, snappers. But what make Fotteyo special is the series of caves between 25–40 m which are covered by some very unique soft corals not found in similar form or abundance any where else in the Maldives or in the world. The thick, lush soft yellow and purplish soft corals are overgrown in exaggerated fashion.

These caverns have been described by guidebooks as the cherry caves of the Maldives. Their intensity and lushness often enralls the first timer; prepare to be breathless on first sight.

On the eastern side of the channel is Fotteyo Falhu, a fringing reef rising to a sand cay; the coral formation appears to be untouched. Prolific large coral plates are scattered over the reef slope as far as the eye can see.

Beware of accidentally wandering into 'Trigger Valley', a sand cay on the right side of the channel. Titan Triggerfish by the hundreds are local denizens, and they are mean and foul-tempered. They attack divers for no rhyme or reason.

If you make an effort to rise before daybreak, Fotteyo is another hammerhead point. I was keen to see them, and predictably, we found them, or they found us, drifting in the blue at half past six in the morning.

Mayaa Thila

Ari Atoll. Nearest resort: Mayaafushi
In terms of fish life, the sheer





Cod, Triggerfish, Pufferfish and Pipefish in various combinations of colours lurk among the corals and gaps.

Moving through this gap in a slow current, subliminally evokes feelings of a journey through an artist's paint box. This site bears its name from the international Pantone Colour Matching system (PMS colour) used by graphic designers, printers, painters all over the world. The PMS swatches comprise of more than 500 colours varying in hue and contrast.

Panettone is the most colour intense dive in the Maldives. A school of Giant Trevally (*Caranx ignobilis*) is denizen of Panettone, though not necessary attracted by the colours but the bottomless pantry of tasty morsels. The channels are ideal country to look out for reef sharks, Dog-tooth Tunas, Eagle Rays and Mantas.

Madivaru/ Manta Point

Ari Atoll. Nearest Resort: Hilton Rangali
The season for manta at this site is from January

to April. The staging area is the outer reef, south side of Rangali Kanduu. During the northeast monsoon, this is the best manta point in the Maldives. During outgoing current, the mantas—big mantas—are found swimming up and down the reef slope to feed on nutrient rich water from within the atoll. Descend to the reef edge about 10m, swim along with the edge. Mantas are seen here enjoying themselves at cleaning stations as well as dancing blithsomenly in the blue. Attempts to approach them will make them swim away; just hover and watch, and in most instances, they will swim right up to you to meet eye to eye. This is one special place in the Maldives where big gentle animal encounters are predictably good. On a few occasions, I have seen flocks of 30 to 50 Mobula rays flying in formation through this reef. But the reef top here is a good enough reason to distract one's attention from the mantas—find turtles, clownfish, octopus, schools of Bannerfish, Powder Blue Surgeonfish plus a school of over three thousand bright yellow Blue-striped Snappers. ■

Panettone

Ari Atoll. Nearest resort- Moofushi
Panettone sits in the middle of Kalhahandhi Kanduu. As water flushes back and forth, this giri receives replenishment on a continuous basis. A long overhang between 12m to 25m along the reef wall is covered floor to ceiling with a plethora of multi-colored soft corals, sea fans, sea whips, and sponges. Squirrelfish, Angelfish, Fairy Basslets, Butterflyfish, Scorpion-fish, Coral

LEFT TO RIGHT: Manta rays enjoy cleaning stations on the reefs where cleaner fish tend to them; swirling school of Blue-striped snappers; fun in the sun is ample on a tradition Maldivian boat called a 'dhoni'

fact file



Maldives



SOURCES: YANN SAINT YVES, MICHAEL AW, US CIA WORLD FACT BOOK, SCUBADOC.COM

History Archaeologists conclude that the Maldives Islands have been a port of business since antiquity, but the certainties concerning their history appear only from the second century. The Arabic traders nicknamed them then the "Islands of Money" because of one local shell, the Cauris, was internationally used as currency. Cowries were used internationally as bargaining chips.

The Portuguese came to the islands in the 17th century. The Maldives Islands became successively a Dutch protectorate in the 18th century, then British in 1880 by the signature of an agreement officializing this status and recognizing Maldivian sovereignty. The country obtained its independence in 26 July 1965, and became a member of the UNO. In 1968, it became a republic.

Elected to six successive terms via single-party referendums, President Maumoon Abdul Gayoom dominated the islands' political scene for 30 years. Riots in the capital Male in August 2004, led to the president and his government pledging to implement democratic reforms with a more representative political system and more political freedoms.

However, progress in many promised reforms were slow in coming. Yet, in 2005, political parties were legalized, and by June 2008, a constituent assembly (the "Special Majlis") finished writing a new constitution, which was ratified by the president.

In October 2008, the first-ever presidential elections under a multi-candidate,

multi-party system were held. Mohamed Nasheed, a political activist previously jailed by the former regime several years earlier, defeated Gayoom in a runoff poll. Challenges facing the new president include strengthening democracy and combating drug abuse and poverty. Government: republic. Legal system: based on Islamic law with English common law used mostly in commercial matters. Capital: Male.

Geography The Maldives Islands are located in Southern Asia. They are a group of atolls in the Indian Ocean, south-southwest of India at coordinates: 4 10 N, 73 30 E. Surface area: 90,000 km² (ocean makes up 99.9 percent). Terrain: flat islands with white sandy beaches. Coastline: 644 km. Lowest point: Indian Ocean 0 m. Highest point: unnamed location on Wilingili island in the Addu Atoll 2.4 m. Note: The Maldives are 1,190 coral islands grouped into 26 atolls (200 islands are inhabited and 80 islands have tourist resorts). The archipelago has a strategic location adjacent to sea lanes in the Indian Ocean.

Economy Maldives' largest industry is tourism, which accounts for 28% of GDP and more than 60% of the Maldives' foreign exchange receipts. Import duties and tourism-related taxes make up over 90% of government tax revenue. The second leading sector is fishing. The limited availability of cultivable land and the shortage of domestic labor constrains

agriculture and manufacturing, which continue to play less and less of a role in the economy. A majority of staple foods must be imported. About 7% of GDP is generated by industries such as garment production, boat building, and handicrafts. In 1989, the Maldivian Government began an economic reform program, lifting import quotas and opening some exports to the private sector. Regulation have been liberalized regulations to allow more foreign investment. The December 2004 tsunami rampaged the islands and left more than 100 dead, 12,000 displaced, and property damage of over \$300 million. However, there has been a rebound in tourism since then, as post-tsunami reconstruction, and development of new resorts helped the economy to quickly recover. Even so, high oil prices and imports of construction material has increased the trade deficit. Challenges facing the country include diversifying beyond tourism and fishing and increasing employment. Global warming and erosion are a real worry over the longer term for the Maldivian authorities. Eighty percent of the area in this low-lying country is just one meter or less above sea level.

Climate Tropical, hot and humid with a dry, northeast monsoon from November to March and a rainy, southwest monsoon from June to August.

RIGHT: Location of the Maldives Islands on global map
FAR RIGHT: Map of Maldives Islands



Currency 20.5 Maldivian ruppies (MVR)= 1€ (2008), but many resorts show prices in US dollars and in Euro.

Population 385,925 (July 2008 est.) Malé, the capital city of the Maldives, is home to 27 percent of the population. Ethnic groups: South Indians, Sinhalese, Arabs. Religion: Sunni Muslim. Internet users: 33,000 (2007)

Language National language is Maldivian Divehi—a dialect of Sinhala with a script derived from Arabic. Working language is English.

Habits & Customs You are in a Muslim country. Nudism and the monokini are totally forbidden and liable to strong fines. It is the same at resorts. Light dresses are frowned upon in the city and outside island hotels. Going topless is totally prohibited and punished even at resorts.

Gastronomy The Maldivian cuisine is simple and easily accessible, although you can dive a little into the local life, on an island, or to Malé. Otherwise, resorts offer a variety of cooking, often dominated by Indian cuisine.

Diving If the Maldives Islands can be a true paradise for the diver, it is necessary to know that what you will see depends essentially on the experience of the captain and on the dive director. The one or the other can be replaced at the drop of a hat, risking a missed opportunity to see the good stuff on the way to the main show. Inquire about the staff, crew and supposed route to the dive site before leaving the dive center.

Phone Country code is 960. Cell phones can easily connect to some networks almost everywhere. Depending on your network – GSM roaming is enabled for some carriers. For Australia is Telecom or Optus and Singapore is Starhub, M1 and Singtel – check with your provider for service and charges. Since 2002, I was able to check email using my GSM phone on all my safari trips in the Maldives.

Time UTC+5 (GMT/Zulu +5)

Links Maldives Tourist Promotion Board www.visitmaldives.com ■



In face of climate change

Maldives seek to buy a new homeland

The Maldives' newly-elected president has said that his government will begin saving to buy a new homeland in case global warming causes the country to disappear into the sea.

The inhabitants of the Maldives do not want to end up like Atlantis. The new president of the Maldives, Mohamed Nasheed, has said he wants to set up a fund to acquire land in other parts of the region and buy a new homeland for his people. "We cannot do anything to stop climate change, so we are forced to buy land somewhere else", Nasheed, told the English daily The Guardian last month.

Fund

The idea is to create a sovereign wealth fund with revenue from tourism in the style of those of the oil-producing Arab countries.

Nasheed said he intended

to create a "sovereign wealth fund" from the dollars generated by "importing tourists", in the way that Arab states have done by "exporting oil". "Kuwait invests in companies, we will invest in land" Nasheed said. "We do not want to leave the Maldives, but neither do we want to live like refugees in tents for many years" he added.

He wants somewhere within the region - possibly India or Sri Lanka. He said Sri Lanka and India were targets because they had similar cultures, cuisines and climates. Australia was also being considered because of the amount of unoccupied land available.

The president, a human rights activist who swept to power after ousting Maumoon Abdul Gayoom, the man who once imprisoned him, said he had already broached the idea with a number of countries and found them to be "receptive".

Environmentalists say the issue raises the question of what rights citizens have if their homeland no longer exists. "It's an unprecedented wake-up call," said Tom Picken, head of international climate change at Friends of the Earth. "The Maldives is left to fend for itself. It is a victim of climate change caused by rich countries."

- The highest land point in the Maldives is 2.4 metres above sea level, on Wilingili island in the Addu Atoll
- The Intergovernmental Panel on Climate Change predicts that sea levels could rise by 25-58cm by 2100
- The country comprises 1,192 islands grouped around 26 Indian Ocean atolls. Only 250 islands are inhabited. The population is 380,000
- The main income is from tourism, with 467,154 people visiting in 2006

The Maldives holds the record for being the lowest country in the world, with a maximum natural ground level of only 2.3 m with the average being only 1.5 m above sea level, though in areas where construction exists this has been increased to several metres.

Mohamed Nasheed is the current President of the Maldives. He is the founder and the Maldivian Democratic Party and was its presidential candidate in the October 2008 presidential election, defeating long-time President Maumoon Abdul Gayoom in a second round of voting. He was sworn in as President on November 11, 2008. Nasheed is commonly known in the Maldives as Anni and is a former member of Parliament for Malé. He was an outspoken critic of Gayoom and his policies. Due to his criticism of the government, over the years he was arrested and sentenced several times.

SOURCE: WIKIPEDIA



INDIAN MINISTRY OF COMMUNICATION

NASA/GSFC/METI/ERSDAC/JAROS



Whale Shark Park

Maldivian Protection Area

Text by Dennis Kaandorp,
Euro-Divers Diva Maldives
Photos courtesy of Dennis
Kaandorp and Yann Saint Yves

On 4 December 2008, the first Maldives Whale Shark Protection Area (MPA) meeting was hosted on the beautiful five-star deluxe resort island, Diva Maldives, located in the South Ari Atoll. The Maldives Whale Shark Research Programme (MWSRP) has been established by an international team of biologists, who since 2006, have been working to build up a profile of the whale shark population in the Republic of Maldives. The MWSRP has been invited by the former Minister of Tourism and Civil Aviation, Dr Shaugee, to assist in a community driven initiative to designate South Ari's southern outer reef as a 'national whale shark park'. The MWSRP is working hard to build strong relationships with local community representatives, and as a result, preliminary discussions with resort managers, dive center managers and island chiefs in the region regarding the development of a marine protected area have been very positive.

The meeting's aim was primarily to initiate this development by bringing together, for the first time, partners in this fight. In the meeting gathered were from the local islands: Ahmed Qasim, Ahmed Junah (assistant island chief and airport development manager from Maamigili), Mohamed Abdulla (assistant island chief Dhidhoo), Hussain Fayaz (school headmaster Digurah), Ibrahim Hassan (assistant island chief Digurah)—and from Fenfushi—Shahid Abdul Raheem (island chief). But also representatives from the resort island were present. Diva Maldives was represented by both the general manager



Maldives

strong relationships with local community representatives and as a result preliminary discussions with resort managers and island chiefs in the region regarding the development of a marine protected area have been very positive.

At the moment, the South Ari Atoll is one of the only places in the world known to have year-round Whale Sharks. This, combined with a big variety of dive sites, makes it one of the top dive



YANN SAINT YVES

THIS PAGE: Snorkeling divers are dwarfed by the gentle giants. RIGHT: Team members

Johnny Matis, the resident manager Xavier Arnoux, and the Euro-Divers Dive Center manager, Dennis Kaandorp. From neighboring resorts Euro-Divers Vilamendhoo Dive Center Manger Mike Cristiani was there and representing Holiday Island and Sun Island, Thomas Weber was present. From the initiators of the MWSRP, we had Adam Harman, Morgan Riley and Richard Rees.

The goal of the MWSRP is to be a Maldivian-run program that exists to facilitate perpetual whale shark research projects and to foster community-focused conservation initiatives within the Maldives.

The Maldives Whale Shark Research Programme (MWSRP) has been established by an international team of biologists, who since 2006, have been working to build up a profile of the whale shark population in the Republic of Maldives. The goal of the MWSRP is to be a Maldivian-run program that exists to facilitate perpetual whale shark research projects and to foster community focused

conservation initiatives within the Maldives.

Since 2006, the MWSRP has been investigating the demographics and behavioral ecology of the Maldivian whale shark sub-population through photo identification, prey surveys and collaborating on international genetic analysis and satellite tagging projects. Over three distinct field work periods, the program has logged over 350 whale shark encounters, and by utilizing photo-identification software, a database of 100 individual sharks has been compiled. The MWSRP are also currently conducting a nationwide survey to investigate whether there are any other significant whale shark aggregation sites in the archipelago.

The program has been working closely with the government, tour operators and local communities to make currently unregulated whale shark directed tourism sustainable. In June 2008, the MWSRP



DENNIS KAANDORP

gave a presentation to the Ministry of Tourism and Civil Aviation and the Ministry of the Environment, Energy and Water on the status of the whale shark population. On the strength of the evidence presented, it was requested that a workshop be organized for the MWSRP to discuss best-practices with key industry stakeholders. This workshop, also held in June, was successful and the resulting whale shark encounter policy has been officially endorsed by the government.

The MWSRP has worked hard to build

destinations, not just in the world, but also in the Maldives. Yet, we have to do our share in protecting these magical creatures. Certain rules have to be made to protect them as much as possible. Many Whale Sharks here, like other places in the world, bare scars from encounters with humans. This can be avoided by education and regulation. It became clear during the meeting that the Maldivian themselves see these

creatures as their legacy to their children.

As result of the meeting, all gathered agreed to set up a committee to achieve the goal. More meetings are expected to take place soon. ■

YANN SAINT YVES



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POINT & CLICK
ON BOLD LINKS



Gifts for Sea Lovers

for the special seastar in your life...

Edited by
Gunild Pak Symes

ALL IMAGES COURTESY OF THE MANUFACTURERS

South Sea Pearl Pendant

Pure luxury, this sparkling starfish South Sea pearl pendant is donned with .13 carats of diamonds graded at GH/SI2. The pearl is a true South Sea pearl of AAA quality, which is blemish free and has excellent luster. Loaded with 20 diamonds the setting is solid 14k white gold as is the chain. Size of pendant: 11.5mm. Sale price: US\$595.00 www.thepearloutlet.com



Nudibranch Bangles

This bangle-style bracelet is handmade entirely from polymer clay by Dee Wilder of Maladoro based in Mississippi, USA. An original design, each piece is truly one-of-a-kind. The bracelet is flexible, strong and lightweight. It will expand to fit tighter on a larger wrist, and spring back to its original size of approximately 7.5 inches when removed. The bangle is durable and lightweight, smooth and silky to the touch. Signed on the back by the artist, it also makes a nice small sculpture on your desk or table. Price: US\$60.00 each. www.etsy.com



Ollie the Orca is handmade of solid poplar harvested in South Carolina by MyDaddyPuzzles. Ollie has 8 pieces and is a great puzzle for children ages 6 and up. Puzzle dimensions are 10 1/2" wide by 8" high by 3/4" thick. Hand sanded and painted in



Alexandria, Virginia, the puzzles are painted both the front and back, so children may need to flip the piece to find its home. This added level of complexity teaches the child to explore new dimensions to complete the puzzle. Price: US\$20.00 www.etsy.com

Dexterous Dolphin

This lovely ceramic dolphin sculpture is an original design handmade by Daga Design in Minneapolis, Minnesota, USA. Sculpting, moulding, casting and glazing are all done by hand at the studio. Even the glazes are made in house. No two pieces are alike as the glazes react and set differently on each piece. Eco-conscious, Daga Design studio is 100% powered by wind. Size: 7 inches. www.etsy.com



Cajun Papa

Seahorse

is an original handmade design by stay-at-home mom, Erin Lee, for Snaukter. This squishably-soft yet durable seahorse toy is safe for babies. It is made from a prewashed ribbed wool/nylon blend recycled sweater with a special pouch on his belly for his two little babies made from a recycled linen/cotton blend dress. Size: Pappa 13"/33cm; Babies 6"/15cm long. Price: US\$40.00 www.etsy.com

Fishy Lollipops

Each fish has a flavor to match its color: Green for Green Apple, Pink for Strawberry, Yellow for Lemon, Purple for Grape. Sweet! www.candywarehouse.com





Sea Lovers *...Gifts*

Edited by
Gunild Pak Symes

Chocolate Fish

Can chocolate fish be cute? These are. Made in Vermont from all natural gluten free ingredients, these solid milk chocolate fish are hand decorated with white and dark chocolate elements. Individually gift wrapped in a ribbon bow tied bag. Dimensions about 4-1/2 x 3 inches. Price: US\$11.50



Lakechamplainchocolates.com



Tattoo Octopus T

Hand screen printed "Polynesian Tattoo Octopus" designed by PhippsArt is printed on an organic basic crew t-shirt, which is lightweight, comfortable, ultra soft, and made of 100% organic cotton. Black ink on Ocean. Price: US\$19.00

www.etsy.com



Lovable Soapy Sea Creatures

Originally designed for school projects, dioramas, and desktops, these realistic hand-painted miniatures of sea creatures are hidden inside handmade soaps by Good Karma Soaps in Raleigh, North Carolina, and include octopus, starfish, dolphins, stingrays, sharks, sea turtles and more! The added bonus is clean hands for the whole family, because to claim the hidden creature inside the soap, kids have to wash their hands. They are made in small batches

with the finest glycerin to produce a smooth, creamy bar of soap with lots of lather. Glycerin moisturizes the skin and will not leave that dry itchy feeling that many commercial soaps do. Price for a set of two different ocean life animal soaps: US\$7.00. Set of three shark soaps: \$9.00. www.etsy.com



Scuba Diver with Mermaid

This whimsical model of a scuba diver carrying a mermaid is individually hand-crafted in the UK from 100 percent silicate glass. Very popular as wedding gifts or cake toppers, these models

measure approximately 14 cm plus plinth. Other models such as 'MkV Diver with Mermaid' and 'Scuba Diver with Bride' are also available. Price: GB£60.00-80.00 www.diversgifts.com

For Sea Lovers Only



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Jim Bram

A talk with NAUI's president

Text by Peter Symes
All photos courtesy of NAUI

Where is NAUI heading?

NAUI turns 50. Are the founding principles still valid half a century later, have they changed, and how does the organization plan to evolve in the next 50?

NAUI was formed 1959 in support of its members training the public to safely dive anywhere in the world. That is a goal that will be valid as long as there are people who desire quality training when learning to scuba dive.

What do you see as the main challenge lying ahead for the dive industry?

Surviving the current economic downturn will be the most significant issue for each of the diving community stakeholders, i.e. retailers, resorts and live-aboards, manufacturers, training organizations and publications, to address in the short term. I am pleased with our financial position and brand strength as there is always a flight to quality during tough economic times. I believe we will do well as the corrections in the global markets work themselves out.

In the longer view, the diving community should look to rekindling our "adventure" reputation amongst the younger generations that we once enjoyed. When divers were viewed as explorers and risk takers, the diving community competed well with mountain

biking, skiing, and other outdoor pursuits. I believe the community is being disserved by promoting the perception that scuba diving is something anyone can do as one of many distractions while on a tropical vacation. While it may be true that anyone can learn to dive, passionate divers are the engine driving the growth of the community. These are the people we should be celebrating and courting for the future of our sport.

How is NAUI going to address these issues and work with the industry?

I believe I've answered the first challenge, and as to the second, we are excited to be celebrating our 50th anniversary of "diver development" rather than just certifying course completers. We're excited by our continuing corporate alliances with Walt Disney World Resorts and NASA's Neutral Buoyancy Laboratory and their environmental and youth outreach programs. We are proud to work with groups like Scubans International who are also partnering with NASA, NOAA and the National Marine Sanctuaries Program cooperating in outreach to middle and high schools here in the United States using NAUI scuba diver training to foster a love of science and the aquatic environment and produce future generations of diving leaders and scientists.

There is also a newly formed program called Oceans for Life with the US Government, NASA, National Geographic and NAUI using a similar concept with NAUI scuba diver training to foster aquatic awareness and respect to many visiting families of the coalition partner nations of the Middle East. Our corporate offices

in the Pacific Rim have conducted many marine enrichment programs for youth in Hong Kong, Palau and Malaysia to name just a few. Members in Kuwait were celebrated recently when they were awarded the NAUI Environmental Enrichment Award for their successful completion of the largest artificial reef ball installation in the world.

The population of scuba divers seems to have gotten pretty gray in the top. We are evidently facing a generation gap and recruitment challenge. How do we best reach out to the younger generation and get them engaged in diving?

This is not a new or significantly unusual observation that each generation in a community inevitably faces. The founding generation of the diving community began retiring from leadership positions as little as a decade ago, and many are still in ownership or senior management positions, which is not surprising in a community that formed only 50 years ago. It is not unusual to see elders in top management positions in any business community and can just as easily be characterized as a sign of a healthy maturing business that can support participants into their retirement years. As I said

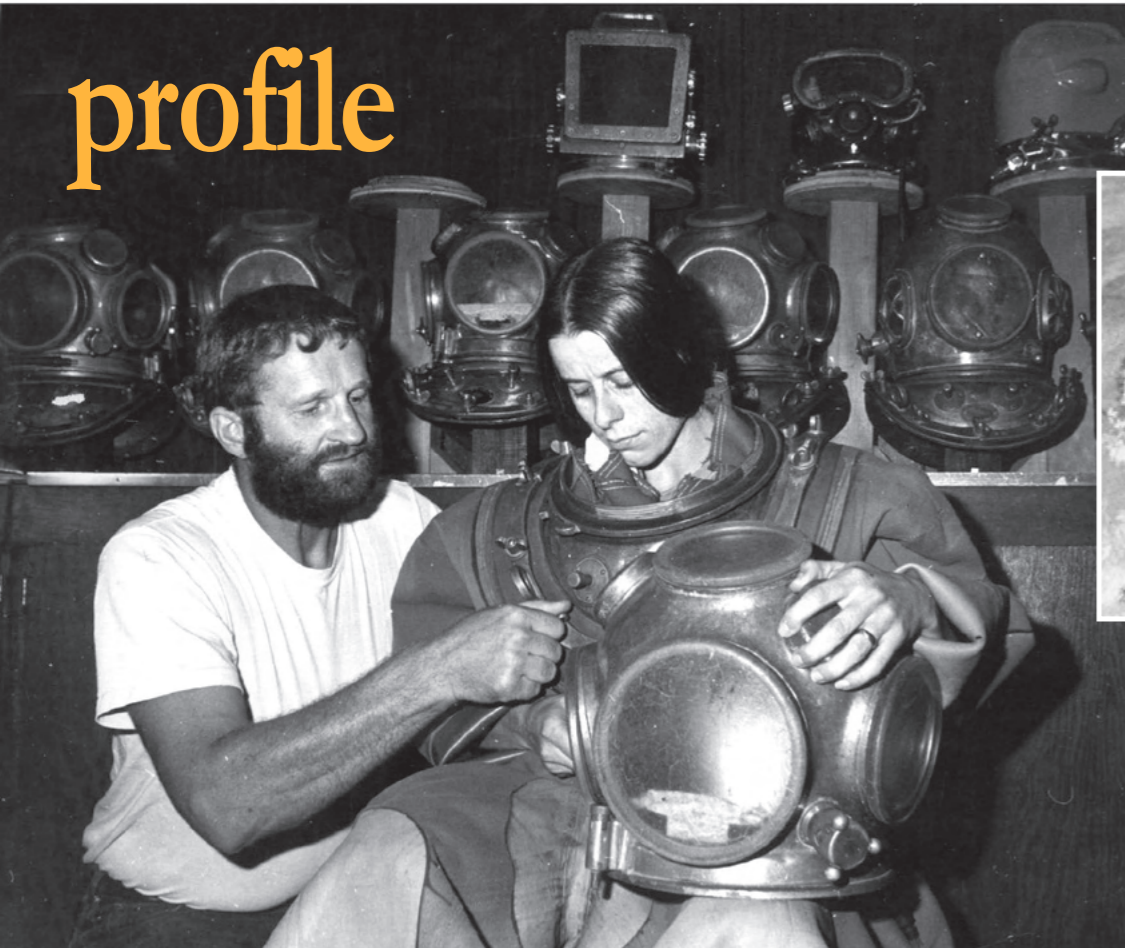
We are excited to be celebrating our 50th anniversary of "diver development" rather than just certifying course completers.



NAUI President, Jim Bram at his desk



Jim Bram



THIS PAGE: Historical images from NAUI archives

before, there is no shortage of focus or effort on reaching out to younger generations.

Does the recreational diving industry have enough competitive strength on today's frantic market?

There will be some casualties, and no brand or company can be considered immune. However, as long as there is an interest in learning to dive, or vacationers looking for something extra in their adventures, there will be a diving community to support it and a need to be trained to safely participate.

What do you see as the main competition or threats?

This may seem like a theme but

I believe that if we continue to dilute the image of scuba diving as an adventurous pursuit, then younger generations will start seeking other activities that are perceived as being more "out on the edge." The proliferation of training companies and dilution of quality training as they compete for a shrinking piece of a contracting market is worrisome because of the desperate measures some will resort to, and all too often, educational shortcuts can fuel frustrated participants at best and produce a negative word-of-mouth advocate at worst.

What is so great about

diving anyway?

For those who are adequately trained, it is a serene experience of weightlessness in a wild environment with alien-looking creatures doing strange things and new wonders around every outcropping. It is a shared experience with dive partners and fellow divers who, in their everyday lives, may be scientists, CEOs, university students or carpenters chattering about the most

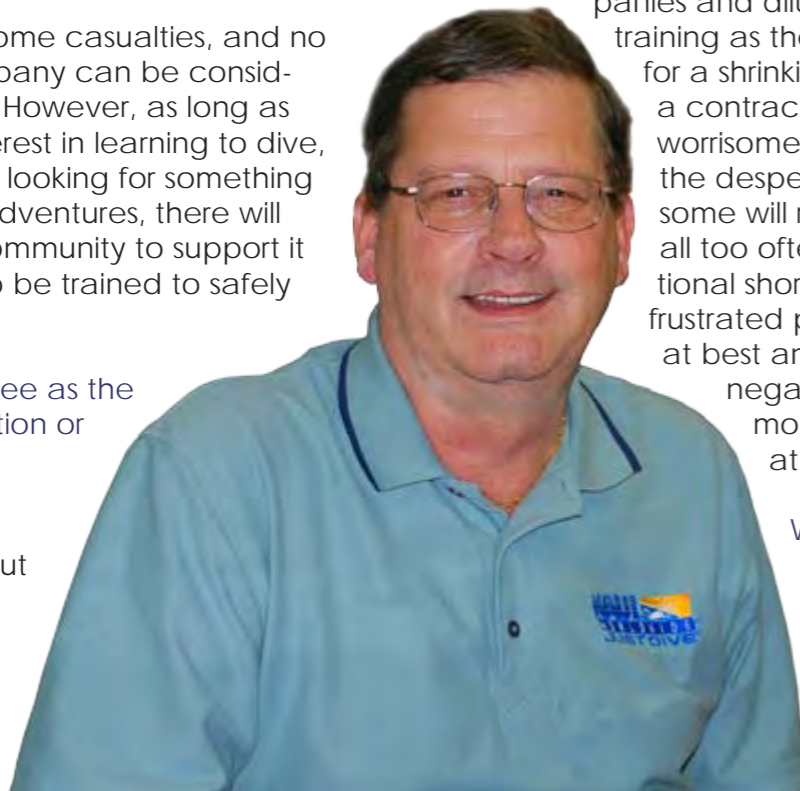
amazing sights just witnessed on the most recent dive. It is the ride aboard the dive charter that can be a wonderful sunny day or a night ride in wild seas pitching to and fro until the lee shore of an island is reached and anchors are set in preparation for the day's diving. It is all those things and

If we continue to dilute the image of scuba diving as an adventurous pursuit then younger generations will start seeking other activities that are perceived as being more "out on the edge."

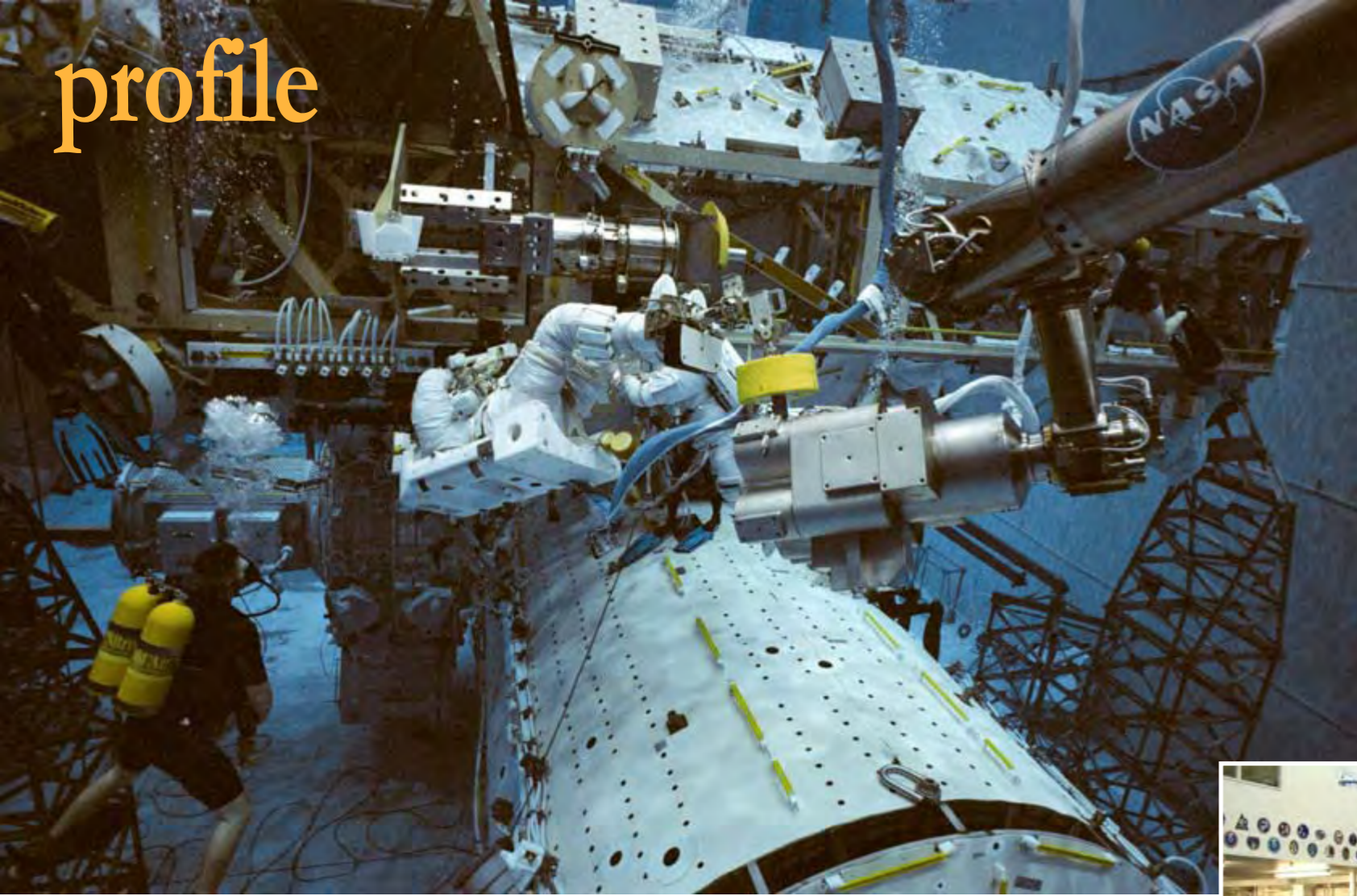
more with every adventure worthy of a journal and memories that last a life time.

What is the best experience diving has given you?

I have to say that it was being introduced to the NAUI family of members around the world, the friendships formed and colleagues met along the way.



Jim Bram



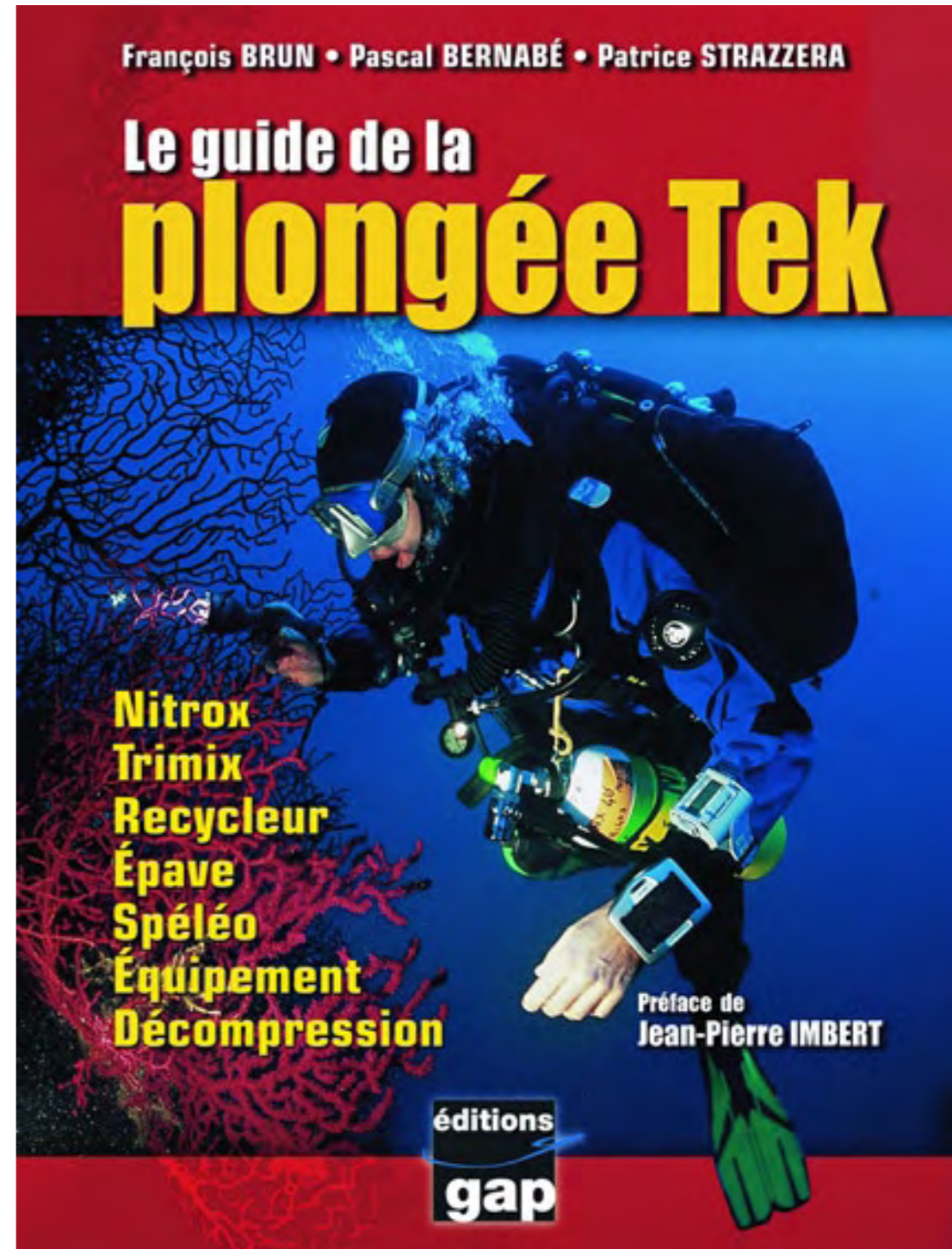
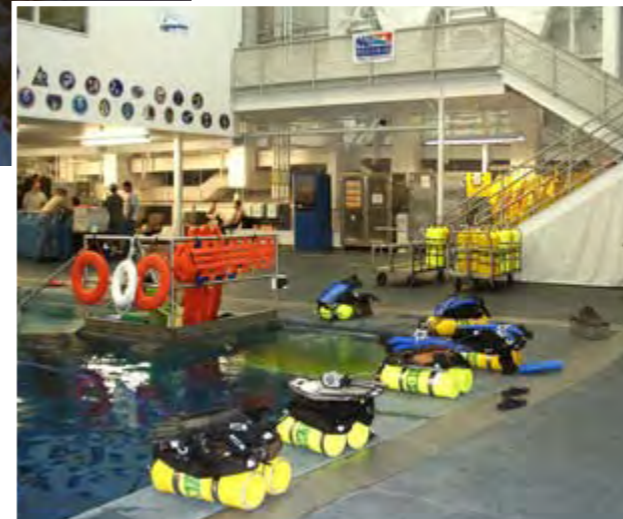
THIS PAGE:
Scenes from
NASA's Neutral
Buoyancy
Laboratory

Jim Bram

This message is carried throughout our educational support materials describing our role as stewards of the aquatic environments and ambassadors of good behavior to those fellow users above and below the surface of the water. ■

marine ecosystems?

Climate change is a constant and will continue to change long after humans are no longer present on this planet. However, NAUI's mission includes not only educating the public to



There is much more to come, I'm sure.

What sets NAUI apart from other diver training agencies?

NAUI is the only non-profit organization whose members can directly affect the

future of the organization. We are reminded every day, and I insist that our staff in each of our offices around the world remember that we can only be successful if our members are successful.

What is the next development? What new technologies do you plan to embrace in

terms of marketing/communication, education/learning and diver training/equipment?

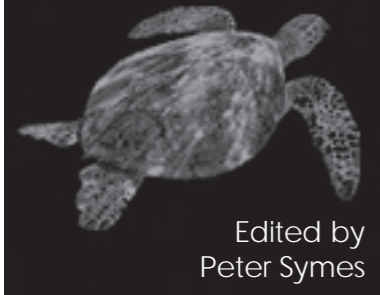
There are exciting things forthcoming, but you'll have to wait and be surprised just like everybody else—especially our competitors.

How can divers and training agencies, like NAUI, play a role in tackling the challenges from climate change and the deterioration of

safely dive, but to preserve and protect the world's aquatic environments. To that end, each of us as a resource user can work to leave a dive site in better shape than we found it and certainly no worse off for us having visited.



Astronaut Michael L. Genhardt and NAUI President Jim Bram



Edited by Peter Symes

Text and photos by Kurt Amsler

Operation Leatherback 2009

A Conservation Project in West-Papua, Indonesia

SOS-Seaturtles and SOLO (Save Our Leatherbacks Operation) will start joint protection measures in West Papua, Indonesia, in favour of Leatherback sea turtles, these extremely endangered marine animals.

the Galapagos or Seychelles. In contrast to the other sea turtles the Leatherback does not have a hard shell or scales. Instead, its carapace is covered with a leathery skin, from which it gets its name. Leatherback turtles are great divers capable of holding their breath for hours and going as deep as 1200m in their hunt for jellyfish upon which they feed.

Plastic

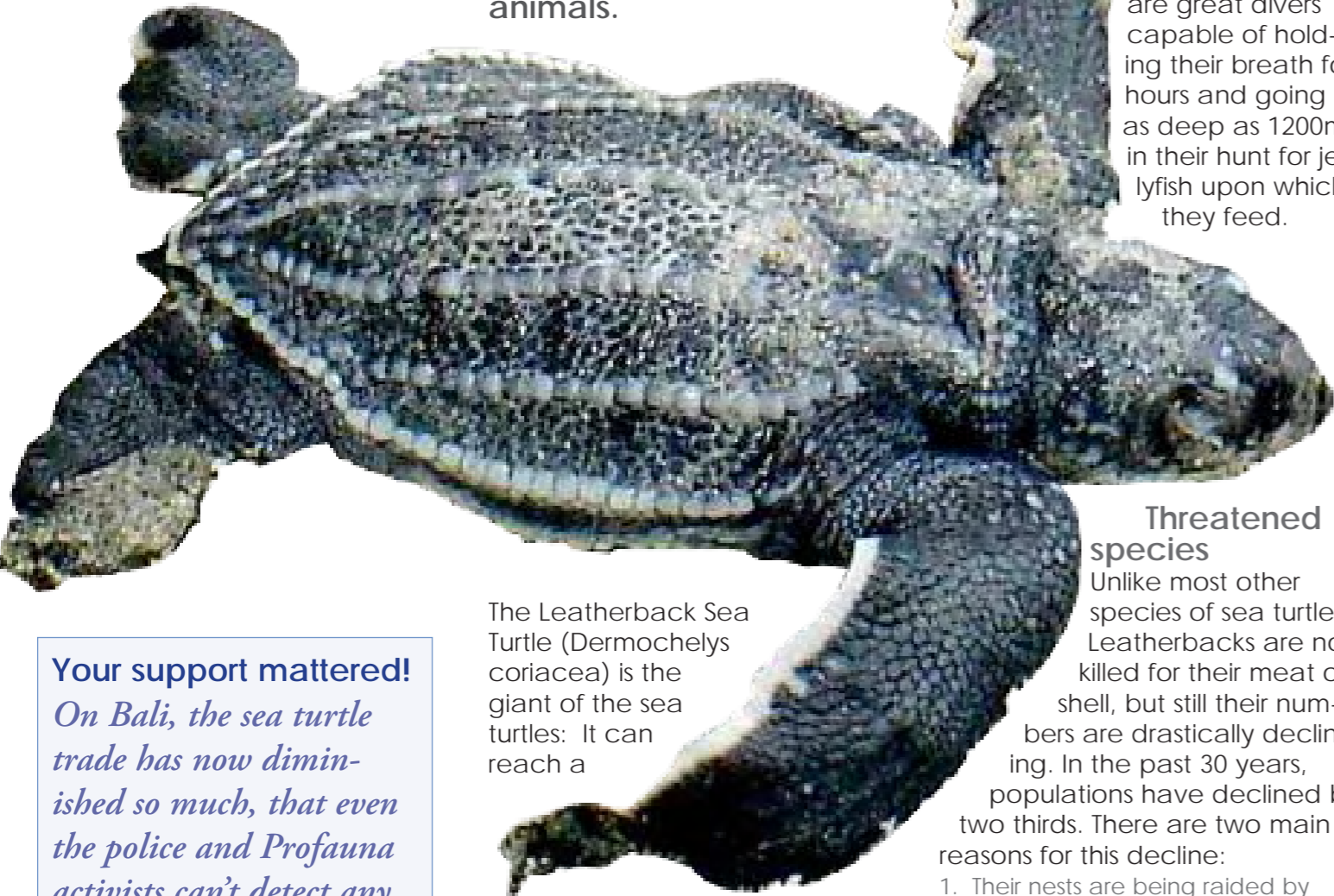
Another big threat comes from plastic bags. Our seas are becoming increasingly polluted with an alarming quantity of trashed plastic drifting around in them. Leatherbacks feed almost exclusively on jellyfish, and as drifting plastic bags can look very much like jellyfish, they are therefore often eaten by turtles who mistake them for food. The result is blockages in their digestive tracts, starvation and ultimately death. Studies of dead Leatherbacks have found that half of the deceased animals had plastic in their digestive tract.

Other problems include the degradation and loss of nesting beaches, increasing levels of unknown diseases and a rise in sea level, which causes some nests to be flooded at high tide.

The more animals that reach the water safely, the more will return to reproduce in the future. There are many threats to female turtles during nesting, and we have to do something about it. A piece of driftwood or litter can block an exhausted sea turtle's way back to the sea, leaving it to die from heat stroke during the day. Sea turtles have braved natural threats for over a hundred million of years—but they are powerless against manmade threats!

The decrease in leatherback numbers is also upsetting the balance of the ocean. As we said before, Leatherbacks mostly feed on jellyfish, and an adult can eat about 100 kg of jellyfish per day. It's easy to see that a decrease in the number of Leatherbacks will lead to a rise in the numbers of jellyfish.

What you can do to help
While the problems of overfishing and ocean pollution ultimately need to be addressed and solved on a political level, there are a number of other things that we can do to help. As consumers, we have a lot of power, and if enough of us choose to buy and eat fish only from ecologically sus-



The Leatherback Sea Turtle (*Dermochelys coriacea*) is the giant of the sea turtles: It can reach a

length of up to 2.5 meters and a weight of up to 900 kg. This does not only make it bigger than all other sea turtles but also bigger than its terrestrial relatives such as the giant tortoise from

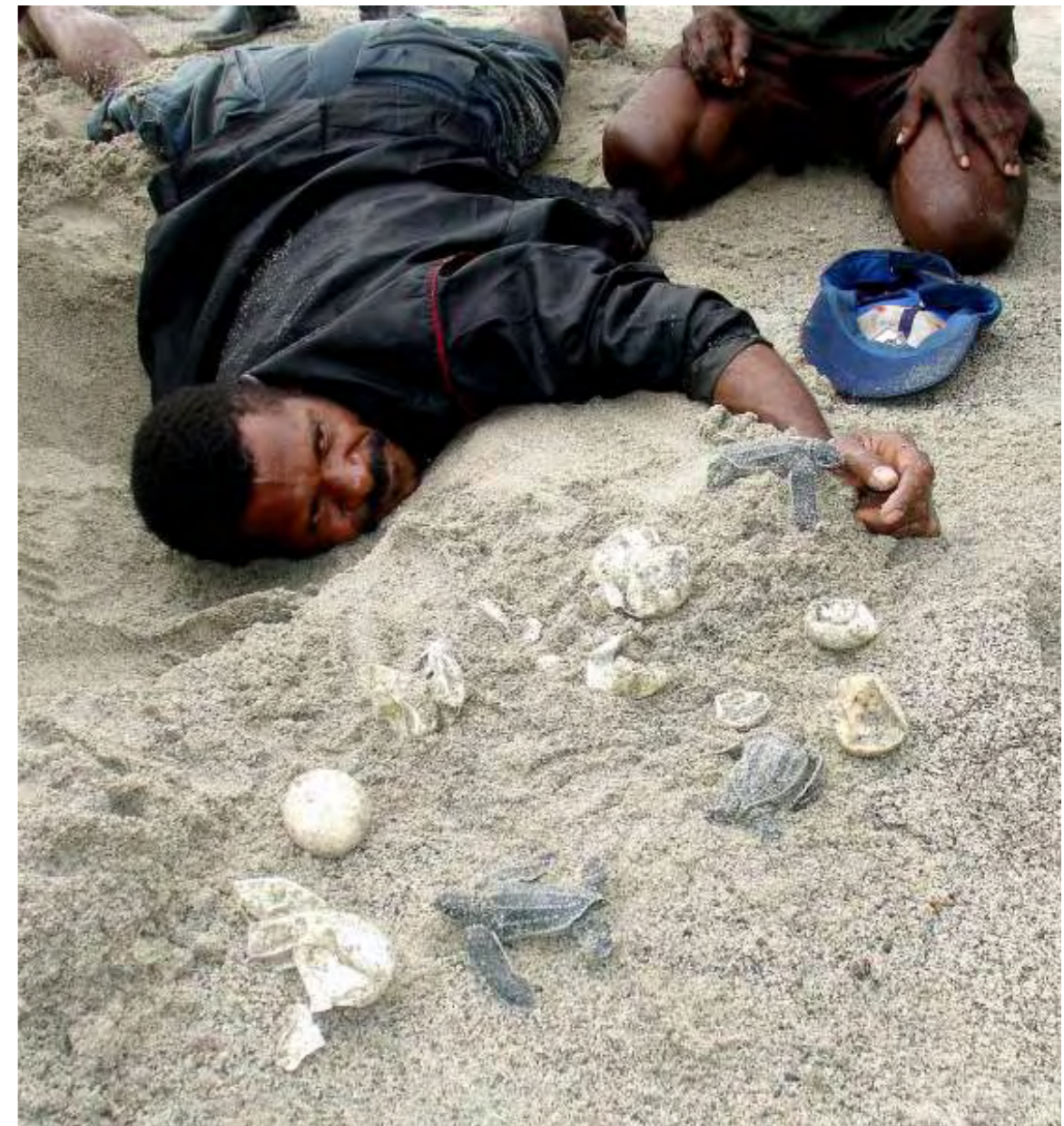
Threatened species

Unlike most other species of sea turtle, Leatherbacks are not killed for their meat or shell, but still their numbers are drastically declining. In the past 30 years, populations have declined by two thirds. There are two main reasons for this decline:

1. Their nests are being raided by poachers who can make a lot of money from selling the eggs as aphrodisiacs on the Asian black market.
2. Accidental by-catch by fishermen who use drag nets, drift nets and long-lines.

Your support mattered!

On Bali, the sea turtle trade has now diminished so much, that even the police and Profauna activists can't detect any suspicious activity anymore. We can therefore declare a significant battle won!



Making sure that the newly hatched baby turtles will make it to the sea

tainable fisheries using methods which do not harm turtles, then this will

force a change. Similarly, choices that we make as individuals about litter can effect great change when the same choice is made by enough people. We can choose not to drop litter, to attend beach clean-ups

or even just to collect rubbish as we walk along the beach.

SOS Seaturtles and SOLO will focus on three main activities:

- Protecting nests from poachers and predators
- Relocating nests to safer places and surveillance during incubation and hatching
- Active support of females during nesting and on their way back to the water



One of the focus points is relocating nests to safer places

“Operation Leatherback”

After years of fighting tirelessly against the sea turtle slaughter on the island of Bali, SOS SEA TURTLES, together with the Indonesian animal conservation organisation PROFAUNA (www.profauna.or.id) have almost won their battle! The sea turtle trade diminished so much that even



the police and PROFAUNA activists can't detect any suspicious activity anymore. We can therefore declare a significant battle won, remembering that just 20 years ago over 20,000 sea turtles were slaughtered there annually! www.sos-seaturtles.ch

leatherbacks.org), we will have a partner, who is already successfully performing preliminary work in Irian Jaya. This organization was founded by **Larry McKenna (link to Interview)**, an award-winning retired US Airforce colonel. During the last nesting season, they got the local population of the nearby village involved with the protection work and were able to save hundreds of sea turtle nests.

In parallel to the ongoing campaign to stop the illegal sea turtle hunt in WAKATOBI National Park in East Sulawesi, we will attend to a new project in 2009: Helping the Leatherback sea turtles to survive.

Partnership

In “Save Our Leatherbacks” (www.saveourleatherbacks.org),

Surveillance during incubation and hatching is another main activity



Aims of the project

- To develop efficient means to protect sea turtle nests from being raided or destroyed by humans or animals until the baby turtles hatch
- To relocate eggs if they are in danger of overheating or flooding
- To educate and instruct the villagers in becoming rangers, who will patrol the coastline by boat in order to protect the nesting beaches from poachers and natural predators
- To improve the living conditions in the village, which includes the channelling of spring water, supporting school children by providing educational books and helping adults to create crafts. We will also be pushing for the local people of this area to be supported politically.

Financing

These protection activities—like all projects from SOS-Seaturtles and SOLO—are being supported by donations from the dive and travel industry as well as from individuals. All donations will be fully used for the sea turtle protection project. None of the donations will be spent on administration. ■

Larry McKenna is the founding director of Save Our Leatherbacks Operation (SOLO), which had its beginnings in the spring of 2005.

McKenna is a former United States Air Force aviator with a chest full of combat decorations. He served for 26 years in uniform while flying and designing new planes and helicopters before going onward to enter the commercial sectors of business as an International banker, real estate developer and hotel/resort operator in the USA, in Central America and the Pacific region of islands.

McKenna is now a dedicated environmentalist helping to save the Leatherback sea turtle from its rapid spiral into extinction. In 1984, he founded his own production studio to make his promotional films. McKenna's base of operations is Kingwood, Texas (close to Houston), but he is rarely there because of his work and can usually be found in the Pacific/Asia region. He is currently involved with conservation efforts to save the Pacific Leatherback sea turtles from a rapid extinction. ■



Larry McKenna (left) with Kurt Amsler on Bali in 2008



Are loggerhead territories defined by ocean salinity?

The salinity of sea water seems to act as a “barrier” preventing sea turtles from moving between the areas of the Western Mediterranean.

Spanish researchers concluding a 15-year running tagging experiment in which more than 1500 juvenile loggerhead turtles were tagged and repeatedly recaptured have demonstrated that loggerhead turtles from the south and north of the Western Mediterranean do not mix. The majority of the turtles were recaptured in the same region where they were tagged. The study, which was recently published in *Scientia Marina*, reveals only limited exchanges between the immature turtles.

In terms of origin and place of birth, the Atlantic turtles tend to stay within the southern Mediterranean, while the Mediterranean ones establish

themselves in the northern area, although the occasional individual does move from one area to the other, with some even traveling as far as the Caribbean. “This limited exchange between the north and the south means the populations do not interbreed,” says Mónica Revelles, lead author of the study and a researcher with University of Barcelona, Spain.

Oceanic

The study shows that the immature individuals are oceanic (unlike the adults, which remain close to the coast), but that they do not stray beyond the areas they are used to. For this reason, the experts believe that water salinity could play a significant role. Maps of ocean currents and

salinity show that salinity is lower in water masses moving around the southern area than in those circulating around the northern part of the Western Mediterranean.

Same species, different genes

The researchers say the different origins of the loggerhead turtles mean those from the south and north of the Mediterranean exhibit “slightly” different behaviours. They are the same species but with genetic and morphological differences between the Atlantic and Eastern Mediterranean populations, with the Atlantic animals being larger, while the Mediterranean ones grow less but become adults earlier. ■



This pewter sea turtle box is part of the Grant Dawson Collections representing endangered and threatened species. Committed to sustainable products and practices, the company won an award from the Sustainable Furniture Council in 2008

NOAA publishes new plan for the Northwest Atlantic Loggerhead Turtle

NOAA’s Fisheries Service and the U.S. Fish and Wildlife Service have announced a revised recovery plan for the Northwest Atlantic population of loggerhead turtles.

The revised plan reviews and discusses the species ecology, population status and trends, and identifies threats to the loggerhead turtle in the northwestern Atlantic. It lays out a recovery strategy to address the threats, based on the best available science, and includes recovery goals and criteria. In addition, the plan identifies actions needed to address the threats to the species and achieve recovery.

This revised plan is significant in that it identifies five unique recovery units, which comprise the population of loggerhead turtles in the Northwest Atlantic, and describes specific recovery criteria for each recovery unit.

Loggerhead turtles in the northwestern Atlantic mature to reproductive age at about 35 years. During their lifetime, they travel and live in the waters of several nations, including the U.S. They face many challenges and threats, including development and loss of nesting habitat, bycatch in fisheries, and degradation of their marine habitats. The recovery of any species takes time, but scientists say that for the loggerhead turtle, it could take even longer due to the long time to reach maturity and the variety and magnitude of the threats they face. ■

“Hello there!”
Loggerhead turtle (*Caretta caretta*) comes up for a peek



Coalition threatens lawsuit over Loggerhead Deaths

A coalition of conservation groups has notified the US National Marine Fisheries Service of its intent to file a lawsuit as early as March if the agency does not act immediately to protect imperiled sea turtles in the Gulf of Mexico.

The action comes after fisheries observer data showed that the Gulf of Mexico bottom longline fishery, which harvests reef fish like grouper and tilefish, resulted in the capture of nearly 1,000 threatened and endangered sea turtles between July 2006 and the end of 2007.

The coalition urges that the commercial bottom longline fishery be suspended until the federal agency meets its legal obligations under the Endangered Species Act to ensure that the fishery does not imperil sea turtles and other threatened species in the Gulf of Mexico.

Even though the fishery has far exceeded the number of turtles it is allowed to take under the Endangered Species Act, the Fisheries Service, has declined to close the fishery while it studies options for reducing turtle take, a decision the conservation groups claim is illegal.

“Allowing this fishery to continue to kill threatened and endangered turtles while the government studies the problem is irresponsible and illegal,” said Andrea Treece, an attorney with the Center for Biological Diversity.

“Now that the National Marine Fisheries Service knows the longline fleet is jeopardizing the future of the turtle populations, they have a duty to act immediately,” said Cynthia Sarthou, executive director of the Gulf Restoration Network. ■



Does a sea turtle find its birthplace by its 'magnetic address'?

Who hasn't been mystified by how some marine animals manage to find their way back to their birthplace to reproduce after migrating across thousands of miles of open ocean? Now, marine biologists at the University of North Carolina believe they might have found the answer.

The Earth's magnetic field varies predictably across the globe, with every oceanic region having a slightly different magnetic signature. By noting the unique "magnetic address" of their birthplace and remembering it at the beginning of their lives, animals such as salmon and sea turtles may be able to distinguish this location from all others when they are fully grown and ready to return years later, researchers propose.

Magnetic maps

Previous studies have shown that young salmon and sea turtles can detect the Earth's magnetic field and use it to sense direction during their first migration away from their birthplace to the far-flung regions where they spend the initial years of their lives. In 2001, the researchers showed that baby turtles use magnetic information to help guide them during their first migration across the Atlantic Ocean. And in 2004, they discovered that sea turtles several years of age possess a more sophisticated "magnetic map" sense that helps them navigate to specific areas rich in food.

What's new?

The new study, just published in the science journal *Proceedings of the National Academy of Sciences* seeks to explain the more difficult navigational task accomplished by adult animals that

Lohmann, Ph.D., professor of biology with the University of North Carolina and lead author of the study. "We hope that the paper will inspire discussion among scientists and eventually lead to a way of testing the idea."

The study notes that the Earth's magnetic field changes slightly over time, and thus, probably only helps animals arrive in the general region of their birthplace. Once an animal is close to the target, other senses, such as vision or smell, may be used to pinpoint specific reproductive sites. Salmon, for example, are known to use smell to locate spawning grounds once they have

return to reproduce in the same area where they themselves began life, a process scientists refer to as natal homing.

"What we are proposing is that natal homing can be explained in terms of animals learning the unique magnetic signature of their home area early in life and then retaining that information," said Kenneth

Only 1 in 4000 survive

Lohmann said one problem making it difficult to test the new theory is the low survival rate of sea turtles. Only one out of about 4,000 baby sea turtles survives to adulthood and returns to its natal site to breed. A similarly small percentage of baby fish survive. ■

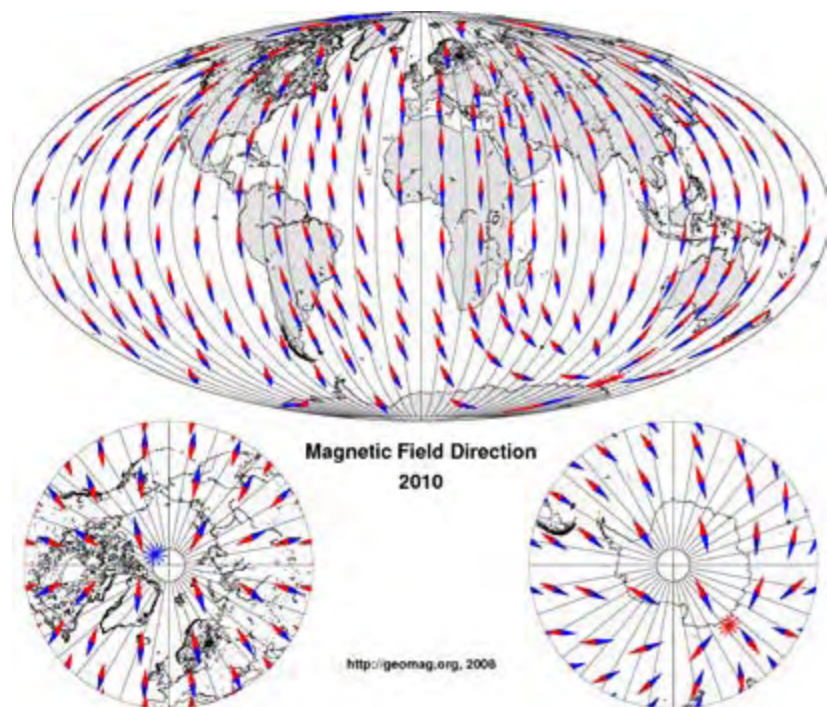
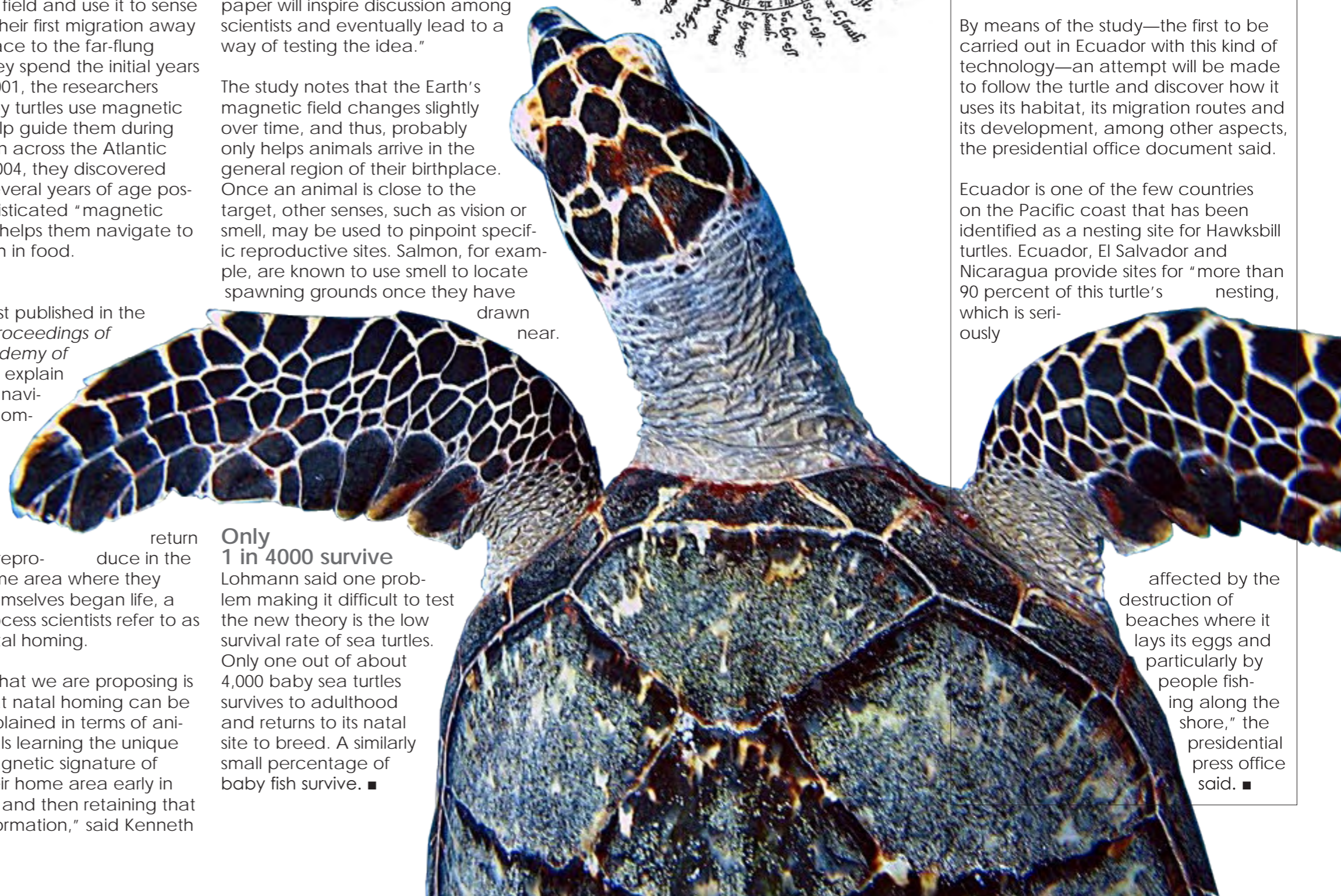
Ecuador tracks sea turtle by satellite

A Hawksbill turtle, a critically endangered marine turtle species that nests along the Ecuadorian coast, will be tracked via satellite for the purpose of studying its behavior, the Ecuadorian presidential press office said.

By means of the study—the first to be carried out in Ecuador with this kind of technology—an attempt will be made to follow the turtle and discover how it uses its habitat, its migration routes and its development, among other aspects, the presidential office document said.

Ecuador is one of the few countries on the Pacific coast that has been identified as a nesting site for Hawksbill turtles. Ecuador, El Salvador and Nicaragua provide sites for "more than 90 percent of this turtle's nesting, which is seriously

affected by the destruction of beaches where it lays its eggs and particularly by people fishing along the shore," the presidential press office said. ■



reviews



Books Film DVDs CDs

Edited by Catherine GS Lim,
Gunild Symes & Peter Symes

POINT & CLICK
ON BOLD LINKS

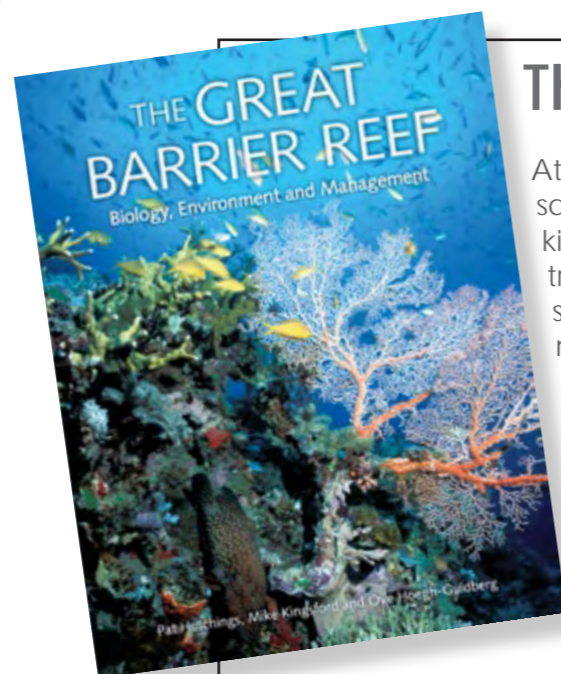


Coral Reef Adventure

Ocean explorers Howard and Michele Hall deliver a spectacular IMAX adventure with footage from pristine coral reefs of the South Pacific. Joining them on the production are Jean-Michael Cousteau, deep reef scientist Richard Pyle

and Fijian diver Rusi Vulakoro, who explore and capture on film the diverse and magical underwater world of coral reefs on our planet. While the film features the beauty of the reefs, it also raises awareness of the tragic loss of many of these fragile eco-systems.

Starring Liam Neeson, Howard Hall, Michele Hall, Jean-Michel Cousteau, Rusi Vulakoro
Directed by Greg MacGillivray
Written by Stephen Judson, Jack Stephens, Osha Gray Davidson
Produced by Greg MacGillivray, Alec Lorimore, Chat Reynders, Christopher N. Palmer
Format: Color, Dolby, DTS Surround
Sound, Widescreen
Studio: Image Entertainment
Run Time: 45 minutes
ASIN: B001CITQZ4
www.amazon.com



The Great Barrier Reef

At 344,400 square kilometres in size, this marine park is home to one of the most

diverse ecosystems on the planet. Included in this comprehensive guide are descriptions of the organisms and eco-systems of the Great Barrier

Reef, as well as influential biological, chemical and physical processes. Current issues such as climate change, coral bleaching and coral disease are addressed as well as the challenges of coral reef fisheries. The book provides a field guide to help people identify common flora and fauna on the reef as well information on animal behavior and roles the biota play. With contributions from 33 international experts, the beautifully illustrated guide will be an asset to reef enthusiasts, tourists, students, researchers and environmental managers. While written with an Australian focus, the

book can also be used as a reference for most of the coral reefs of the Indo-Pacific region.

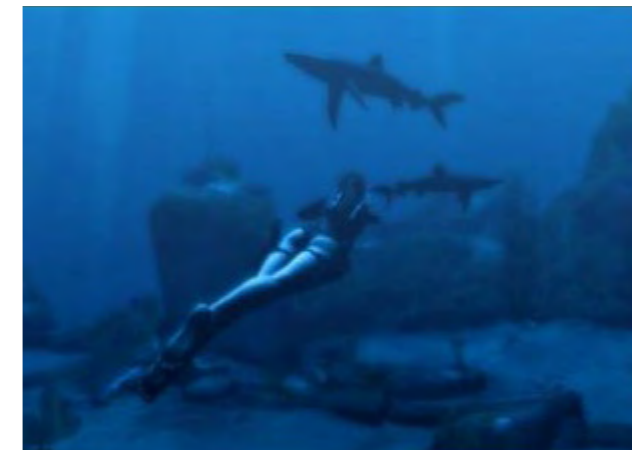
The authors are Pat A Hutchings, Senior Principal Research Scientist at the Australian Museum; Michael Kingsford, Head of School of Marine Biology and Aquaculture at James Cook University; and Ove Hoegh-Guldberg, Director of the Centre for Marine Studies at Queensland University. Paperback, 392 pages
Publisher: CSIRO PUBLISHING
Published: November 2008
ISBN: 9780643095571
www.publish.csiro.au
www.springer.com



Tomb Raider: Underworld

This video game for PlayStation 3 by Eidos takes off where *Tomb Raider: Legend* left off. It introduces a new, interactive playing ground that gives players an opportunity to immerse themselves totally in the game. Once again, players take the role of Lara Croft as she explores exotic places in the Arctic, Mexico, and under the Mediterranean Sea.

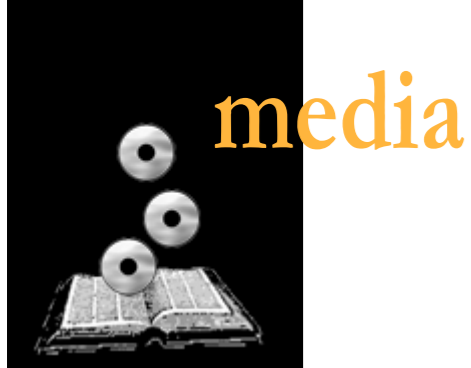
ASIN: B0012N746W
Media: Video Game
www.amazon.com



Shark Handbook

One of the world's leading shark experts, Greg Skomal—aka the "Shark Guy" on Discovery Channel—is affiliated with the Woods Hole Oceanographic Institute and has authored this comprehensive field guide to swimming with sharks. Skomal has compiled a complete listing of every known shark in existence as well as some extinct species illustrated with stunning images by awarding winning National Geographic photographer, Nick Caloyianis. Information shared about sharks includes their life cycle from birth to death, anatomy, distinguishing markings and features of each type of shark, development of their teeth, hunting and attack strategies, and the importance and purpose of sharks within our eco system.

Paperback: 280 pages
Publisher: Cider Mill Press; 1st edition
Published: July 1, 2008
ISBN-10: 1604330074
ISBN-13: 978-1604330076
Price: US\$10.17
www.amazon.com



media

Cave Diving Articles

& Opinions: A Comprehensive Guide to Cave Diving and Exploration. This new book brings together a collection of articles written by caving professionals like Jarrod Jablonski, Lamar Hires, Hal Watts, Jeff Bozanic, Ron Simmons, etc. Within its covers, you'll learn about the many aspects of cave diving, from the geology, equipment, fitness, propulsion techniques and gas supply management to cave photography, rebreathers, low visibility diving, sump diving, cyberdiving and even survival psychology and team diving methods. The illustrations and also photographs of Florida Springs are an added bonus. Written for cave divers at all levels – from the beginner to the seasoned professional – this textbook easily serves as a

valuable reference book. The fact that it has been edited by Jill Heinerth, a pioneer cave diver and inaugural inductee into the Women Divers Hall of Fame, and co-editor Bill Oigarden, with his extensive experience in cave diving, adds to its credibility and worth.

Edited by Jill Heinerth and Bill Oigarden
 Published by Heinerth Productions
 Published: 2008
 ISBN 9780979878909
 Price: \$42.95
Secure.nsscds.org



Guardian's Keep

Author and dive instructor, Eric Douglas, delivers another adventure above and below the water with his third dive novel in the Mike Scott series. The story follows a beautiful archeologist, Dr. Francesca DeMarco, who is investigating an underwater site off the Adriatic Coast of Italy. As she pursues stories of a mysterious group of Guardians, she meets roadblocks set by someone attempting to keep her from discovering the truth. With the help of a news

photographer on assignment, Mike Scott, Demarco strives to unlock the mystery of the Guardians, while a group of delusional fanatics strives to stop them at all cost. Hot on the trail of a religious artifact lost in Jerusalem in ancient Roman times, they could find themselves locked permanently in a tomb instead.

Paperback: 300 pages
 Publisher: PublishAmerica
 Published: December 1, 2008
 ISBN-10: 1607038382
 ISBN-13: 978-1607038382
Amazon.com

2009 Diving Almanac & Book of Records

The latest edition of the Diving Almanac & Book of Records is the perfect way to start off the new year. With listings of about 500 diving records – spanning the gauntlet from the first underwater radio show, the deepest wreck dive, the thickest log book, to the first all-glass underwater restaurant, the loudest animal in the ocean and the largest underwater wedding – it's sure to yield hours of leisure, albeit sometimes envy-filled, reading.

However, this is more than the diving world's version of the Guinness Book of Records. Besides the long list of Who's Who, this annual compilation also includes a comprehensive listing (think 'Yellow Pages') of dive-related businesses, associations, publications, etc around the world. Amongst its 746 pages are also 15 chapters about varied topics, spanning military diving, freediving, underwater photography and marine

biology. What's more, there is also a review of diving-related incidents from September 2007 to December 2008 – how's that for being up-to-date!

Indeed, since its inaugural edition in 2006, the Diving Almanac & Book of Records just keeps growing and growing with each passing year!

Edited by Jeffrey J Gallant
 Foreword by Hillary Vidars
 ISBN: 978-0-9781078-2-6
 Published: January 2009
 746 pages

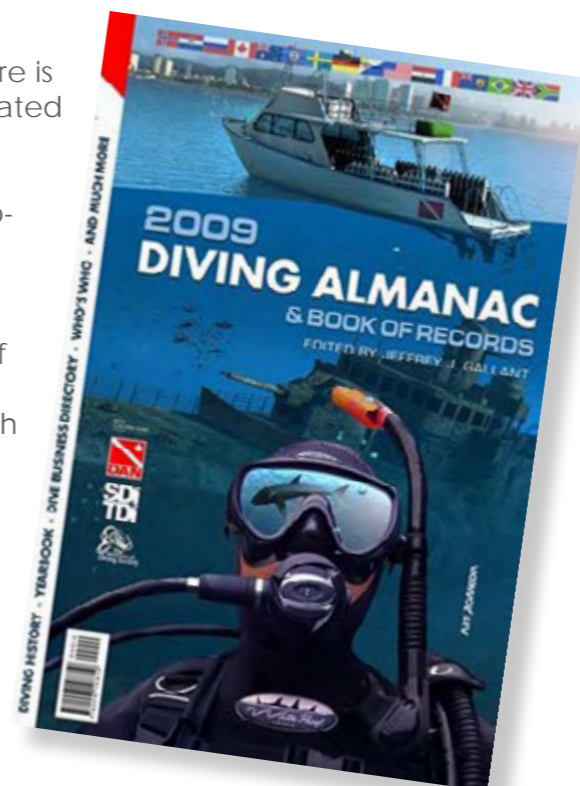


Titanic's Last Secrets

With this book, author Brad Matsen gives us a new perspective on the Titanic disaster. In August of 2005, previously undiscovered wreckage from the ship was discovered on the ocean floor by a team using Mir submersibles. The findings suggested that the ship had broken in half while almost horizontal and gone down before most of the passengers knew what was

happening instead of sinking with the bow rising into the air as previously thought. The discovery informs Matsen's retelling of the Titanic story in which he smoothly incorporates massive amounts of research.

Hardcover: 443 pages
 Publisher: Thorndike Press; Large edition
 Published: November 21, 2008
 ISBN-10: 1410410951
 ISBN-13: 978-1410410955
Amazon.com



REVIEW



The Sea reviewed by Cat GS Lim
 This book may be entitled 'The Sea', but many of the photos have been taken from the air, so that entire islands can be seen, allowing the vast expanse of the ocean can be truly appreciated. We bear witness to the majesty of nature as waves crash against stone; we relax at the soothing images of the underwater world, as its delicate creatures soar through their domain. Yet, unlike many other nature books that focus on the feathered, furry and scaly, this one acknowledges the contributions and activities of homo sapiens. Yes, humans are depicted going about their business, as sailors, fisherman, villagers, etc who interact with the ocean. Those of us who are landlock receive a rare glimpse into their lives, as they fish, sail, repair nets, surf, play and of course, scuba dive.

Every chapter contains an introduction that is a tad wordy, and some readers may find it a tad challenging to read as it is generally not broken up by paragraph breaks. It is tempting to skip past the text and get to the real meat of the book : the photos.

In short, this book is one massive picture book. With more than 700 pages, this is not a book that can – or should – be completed at one sitting. Not even several sittings.

Publisher: White Star
 Editor: Valeria Manfredi De Fabianis
 ISBN: 13: 9788854401259



Text and underwater photos by Andrey Bizyukin. Topside photos of diving birds by Nataliya Chervyakova. Edited by Gunild Symes

All along the shores of the Kola Peninsula in North Russia, Finno-Ugric tribes (Laplander) have lived since the oldest of ages. In the 11th century, the Viking ships appeared here, and then the Novgorods and the Pomors (Russian settlers and traders on the coasts of the White Sea and the Barents Sea) came. All of them adapted successfully to this severe place, went to the sea to catch animals and fish and to trade their goods. They even drew sea charts. This went on until 1594, a year when a secret Dutch expedition, under the leadership of Captain Willem Barentsz, appeared in this place. **Their purpose was to find a northeastern sea pass to Asia and China.**

During their three years here, the Dutchman organized three expeditions to search for a navigable way through the ice. They discovered new lands,

charted maps, made meteorological observations, and conducted the first wintering of the Dutch team in the Arctic region. They struggled with scurvy, having lost their ship, and made a desperate attempt to get to safety on two cockboats to reach the Kola Peninsula

where they met the ship, *поморов*. The surviving crew members came back to Amsterdam where they had long been considered dead.

The history of these navigations are described in books by Gerrit de-Fera, *The truthful description of three voyages by*

the Dutch and Zealand ships, to the North from Norway, Moskovia and Tataria, to kingdoms China and Cinchona, and Barents's voyages (Diarium nauticum).

During the last expedition, Willem Barents died of scurvy. According to seamen tradition, he was buried in the

sea, which the German geographer, A. Peterman, named the Barents Sea in 1853 in honor of this famous polar explorer.

Diving in Russia?

In discussing the best dive sites of the world with foreign journalists—the elite of



The Barents Sea





does one find authoritative experts, photographers and dive guides from the best diving locations in Russia, to describe all the unique features and beauty of the underwater world of this country?

In the midst of these infinite meditations, we were interrupted by the unexpected offer to dive on the Barents Sea to the north of the Kola Peninsula in the territory of the

Kandalaksha nature reserve. If one has a look on a map, it is to the east of Norway and even further to

the east of the city of Murmansk.

The offer looked routine and not promising of anything especially new. We knew practically nothing about the diving features in this region, but all the same, decided to go, in order to start to build up a personal collection of details on Russian dive sites for our foreign friends.

We had already dived in Norway, and as the north of the Kola Peninsula is a continuation of the Norwegian coast, which is already known as a classic in the best cold water dive sites of the world,

we expected to see an underwater world very similar to the Viking country. It was also interesting to us to have an opportunity to compare diving in the Barents Sea to that of the Norwegian Sea.

The northern coast of the Kola Peninsula, or southern edge of the Arctic Ocean, is straighter than the rest. Here, there are very few warm fjords and only a few good bays. That's why the influence of the Arctic Ocean is felt so very much up here, and strong storms happen quite often.

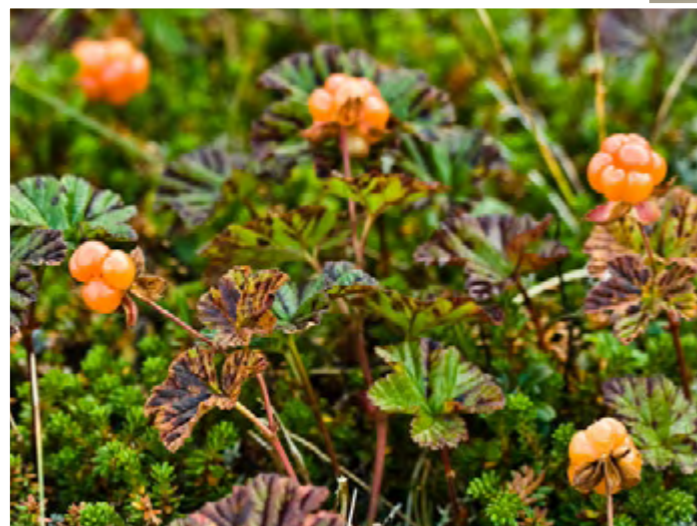
There are three natural landscapes one passes during the four hours of driving from the airport of Murmansk to the region, and 70 kilometers of broken roads up to the fishing settlement of Teriberka where we would be boarding our dive boat. The coniferous and mixed woods came to an end as soon as we crossed the snowy hills, and the forest tundra with rare bush from Karelian birch, thawed streams and snow fields, began.

Nearing the coast at the Arctic Ocean, even dwarfish trees disappear. Here,

the international diving press—we found out with surprise that our writer/diver friends knew practically nothing about diving in Russia.

From year to year, such erudite divers of most other countries asked us the same questions: Where is it interesting to dive in your country? Where are the best dive locations, etc.?

Certainly, Russia is the country of 13 seas, but how do you talk about all the diving attractions in each of them? Where



THIS PAGE: The north coast of the Kola Peninsula is a rocky ice desert with dwarf plants contrasting with the sea which is filled with life





Barents Sea



people still live here. They are fishermen, hunters, biologists, military, coast guard, and those who have no where else to move to from here.

In the near future, there may be a new terminal of "Gazprom" constructed here. People hope to find new jobs and maybe a new life will return to these wild territories.

Diving

We boarded a surprisingly comfortable and specialized dive boat,

at the surface. With depth, it fell to 3-4°C.

The first dive is comparable to falling into liquid nitrogen, with the freezing temperature sharply burning unprotected areas of the face. Time vanishes. Then, the body rebuilds on calorification, and the water doesn't seem so cold any more.

For extra safety, all the divers in our team dived with two valve cylinders and duplicate regulators in case of freezing. At the surface, we met a layer of muddy fresh water. At three meters, we crossed the hallocline and came into an ice cold zone of Arctic water with 30 meters visibility.

This was a world of seaweed kelps, fishes, starfishes, hedgehogs, crabs, mollusks, actinium and soft corals. All of them look so active, occupied with such important business, well fed and happy with their lives.

In the first 40 minutes of making an acquaintance with the underwater world of the Barents Sea, one gasps with astonishment. We were amazed and inspired by



Ice burning water, great visibility, kelp jungles, sea-urchins, small crabs and incredible multicolor sea anemones—and this is just in the first dive!

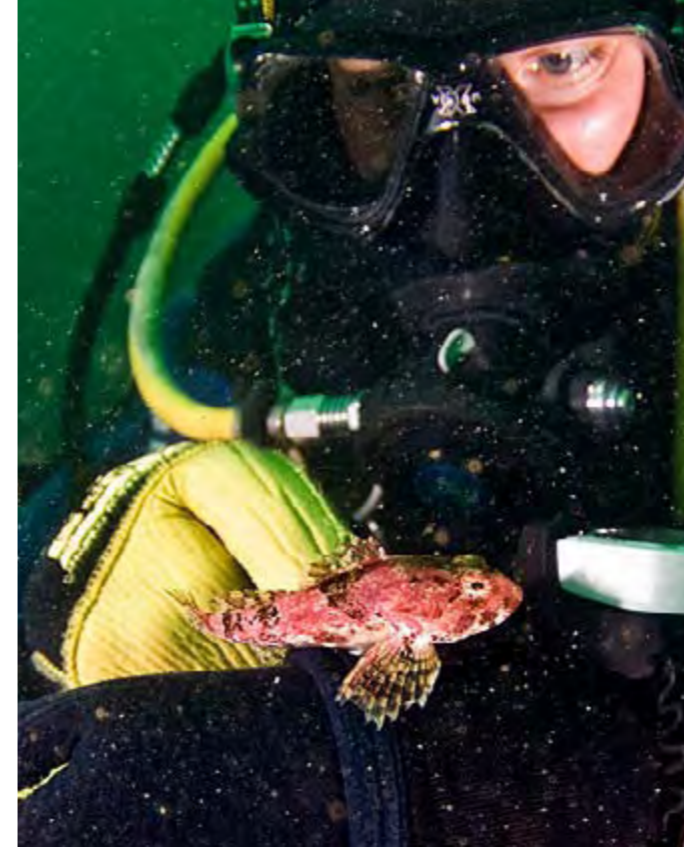
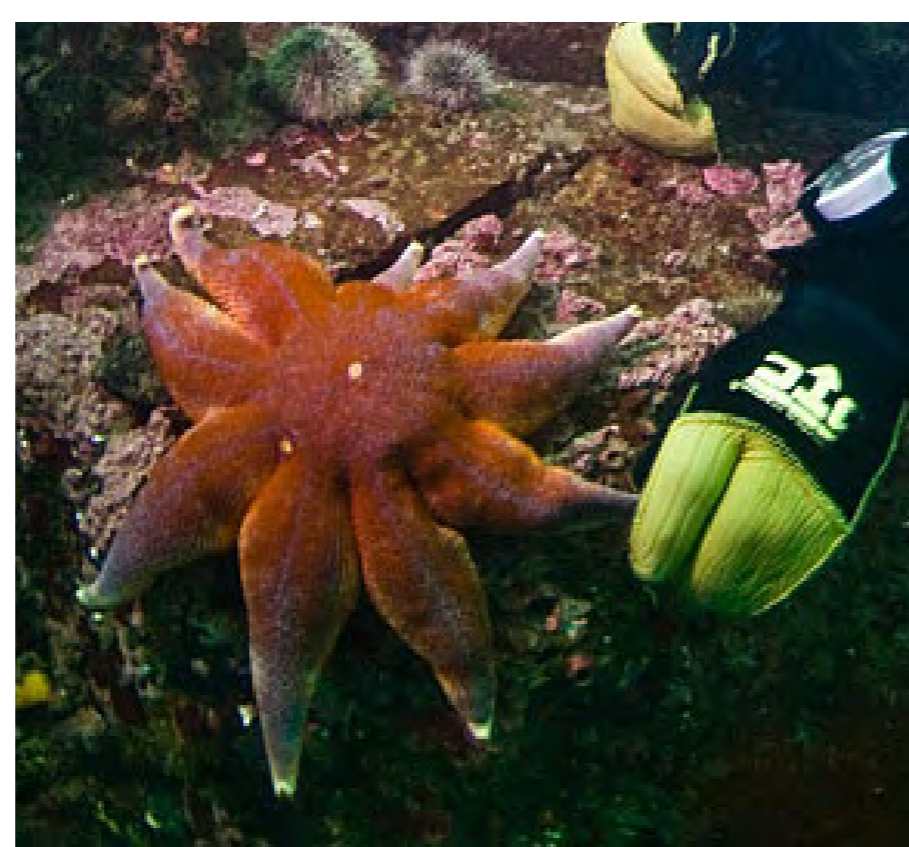
it's a tundra kingdom. Frequent Arctic winds, with mid-annual speeds of nine meters per second sweep away all that is in the way. Only lichens, reindeer moss, black crowberry and herds of reindeers survive.

Today, this is the deserted territory of a collective of fishing villages still exhibiting the era of communist construction—empty houses, beaten out glass, ruins—a zone of alienation like a scene from a science fiction novel. It seems surprising, that some

a vessel with the unique name, *Kartesh*, and headed to the Barents Sea. The heavy lead color of the water, long oceanic waves, naked stone rocks on the coast, even a midnight with no coming sun and infinite polar day, greeted us. "If it is so deserted on the surface, what then should we expect to see under the water?" was the first crazy thought that popped into my head.

Noisy seagulls circled around us and the first curious seals kept far off from the dive boat, when we prepared for our first dive into the Dolgaia Guba Bay. The water temperature was eight degrees





what we saw, and came back to the surface impressed with the wondrous biodiversity of the underwater life, so contrasting with the lifeless ice desert at the surface.

We came aboard the boat with questions for our dive guides and sea biologists. Why was the water here greenish in color, and the majority of fish consumed by humankind (thousands of tons) caught here? It appeared, that freezing under ice during the long polar winter, the ocean became heavier and squeezed out to the surface, benthonic water—water that is saturated by a lot of organic material, which is made up of all kinds of animal substances useful and necessary for life).

The vertical convectional currents found here create the necessary

conditions for rapid growth of microscopic seaweed and krill. As a consequence of this, the sea becomes a never-ending source of food for fishes, birds, seals and many other sea animals.

Not so many divers know that the seaweed of the northern seas is one of the largest manufacturers of atmospheric oxygen. There is an authoritative scientific opinion that suggests that it is precisely these seaweeds of the cold water in the northern seas that make more oxygen than all the planet's forests taken together, providing the major reason for the survival and existence of humans on land, which is so small in comparison with the area of the global oceans. Overwhelmed by such important scientific information, we understood that we

were diving in a place absolutely unique in the world.

Dalnie Zelentchy Bay

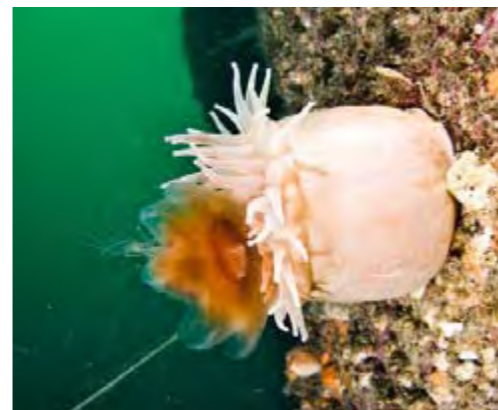
Thirty sea miles even further to the east though ocean waves, along coastal rocks laden with snow, we stopped to anchor in Dalnie Zelentchy Bay. This is an historical place for Kamchatka (King) crab expansion into the Barents Sea and Norway. It is precisely from this place that its biological experiment was begun.

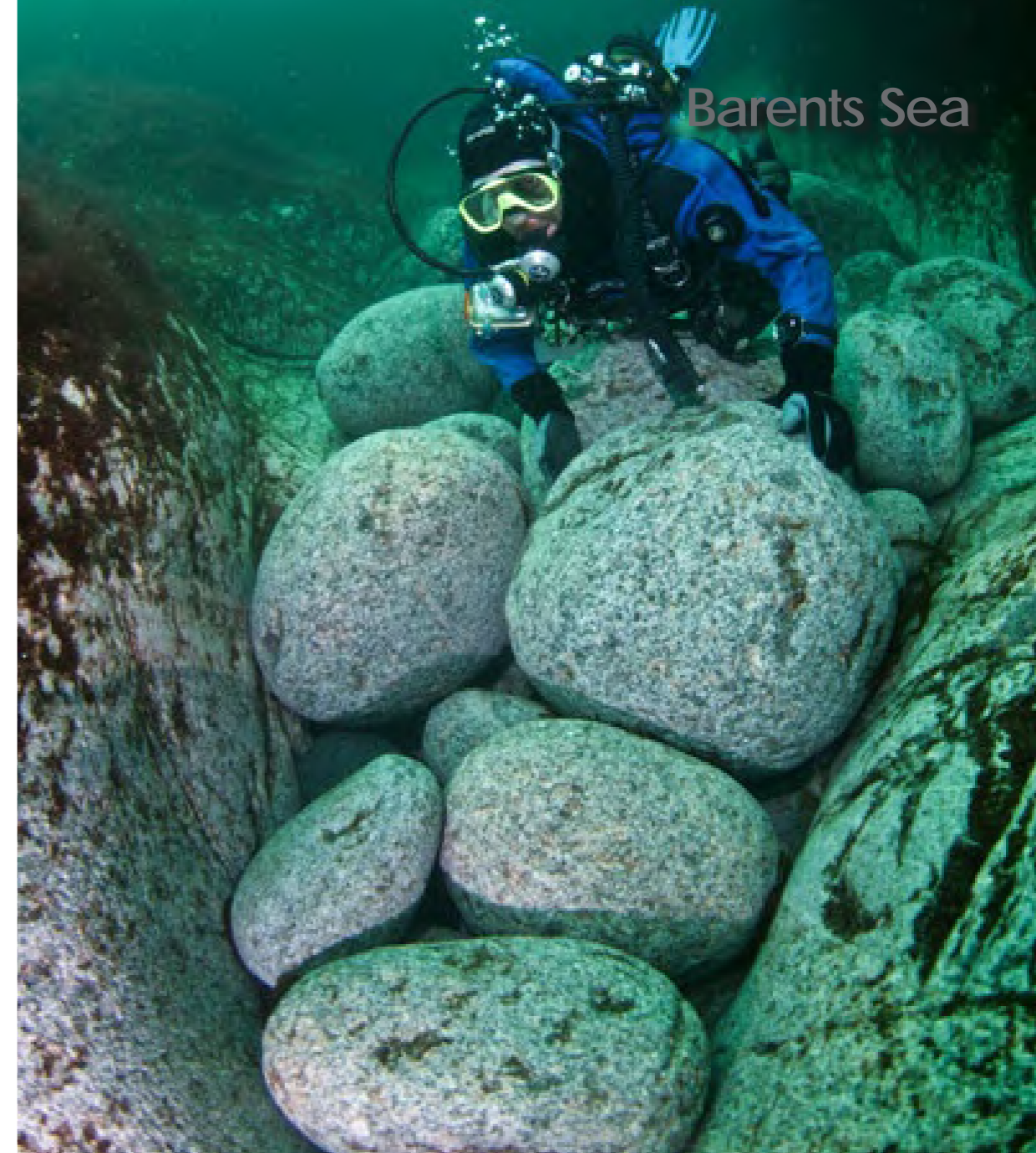
During the 1960s, the Soviet Union scientists experimented with crabs. Thousands of Kamchatka crabs were brought here from the Far East, from year to year, and were issued into this bay of the Barents Sea.

But no matter what the biologists



The Barents Sea is full of small and big creatures (crabs, ruff, prawns, lumpfish, comb jellies) who are all hungry and ready to hunt all day and into the night. An even more amazing underwater flower (a sea anemone that on first look, appears so passive) catches a jellyfish by its rays and draws it into its gluttonous mouth





Barents Sea



did, the crabs completely disappeared into the bottomless sea. It seemed to the scientists that the crabs were not able to survive here. The arrogant scientific project was officially deemed a failure, and was tossed.

The sea laboratory of Murmansk Sea Biological Institute was established in Dalnie Zelentchy Bay. Of the many scientific projects realized in this laboratory, the most astounding one was the success of settling Kamchatka crabs in the Barents Sea.

The Kamchatka crab lives almost 30 years,

Kamchatka King crabs integrated very well in the biocenose of the Barents Sea. TOP LEFT: Small crabs like to be together (especially during moulting time) for better protection from big cods and other predators

and it gets big enough in size suitable for industrial catching only after it reaches 15 years of age. This is the reason why some malicious gossip suggests that just the right amount of time has passed for the first crabs that were started here 30 years ago to have multiplied just enough to be caught now.

Today, the famous historic sea research institute is totally abandoned. Everything was destroyed after Perestroika. Now there is only a private farm for growing the crabs in natural sea conditions.

With great interest, we dived this historical place and explored the various underwater landscapes.

A huge seal-hare, or bearded seal, with a wonderful gray-haired moustache and big dark eyes, slowly floated around us. Inquisitiveness motivates these animals. He made a few circles around us, studying us, these strange fin-footed

carnivorous relatives. But when I attempted to come closer to him to take a close up photograph, the seal moved farther away from us odd fellows, as he was blinded by flashlights from the strobes.

It was an underwater jungle at this site, from finger kelps, developing tidal currents, Kamchatka crabs, delicious scallops, curious seals, underwater canyons, steep walls, grottoes and the picturesque rocks densely covered in hundreds of multi-colored predatory actinium, pleasing our senses from dive to dive.

The following evening transfer took us even further east where we dived around several islands: Anonymous, German, Inhabited and Krechetov. Huge blocks of rock were covered with seaweed taller than a human. There were heaps of rock fragments, grottoes and tunnels, masses of sea





Attractive and exciting underwater landscapes and great biodiversity awaits every diver

hedgehogs and sea stars, rare fishes and, as always, great visibility with temperatures at 4.5 - 5°C.

We still can't deny our first impression, that the Barents Sea is considerably more filled with a life than even the Norwegian fjords. Here, the water is more clear, and there are more animals and underwater beauties.

Following is a list of just a few of the local animals that would be interesting for underwater photographers: crab-spider, King crab, cancer-hermit, skeleton shrimp, hairy hermit, Eulaus shrimp, sculptured shrimp, Acorn barnacles, sea

spider, trumpeter, scallops and more than five kinds nudibranches, mollusks, star fishes, sea cucumbers, hedgehogs and carnations, catfish, lumpfish, (Pholis) gunnel, sea scorpion, cod, herring, whales and seals.

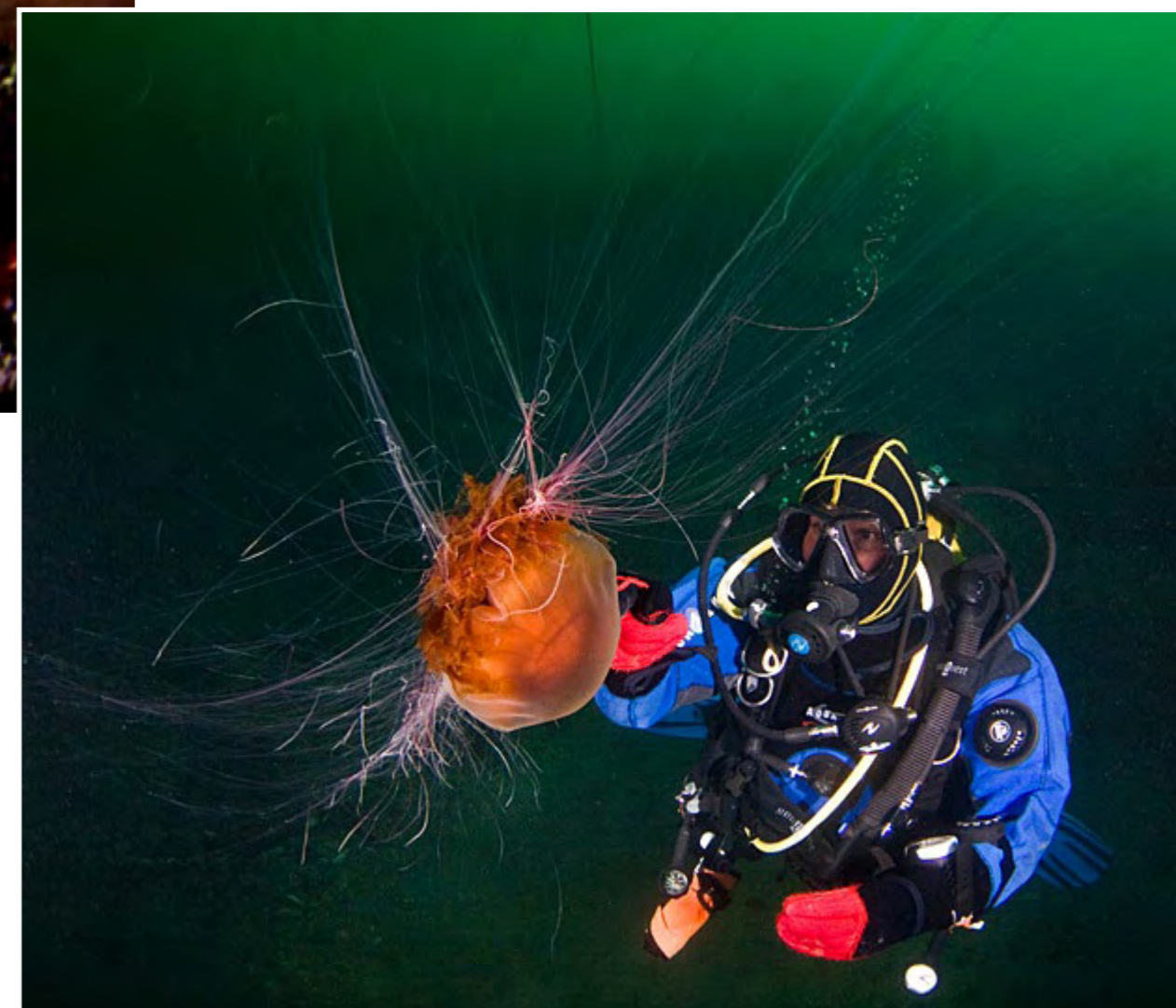
The most distant and amazing dive site was off the island of Kuvshin (or 'Jug') in the archipelago of Semiosrov'e. The island is a nature reserve for birds. Guillemots, unique birds that can fly under the sea, nest here.

We dived directly under the steep rocks hosting a noisy bird market. We submerged to a depth of 15m and met

a jungle of finger kelps. Huge king crabs walked between the stones. One of the crabs, having torn off an arm of a starfish, was busy devouring it, savouring it with pleasure.

We moved along rocks and looked upwards to the surface of the water from time to time. We were waiting for the guillemots to start diving. It could happen at any moment.

Two kinds of guillemots nested here. One of them likes to search the sea bottom for sandhoppers and can dive to 30 meters depth. The other hunts for small fishes in the open water.





We hoped that guillemots would become interested in us, the unusual fin-footed creatures, and come dive with us. We continued to wait for them underwater, but we ran out of air, and we realized that our attempt was in vain. The guillemots wouldn't come dive with us.

Then we decided to use a second method: after submerging underwater, we fixed ourselves to three-meter long ropes that were attached to an inflatable rubber boat, and then drifted along with the boat, which made its way along the birds' market place.

We hoped that the birds would get used to us, cease to be afraid and pose for our cameras nevertheless. Our persistence and patience paid off after 20 minutes of drifting with the boat, the flying birds suddenly appeared in the depths of the cold green water. It was surprising that they literally flew under the water, rowing intensely with their wings, and swiveling their heads to examine us.

One of them made a circle around us, and after inspecting us, disappeared somewhere in the depths of the ocean filled with plankton. But in a minute, new individuals, who probably found out about us funny creatures drifting

under the boat from the first envoy, flew into the sea to meet us. They also turned around, swiveling their heads and peering at us.

Guillemots are birds with black backs, wings and white breasts. Underwater, they look completely made of silver. Their bodies are covered with little air bubbles protecting their feathers from getting wet.

The show was amazing! The world had turned upside down. Birds flew not across the land, but underwater, and in the Barents Sea in Russia of all places! Our curiosity in the birds became even more intense after seeing them in action, especially with the knowledge that there is uncertainty in their survival.

We finished our diving adventure by visiting one of the noisy bird markets on the island of Harlov. Thousands of sea birds arrive here during this time of year, in this lifeless ice desert, to lay their eggs and raise their young. Yet, it is here that there is a surprising sea filled with food for the

hungry birds.

The trip to the Barents Sea and the discovery of the magical underwater world of the Russian North made an indelible impression upon us all. We can now make an authoritative recommendation for these places to our friends and divers worldwide. It is typical of Russian diving, where adventures leave only delightful emotions and memories—perks of experiencing the life-filled cold water seas of our country. ■

Special thanks to Nataliya Chervyakova and Mikhail Safonov, highly educated marine biologists, who showed us the unique underwater world of the Barents Sea.

THIS PAGE: There is a lot of food here, if you know how and where to get it. Hence, millions of birds come here to lay their eggs and raise their babies each spring and summer



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ON BOLD LINKS



Equipment *Die hard*



Edited by
Arnold Weisz



IQ Rayboard

With the iQ-Ray-Board you can glide smoothly through the underwater world. Pulled by a boat on a rope, you only need to tilt the Ray-Board slightly to plunge under water. Beginners can easily cruise through the underwater world while advanced Ray-Boarders can experiment with speed and waves. Prototypes of the Ray-Board are being presented at trade shows around the world, while production will start in February. The Ray-Board will be available for sale from iQ-Company in May 2009. www.iq-company.com/ray-board



Uemis Zurich Scuba Diver Assistant

This Swiss made diving computer features a high definition display in all lighting conditions. The Uemis Zurich can be recharged via the integrated solar module, USB cable connected to your laptop, or using the Uemis travel charger plugged into a power outlet. Other features also include three slide controls and 5-way navigation for easy use above and under water, even while wearing gloves; 5-way navigation with three non-slip slide controls; intuitive menu control; entry of text and numbers via virtual keyboard and a tank pressure transmitter. www.uemis.com

Scubapro A700

The MK25 and MK17 first stages have both been redesigned in polished chrome finish editions, specifically for the new A700. Some of the features of the A700 second stage: polished chrome exterior, compact dimensions for lightweight comfort, air balanced valve technology, new aligned VIVA system with co-axial 2-piece dive switch, full metal body and metal components assure maximum performance and quality. Metal provides the thermal exchange in the second stage, lowering the possibility of freezing in cold water. www.scubapro.com



Vyper Air

The Suunto Vyper Air includes Air, Nitrox and Gauge modes with the ability to switch gases during a dive. It features optional wireless air integration and a technologically advanced electronic 3D compass that tilts up to 45 degrees in any direction. With the new wireless air integration option, the Suunto Vyper Air allows divers to monitor tank pressure and air consumption conveniently from their wrists. In Nitrox mode, divers have the choice of using two different gas mixes, which are pre-set before the dive. During the dive, divers can then switch to the second gas if they are within the maximum operating depth. Other features: built-in dive simulator, multi-step ascent rate indicator, automatic safety stop countdown and optional USB-compatible PC interface. www.suunto.com

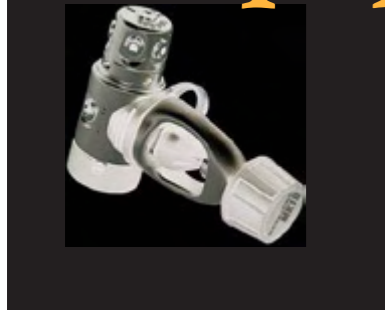


Bonex Discovery

This German made scooter weighs 24 kg including battery and trim. It has a run time of 280-400 min. Other features: up to 18km range, two independent LiMn batteries that direct switch selection, emergency switch, sealed motor, neutral buoyancy at any depth, step less speed setting, one-handed operation, carbon hull and a carbon propeller shroud. www.bonex-systeme.de



equipment



Onyx M1

The Hollis Gear Onyx M1 is a low-volume frameless mask with a skirt made from 100% silicone. Ideal for a backup mask, it can be folded away and retrieved quickly in an emergency, as well as being low volume and wide vision! The mask has a crystal clear view thanks to the use of Saint-Gobain Diamant glass which improves the transmission of light

www.hollisgear.com

AquaLung Titan LX Supreme 2009

This regulator comes with the following features: auto-closure device (ACD) keeps corrosive water out of the first stage, a pneumatically-balanced second stage, T-shaped first stage to optimize the location of the 4 MP ports and 1 HP port, yoke (3300 psi / 232 bar max) or DIN (4350 psi / 300 bar max), easy-to-grip venturi lever prevents unwanted free flow at the surface while giving a performance boost at depth. The regulator is compatible with nitrox, up to 40% O₂, new out of the box. It is also equipped with Aqua Lung's patented Comfobite mouthpiece along with a reusable mouthpiece clamp. The Titan LX Supreme is resistant to freezing when diving in waters colder than 50°F / 10°C.

www.aqualung.com



Magnetic

Oceanic introduces the perfect combination of magnetic attraction and accessibility with the highly-anticipated Octo Swiv with Magnetic Keeper. This innovative octo exhibits improved convenience through an extraordinarily easy-to-attach magnetic keeper. No more pinch clips. No more Velcro. No more fumbling. An inline swivel allows for adaptability and flexibility in situations that require immediate accessibility and safety. This low profile octo has no downside, literally. The Octo Swiv with Magnetic Keeper can be used in ANY position you desire restoring a level of safety to any out-of-air situation.

Oceanicworldwide.com

Cobra 3

The Suunto Cobra3 is a full-featured decompression dive computer console with air integration capabilities. It has the ability to monitor and display air pressure, track the rate of air consumption and continuously calculate the remaining air time. It also features a new electronic 3D compass and easy-to-read matrix display with simplified four-button operation. The electronic 3D compass offers divers the unique ability to tilt the compass up to 45 degrees in any direction without impairing the ability to read figures clearly and accurately. Additional functions include 42-hour logbook and profile memory, optional USB-compatible PC interface, and extended decompression range. www.suunto.com

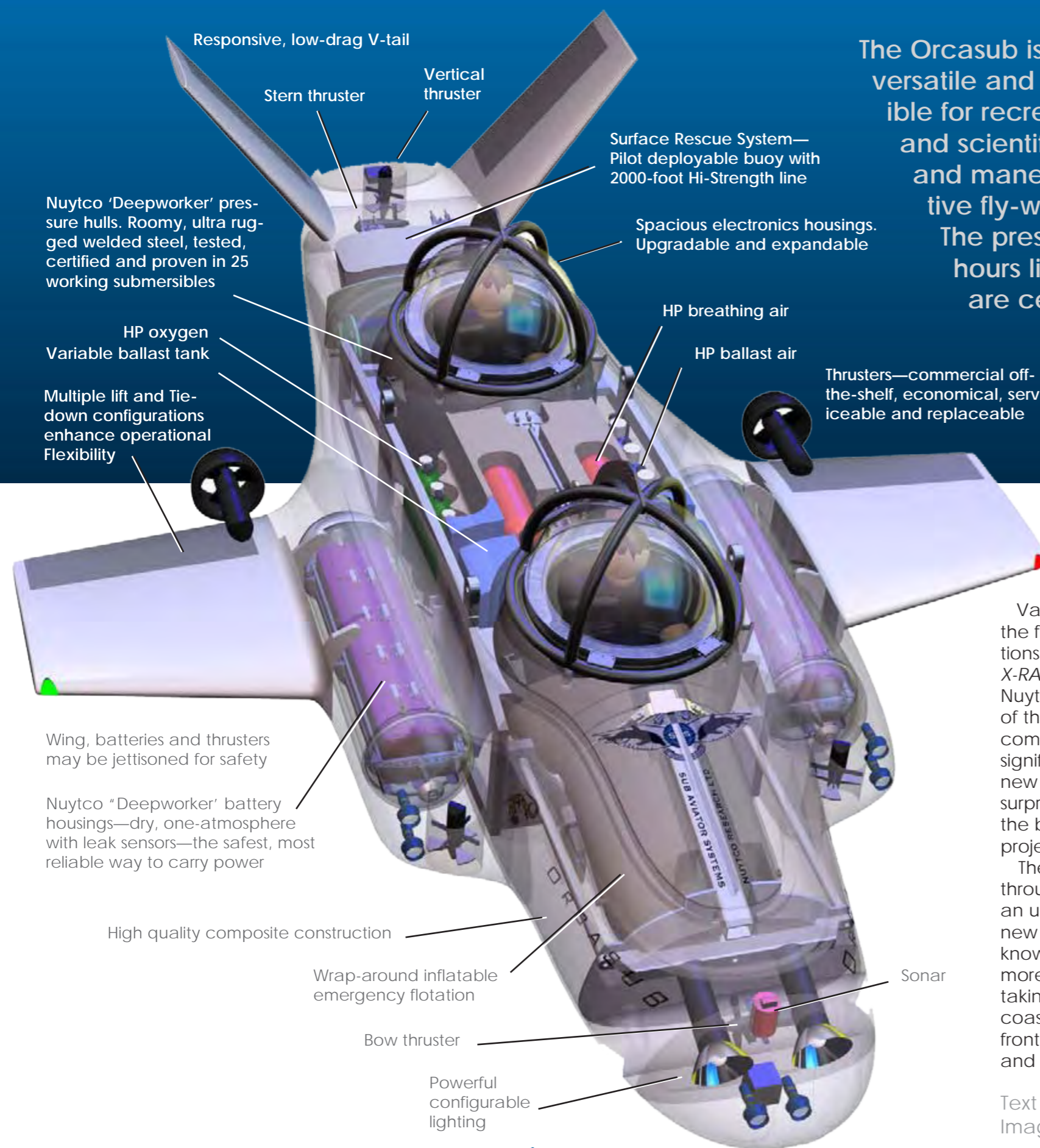


DUI Xm450 Jumpsuit

DUI combined Thinsulate™ Ultra 400 Type BZ with Polartec® PowerStretch® to create the Xm450 Insulation Jumpsuit undergarment. Some features: Thinsulate Ultra 400 for maximum insulation, Polartec PowerStretch panels strategically placed in the armpits, mid-back, around the waist, knees and down the sides of the legs, wind-and-spray resistant outer shell, 2 zippered hand-warmer pockets, 1 zippered chest pocket, thumb and ankle stirrups.

www.dui-online.com





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Sonar

The Orcasub is a customizable, versatile and innovative submersible for recreational, commercial and scientific uses. It is quick and maneuverable with intuitive fly-wire-joystick control. The pressure hulls and the +80 hours life support systems are certified by Lloyds.



At a recent dive show, we ran into Phil Nuytten, whom we had visited some years back at his workshop in Vancouver, receiving a tour of the facility and Nuytten's inventions by the man himself. (see X-RAY MAG #9 - 2006). Dr Phil Nuytten is widely regarded as one of the pioneers of the modern commercial diving industry and a significant force in the creation of new technology, so I was hardly surprised when he showed me the brochure for one of his latest projects, the Orcasub.

The first thought that ran through my mind that this was an underwater Ferrari—a sleek new toy for the überich. But who knows, what will one day become more common place, such as taking a Sunday drive along the coastline... not along the beachfront promenade but underwater and along the reef!

One thing led to another and soon I ended up talking with his associate John Jo Lewis from Sub Aviator Systems (SAS) in Bellingham, Washington State. I asked him why they built this new submarine.

John Jo Lewis explains: The idea behind Orcasub has always been to design a high performance submersible for would-be pilots rather than passengers. It's a sub you buy to fly in for the sheer pleasure of doing it yourself. It's akin to owning a high performance motorcycle or a vintage war plane; you don't do it to be a pillion rider or to stare out the window while someone else is having all the fun. Flight based subs, like the experimental Super Aviator and SAS's forthcoming Orcasub, are a breed apart from most conventionally designed subs built or modified for private owners.

In the past, I think a lot of yacht-based subs have ended up as deck ornaments because either the pilot experience was not rewarding for the sub's owner, or because the experience of being chauffeured underwater as a passive spectator simply lost its appeal after a limited number of dives.

Apart from gratifying the barnstormer in all of us, underwater flight has distinct advantages for those who desire to explore and directly observe life in the ocean as it has never been seen before. Having the ability to go faster and farther, with extreme maneuverability and a nearly 360 degree view, offers nothing less than a new way for humans to experience and be in the ocean environment.

It's hard to explain what this means, but you can start by imagining yourself as a scuba diver

Text by Peter Symes
Images courtesy of Phil Nuytten

If you've been wondering what Dr Phil has been up to lately...

Picking up your mother-in-law in style

Sub Aviator Systems (SAS) was formed by members of the original team of pilots, engineers and expedition crew members who pioneered underwater flight with the experimental Aviator submersible. Aviator was built to test theories about high speed, long range, underwater "flight", and turned out to be an E-Ticket ride for high adrenaline hydrobatic maneuvering. Aviator continues to thrill her pilots, and serves as a uniquely capable platform for high definition video capture, underwater survey and research.

As an experimental craft, Aviator was constructed with some acknowledged limitations such as remaining positively buoyant underwater at all times. This expedient provides a fail safe feature—if power is lost, Aviator happily glides to the surface. ■

cruising above a beautiful reef. The view is amazing because this time it's panoramic and distortion free. You glide along quietly and effortlessly hardly disturbing the schools of colorful fish. Do they think you're a big fish?

You arrive at a wall, turn and gaze down at some grey sharks below as they follow along it. You roll over the wall and increase speed as you angle down to join them on their patrol. You and the sharks round the wall and cross over a plateau. Large formations of soft coral are open and feeding in the strong current, so you decide to angle into it and hover with your companions for awhile.

However the mystery of the wall beckons, so giving the sharks a farewell waggle of your wings, you bank hard and dive again watching the ultramarine blue around you grow darker and darker blue. It might be time to add a little light to the equation. Aren't ultra LEDs wonderful? The terrain is beginning to shelf as you fly downward—passing 400 feet now. How nice not having to worry about the affects of pressure on your body or the ambient air you breathe so naturally.

What's that ahead? Are you seeing things? It can't be nitrogen narcosis because that's not a factor anymore. Looks like a debris field. Will you decide to follow it down or call topside for a GPS fix so you can come back after lunch? You decide to pull back on the stick and jet to the surface. Remember when you had to worry about embolism, the bends, dive time, or surface intervals? Ah, freedom...

If you'd like a taste, Sub Aviators will be offering flight training on our Super Aviator submersible this Spring in the Caribbean, and of course we'd only be too happy to build you an Orcasub of your own. ■

Charters

SAS' new Super Aviator submersible is now available for charters, complete with pilots and crew. Charters for first-time undersea exploration and wreck location, environmental and marine life surveys, climate change study and its related effects, archaeological site surveys, or marine photography or video.

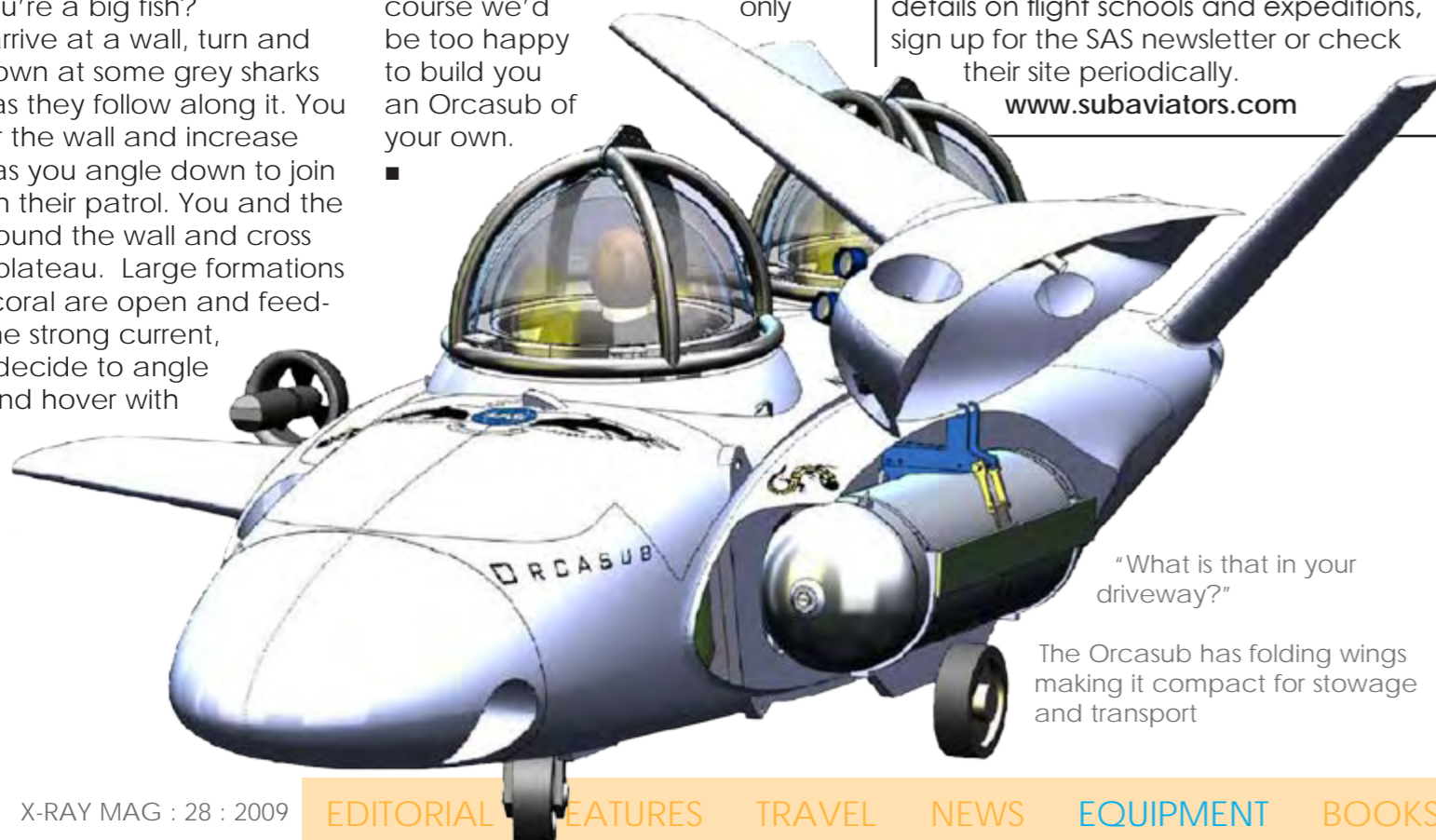
For more information please call 1-888-809-7948 or contact SAS via email.

Underwater Flight School

Sub Aviator Systems LLC is also pleased to announce that it is now taking reservations for Underwater Flight School in the Bahamas, using the revolutionary new Super Aviator submersible, for the fall of 2008 and the spring of 2009.

Please contact Cpt. Alfred S. McLaren, USN(Ret.), Ph.D., Senior Pilot on email alfredsmclaren@aol.com or phone (303)447-0608 as soon as possible to ensure that you secure a training spot in this very exciting new method of exploring the vast and largely unknown undersea world. Future underwater flight training schools are also planned for other ares of the Caribbean, the Sea of Cortez and Lake Tahoe, California. For the latest details on flight schools and expeditions, sign up for the SAS newsletter or check their site periodically.

www.subaviators.com



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technical
matters

The use of rebreathers in caves is nothing new. Decades ago, Hans and Lotte Hass used them to venture into marine caves. Profiles like Rob Palmer in the UK, Bill Stone, George Irvine and Jarrod Jablonski in the USA, or Olivier Isler in Europe, are also strongly linked to rebreathers and cave diving. Recreational cave divers discovered Oxygen CCR in the Navy surplus, then experimented with Draeger Dolphins, and more recently, APD Inspiration. Nowadays, there are many different brands and models, and they become even more popular within the cave diving community worldwide.

Text: by Cedric Verdier
Photos by JP Bresser

Rebreather for Cave Diving

Why?

So, why use a rebreather for cave diving, and what kind of benefits does this type of equipment have compared to the highly reliable conventional Open Circuit scuba?

Extended dive time. One of main advantages of a rebreather is that it makes longer dives possible. In a cave, that translates into extended explorations and the ability to do penetration dives much longer and further than what would be possible with conventional open circuit scuba. But the rebreather also gives an additional safety margin, as it provides the cave diver with more time to handle emergencies. It could be a lost line scenario, where the way to the exit is unknown, or a situation when a team member is lost, and extra time is required

to look for them. A light failure or a complete silt-out is also a situation where extra time is needed, as the progression to the exit is very often drastically slowed down.

Good buoyancy characteristics. In cave diving, buoyancy control is obviously one of the most important skills, as it prevents silt from lifting up off the bottom. With a rebreather, the buoyancy of the tanks remain almost constant throughout the dive. Therefore, it is not necessary with extra weights to compensate for the added buoyancy of tanks going empty towards the end of the dive. Less weight also means a better trim and less energy spent when moving underwater.

Lack of bubbles. A constant problem cave divers face with OC scuba is called percolation. Bubbles make their way to the walls and the ceiling of the cave and dislodge some silt. This is not an issue when diving with a rebreather. It also helps improving communication (it's possible to talk in the mouthpiece) and maintains the silence that most people are looking for in a cave.

Mixed-gas flexibility. A mixed-gas CCR offers quite a lot of benefits for the

The rebreather also gives an additional safety margin, as it provides the cave diver with more time to handle emergencies.

exploration of unknown cave systems. Dive planning is easier when it comes to gas mix selection, even if one doesn't know exactly how deep the cave is; the same diluent can be used for a larger depth range than the same mix used on OC. A mixed-gas CCR also gives the best decompression mix when it's time to ascend—and it could be quite often during a cave dive—ending up with a perfect yo-yo profile.

Warmth. Most of the cave systems are

located in cold/cool water (with the exception of places like Mexico and Cuba). A rebreather provides divers with some additional warmth, as they are breathing warm circulated air rather inhaling cold air from a tank—a definite benefit when the total dive time is a matter of hours.

Weight. Many caves are in remote areas. When a cave diving team wants to explore some deep caves, the amount of gas to be carried is some-

With a rebreather, the buoyancy of the tanks remain almost constant throughout the dive.

times unrealistic if the dives have to be done on conventional scuba equipment. Regardless of the bailout gas to be used, rebreathers help to have smaller and more flexible logistics. A booster pump and a few tubs of sodalime give the opportunity to explore virtually any cave system.



*Obviously
rebreathers are
very useful tools
for the cave
explorer.*



But simply having a rebreather is not enough to go cave diving. There are some necessary features and safety components that need to be there.

A Head-Up Display. An HUD is a key piece of equipment for safe cave diving. It tells you if you are breathing the right mix and can even inform you about other potential problems (O₂ sensors, battery power, decompression requirements, etc). All this information is normally

displayed on the handset(s), but in a cave, you need your hands free to perform other tasks like reeling in and out the guideline, setting up a jump, squeezing through a restriction, riding a scooter, mapping, etc. In an emergency situation (complete light failure), one can even use the small amount of light made by the HUD to keep a visual contact with the line while looking for a back-up light.

Trim. Some rebreathers have a tendency

to make the diver bottom heavy. It could be because of their different components (tanks and scrubber, OTS or back-mounted Counter-Lungs, etc) or because of the diver him/herself and the dive gear (dry/wet suit, heavy fins, canister light, etc). Before venturing into a cave, it's essential to make sure that the trim is appropriate (horizontal position, slightly head-down feet up), thanks to some adjustments and maybe some trim weights. It's also important that the configuration is streamlined

and free of danglies (LP hoses, handset cables, etc).

Off-board gas switching capability. For cave diving, this is a very important feature. It gives you the possibility to use different off-board cylinders and to plug them into the loop. In case of gas depletion, electronics failure, equipment failure, scrubber failure, the diver can still stay on the loop while manually flying the unit, (Closed, Semi-Closed or open loop

mode). The additional cylinders significantly increasing the possible duration and range of the diver, it would then be nice to make sure that all the fittings are the same and that all additional tanks (sling or staged) have an LP hose fitted.

A safe way to the exit. All cave divers have to make sure that they can safely come back to the exit (and the surface!) if they have to go off the loop for any reason (mainly Total Loop Flooding



or severe hypercapnia). In most of the cases, it means carrying enough Open Circuit gas for a complete bail-out exit, but it could also be a Bail-out Rebreather when the amount of gas needed is simply too big.

A Bail-Out Valve. A BOV is very useful to have on a rebreather when cave diving to avoid task loading in case of emergency. When something goes wrong with the rebreather, it is safer and easier to quickly switch to Open Circuit, sort the buoyancy out, lock off the reel, etc., then check out what happens and what to do. Furthermore, a diver suffering from CO₂ toxicity might have a hard time removing their mouthpiece and replacing it with a regulator because their breathing action is involuntary. If they try, there is a real risk that they will breathe in water. When using a rebreather in a cave, CO₂ toxicity is a very real possibility when one has to fight against a current or go through a restriction. A BOV is a quick and safe solution, at least for some sanity breaths, time to calm down and switch to the OC bailout tank.

Potential problems

Obviously rebreathers are very useful tools for the cave explorer. Nevertheless, the two main problems that could occur are:

Improper time management. As a rebreather gives additional dive time for cave diving, one can easily extend their oxygen exposure or deplete one tank. Going beyond the scrubber duration could also be a concern.

Task-loading. Never forget that cave diving is a very demanding activity. There are simply so many things to do and to think about. Situation awareness is an important component of every cave dive. Therefore, adding another task loading equipment like a rebreather doesn't help to deal with the normal flow of a cave dive, and even less when dealing with an emergency situation.

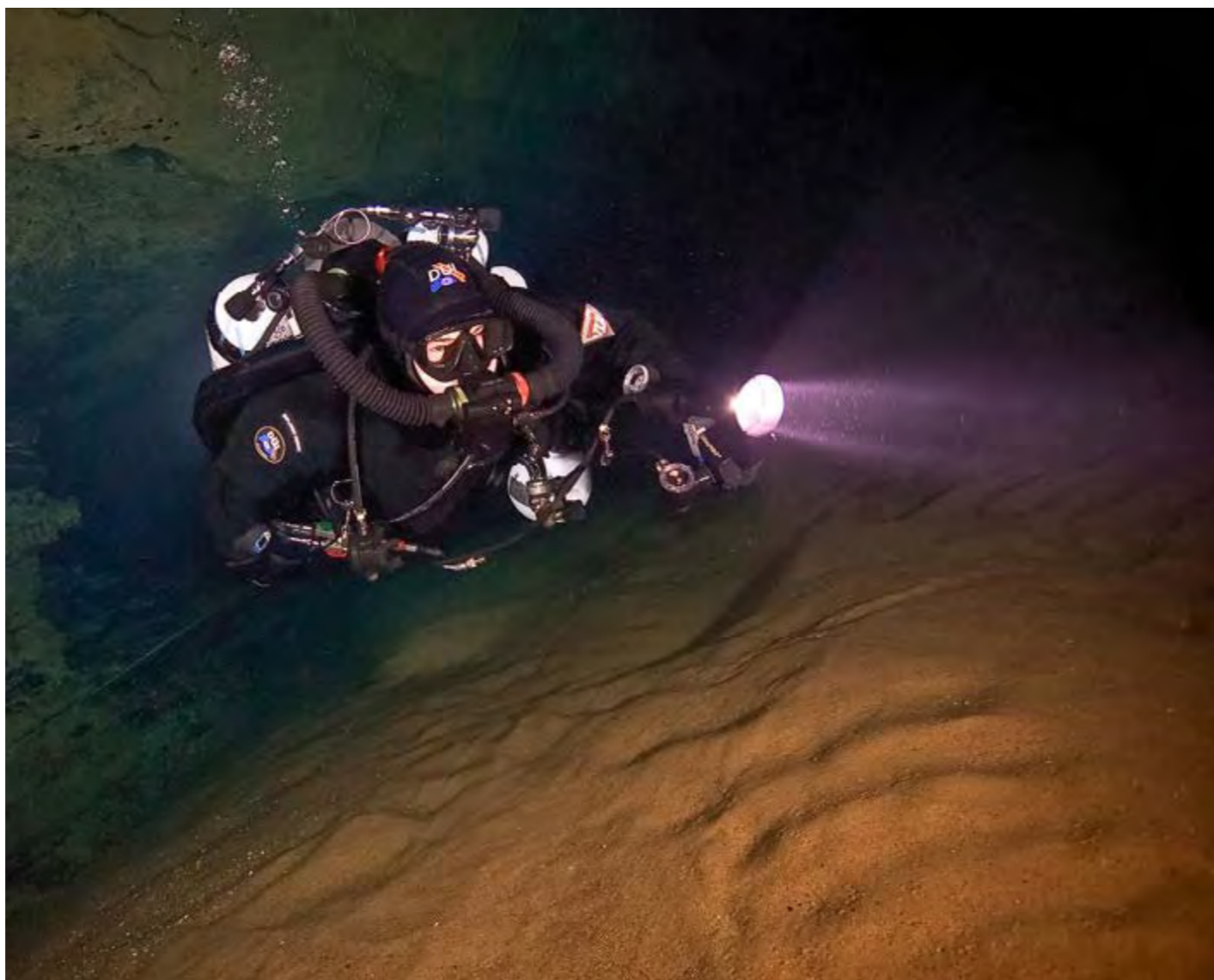
Discipline

As we often say when teaching cave diving courses, "Cave diving is not for everyone!" Add rebreathers to the equation, and we would say, "Cave diving with a rebreather is definitely not for everyone!" One has to be a very experienced CCR diver before starting any dive in an overhead environment. The main attribute of a CCR Cave diver is *discipline*. One

needs discipline not to exceed the so-easily-exceeded limits. If one exceeds their limits and gets away with it very often, it could seem safe to do so.... until the day something goes wrong, which could take years to happen.

A rebreather is a very convenient tool to further explore a cave system. It's also a good solution for some of the emergency situations that can occur in a cave. Nevertheless, despite all of the benefits listed above, it's not an easy-to-use tool that can be immediately adapted to one's needs. An experienced OC cave diver or an experienced rebreather diver needs time to be able to safely combine both techniques. When they reach this state, they get the best of both worlds! ■

Never forget that cave diving is a very demanding activity



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Edited by
Peter Symes

The silent invasion of 'immortal' jellyfish

Turritopsis nutricula is the only known animal that is capable of reverting completely to its younger self. Marine biologists say the jellyfish numbers are rocketing because these creatures need not die.

"We are looking at a worldwide silent invasion," said Dr Maria Miglietta of the Smithsonian Tropical Marine Institute. The jellyfish are originally from the Caribbean but have spread all over the world.

Life cycle

The fertilized eggs develop in the stomach and in the screen formed by

the cave in the jellyfish planula. The eggs are then planted on the seabed in polyp colonies. The jellyfish hatches after two days. The jellyfish becomes sexually mature after a few weeks depending on the ocean temperature.

While most members of the jellyfish family usually die after propagating, the *Turritopsis nutricula* has developed the unique ability to return to a polyp state. This is done through a cell change in the external screen through the cell development process of

transdifferentiation. The ability to reverse the life cycle is probably unique in the animal kingdom, and allows the jellyfish to bypass death. Theoretically, this cycle can repeat indefinitely, rendering it biologically immortal.

Having stumbled upon the fountain of eternal youth, this tiny creature, which is just 5mm long is the focus of many intricate studies by marine biologists and geneticists to see exactly how it manages to literally reverse its aging process. ■

Jellyfish protein effective in treating arthritis

A glycoprotein found in jellyfish is effective in the treatment of osteoarthritis, a team of Japanese researchers has found.

Osteoarthritis is a condition caused by aging and injury in which cartilage in the joints wear thin, making walking difficult. Hyaluronic acid injected into the joints delay its progression, but no fundamental cure exists.

The protein qniumucin was discovered in Echizen jellyfish in 2007. It has a structure similar to that of mucin, the main substance found in human stomach acid.

Masato Sato, an associate professor at Tokai University, and his colleagues focused on the fact that the levels of mucin found on the surface of cartilage in the joints of people suffering from osteoarthritis were low. Tests conducted on rabbits with osteoarthritis found more cartilage recovery among those injected with both hyaluronic acid and

qniumucin extracted from moon jellyfish and Echizen jellyfish, than with those who were injected only with hyaluronic acid. The extent of cartilage damage and the area affected also greatly improved among the former group.

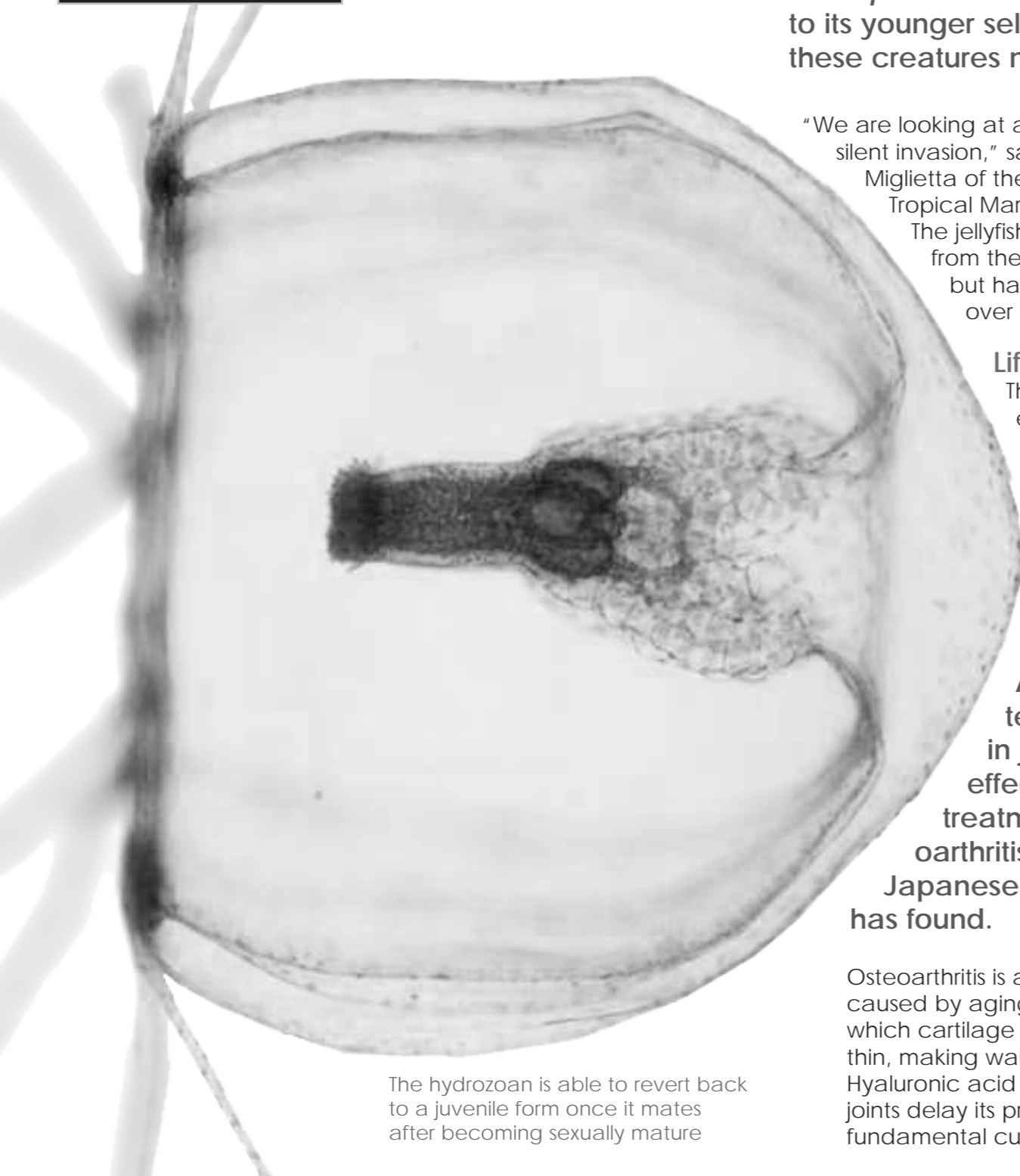
"We suspect that the hyaluronic acid wraps itself around the qniumucin, creating a synergistic effect that allows the substances to remain in the cartilage for a longer time," says Sato. "We'd like to make this applicable for people after confirming its effects on larger animals." ■

Jellyfish Trivia

Environmental Change and Jellyfish Blooms

1. One third of the total weight of all life in Monterey Bay is from gelatinous animals.
2. Three minutes after a person is stung by a deadly box jellyfish, she or he may be dead.
3. Eight years after fast-reproducing comb jellies invaded the Black Sea, they dominated it.
4. Twenty to 40 people are killed annually from box jellyfish stings in the Philippines alone.
5. One hundred foot-long tentacles may dangle from the Lion's Mane Jelly.
6. Four hundred vast Dead Zones in the world oceans are too polluted for almost all life except jellyfish.
7. One thousand plus fist-sized comb jellies filled each cubic meter of water in Black Sea jelly blooms.
8. 45,000 eggs may be released daily by a single jellyfish.
9. 500,000 people are stung by jellyfish in the Chesapeake Bay annually.
10. 500 million refrigerator-sized jellyfish float into the Sea of Japan daily during blooms.

SOURCE: THE NATIONAL SCIENCE FOUNDATION



The hydrozoan is able to revert back to a juvenile form once it mates after becoming sexually mature

photo &
videography

Edited by Kurt Amsler
Peter Symes and
Scott Bennett

*Avoid ice
covered with
snow and opt
for good sunlight
to get well lit
images.*



Text and photos by Kurt Amsler
Translation by Arnold Weisz

Ice diving is always something out of the ordinary. The atmosphere, colors, flora and fauna—it definitely pays off to endure the icy temperatures for a while. However, there are a few things you need to be aware of. If you are not afraid of the cold water and you can overcome the anxiety of diving under ice, you will enjoy photographing the sometimes bizarre formations under the ice.

photo & Ice Diving



photo & video

Most ice diving will take place near the entry/exit hole, as you will find the best light conditions here.

When and where

The best images captured under ice are usually done near the entry and exit hole, because you find the best light conditions here. Another advantage is safety, as diving under ice is more risky than diving in open water. Even though you seldom dive very deeply under ice, but mostly keep directly under the ice, it is recommended that you take a special ice diving course before you go. In addition you need to have equipment that is prepared for low temperatures.

The most spectacular images are often taken with rocky ice formations. These ice conditions arise when water is partly frozen, and the wind starts to shift the ice, so it piles up on each other. The temperature then drops low enough so that the ice forms fantastic structures. Combine this



with sunlight, and you have some fantastic scenery for your photographs. Just make sure that (as with normal flat ice) the snow doesn't cover the area where you want to photograph. As this will greatly diminish the sunlight.

The equipment

What kind of camera you use for ice diving doesn't matter. More importantly are the batteries. These need to be new or fully charged, as extreme temperatures

tend to deplete batteries more quickly.

Whether you should use one or two strobes depends on how wide your lenses are—which can never get wide enough. And you certainly have enough free space under the ice to work with.

The subject

You are not going to make any close up or detailed images under the ice. Here, we are literally speaking about the "big picture". For example, pictures of your dive buddy swimming in diffuse light under the ice. Or images that capture the atmosphere of the light coming through the ice.

For best results, mix strobe light with natural light. Set the camera on manual, set your focus on the immediate area in front

of the camera for the flash, and regulate the shutter speed, so it takes into consideration the ambient light. The most ideal cameras for this kind of photography are digital cameras, as you can check the result immediately and make necessary corrections before the next shot.

When using an analog camera, you should always make a series of images with different settings. Just remember to use fast shutter speeds as you would use in the Caribbean—this is easy to forget.

Normally, set your aperture between 3.5 to 4, and set the shutter speed for 1/30 to 1/15 seconds. The advantage of this is that the light rays from the dive lights will appear more intense. Don't use too strong flash as this will reflect of the particles in the

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Don't forget to make some shots through the water or the surface of the ice of the people on top of the ice.





The prevailing color in a image taken under the ice is often "cold blue". You can add some warmer colors and create a different ambience in the image by using divers with colored suits and lamps.



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and briefings should be done indoors. Plan the dive well within safe limits and dive the plan. If you are getting cold underwater, get out immediately.

An underwater photographer shivering is of no use.

Underwater ice photography can only be successful if it is done safely and well organized. This type of diving offers the underwater photographer a completely different environment and new subject matter, which you can never find in tropical waters.



sunlight to get well lit images.

- Because of the extreme conditions, you should only use camera equipment and techniques you are very familiar with.

- To avoid being cold even before entering the water, do all your preparations indoors.

- Batteries lose power much faster in low temperatures. Try to keep your camera equipment out of the cold as much as possible, to avoid the batteries giving out mid-dive.

- You will still have to apply basic photography rules under water. The

only real changes are the light conditions, and you have to set lower shutter speeds, such as 1/15 second. Keep your camera steady.

- Most ice diving will take place near the entry/exit hole, as you will find the best light conditions here. Don't forget to make some shots through the water or the surface of the ice of the people on top of the ice.

- Don't plan too many maneuvers during an ice dive. The safety lines restrict movement, and you have to work more slowly. Low temperatures can chill your body quickly and make you lose your concentration.

- The cool blue ambience is part of under ice photography. But avoid divers just appearing as dark shadows. It's always good to have models with bright colored dive suits. Don't underexpose the images.

- Ice diving can be dangerous. Never dive without a safety line, and enforce all other safe diving rules. This way you will be able to concentrate on the imaging and surface with good shots.

For more information on Kurt Amsler and his UWP workshops, visit: Photosub.com ■

water and ruin the image. The prevailing color in a image taken under the ice is often "cold blue". You can add some warmer colors and create a different ambience in the image by using divers with colored suits and lamps.

Working under ice is restricted by your safety line. Hence you shouldn't move around too much, and neither should your models, to avoid entanglement.

Thermal protection

The freezing temperatures are also an important factor. Avoid prolonged stays out of the water in below zero (°C) temperatures. Preparing the camera

Practical tips for ice diving photography:

- To get good images under the ice, conditions play a vital role. Avoid ice covered with snow and opt for good

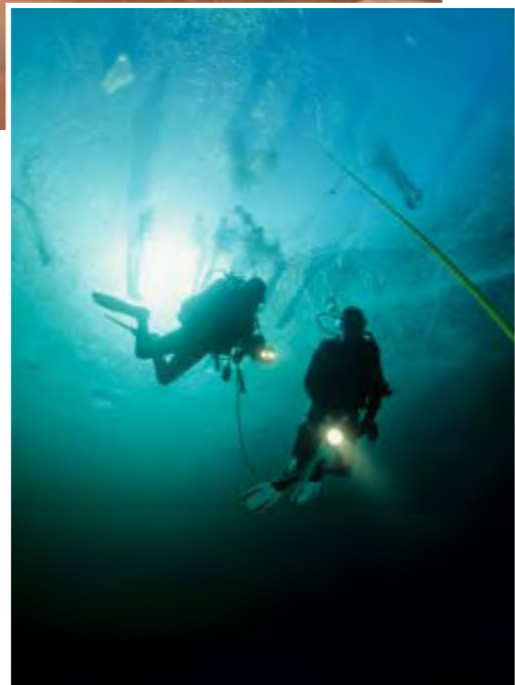




photo & video



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Seatool

The Seatool SR11/SR12 underwater housing for the Sony HDV Handycam HDR-SR11/SR12 is machined from pure, solid blocks of aluminum and polycarbonate. The end result of this meticulous attention to detail is one of the smallest, lightest underwater video housings ever produced.



This housing features rugged aluminum construction yet only weighs 1.5kg. Small and light enough to hand carry on aircraft, it's the perfect tool for the travelling diver faced with strict airline weight restrictions. www.h2ophotopros.com

Ring LED

These groundbreaking new LED ringlights from German Werner-LED are designed with both video and still photography in mind. Depth rated at 100m these sturdy units have an expected life time of 50,000 hours. The Ring-LED comes in a 18W version with 36 diodes and a 36W version with 72 diodes. Output is rated at 650 and 1300 lumen respectively. Colour temperature is 9000-10,000 K. Price starts at € 497 (excl. accumulator and accessories) werner-led.de



Watershot

Designed for the Canon EOS 450D/XSi Rebel DSLR camera, the Watershot WDS-450D underwater housing features the highest quality in camera housing design and manufacturing.



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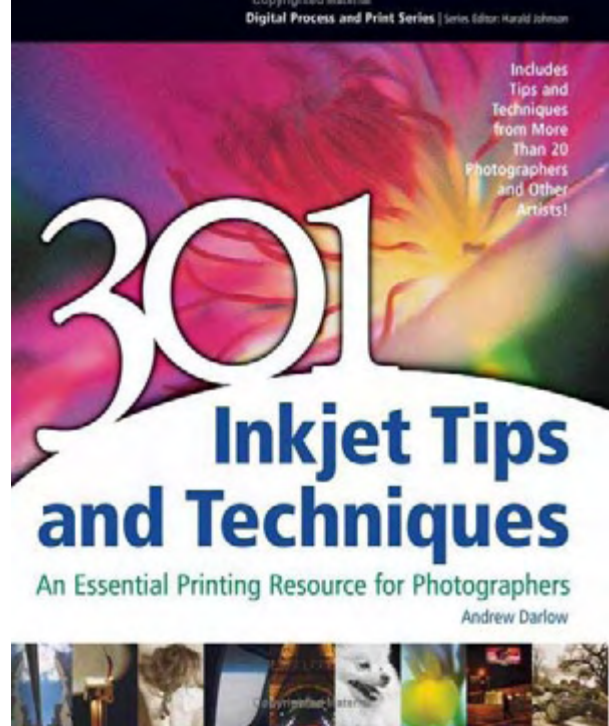
D90

French Fradotec sent us a very brief press release notifying us about this new housing for the Nikon D90, which is depth rated to 60 m fradotec.com

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Aquatica is proud to announce its latest addition, the housing for the incredible Canon 5D mark II, with 21 mega pixels and HD video this camera/housing combination will change the rules of underwater imaging. The Aquatica housing is equipped with a hydrophone to take full advantage of the Canon 5D Mk II potential. Machined from solid aluminum, treated and anodized to military specification, then painted with a robust weather and wear resistant finish, this addition to our already wide selection of housings will benefit from the same 300 ft. depth rating that set us apart from our competitors. www.aquatica.ca



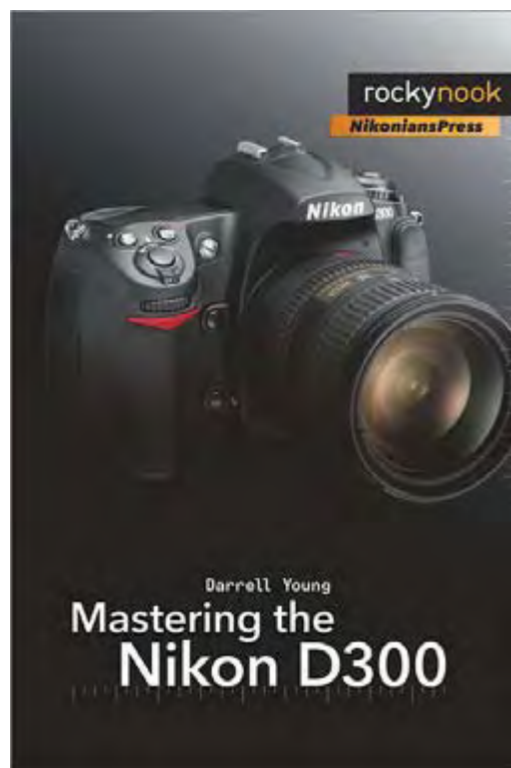


301 Inkjet Tips and Techniques was chosen as the winner in the 'Photography: Instructional/How-To' category of The National Best Books 2008 Awards, sponsored by USA Book News

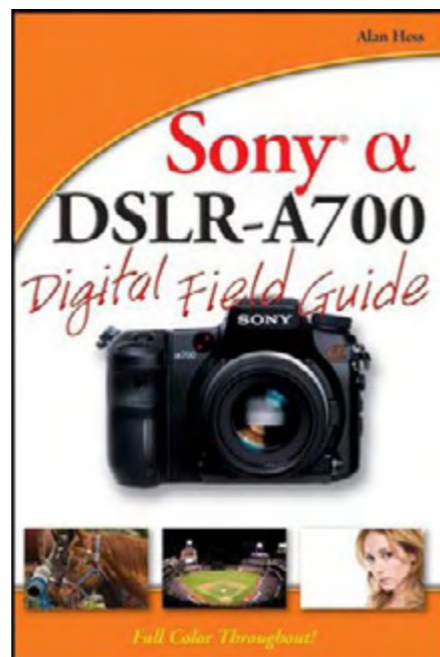
"301 Inkjet Tips and Techniques," is a comprehensive, how-to guide to high-quality digital output that shows photographers of all levels how to make high-quality prints through detailed instructions and hundreds of full-color examples from more than 20 professional photographers and other artists. The book is available in most bookstores, at Amazon.com and other online retailers. The Table of Contents, Introduction and a full chapter can be read at the book's companion site, www.inkjettips.com.

In Mastering the Nikon D300 (Rocky Nook, \$39.95 USD), author Darrell Young leads you on an exploration of the features and capabilities of the powerful new Nikon D300 camera.

The learning experience for D300 beginners (and refresher information for professionals) goes beyond the camera itself, covering additional Nikon equipment, such as the use of optional Speedlights. Frequent references to the user manual provided by Nikon (with specific page references) allow the reader to easily navigate past the confusion that often comes with new equipment.



Shooting Magic, a DVD guide designed to help you get stunning underwater filter images with either SLR or Compact digital cameras. Price is just £15 (approx \$23, €18). All Magic Filters come with detailed instructions on how to use them. This film takes you further and gives you an 1:1 demonstration of the techniques with Alex Mustard and shows you the results you can expect from typical dives.



The Sony Alpha DSLR-A700 Digital Field Guide is filled with everything you need to know in order to take amazing photographs using your Sony Alpha A700 digital SLR camera. This full-color portable guide walks you through the essential controls, features, and functions of the A700 using step-by-step instructions and full-color images of each menu screen. This robust guide not only shows you how to adjust white balance, autofocus, exposure, and choose lenses, it also teaches you when and why you should adjust each of these key settings.

ISSUE #3
MEGAMERICAN

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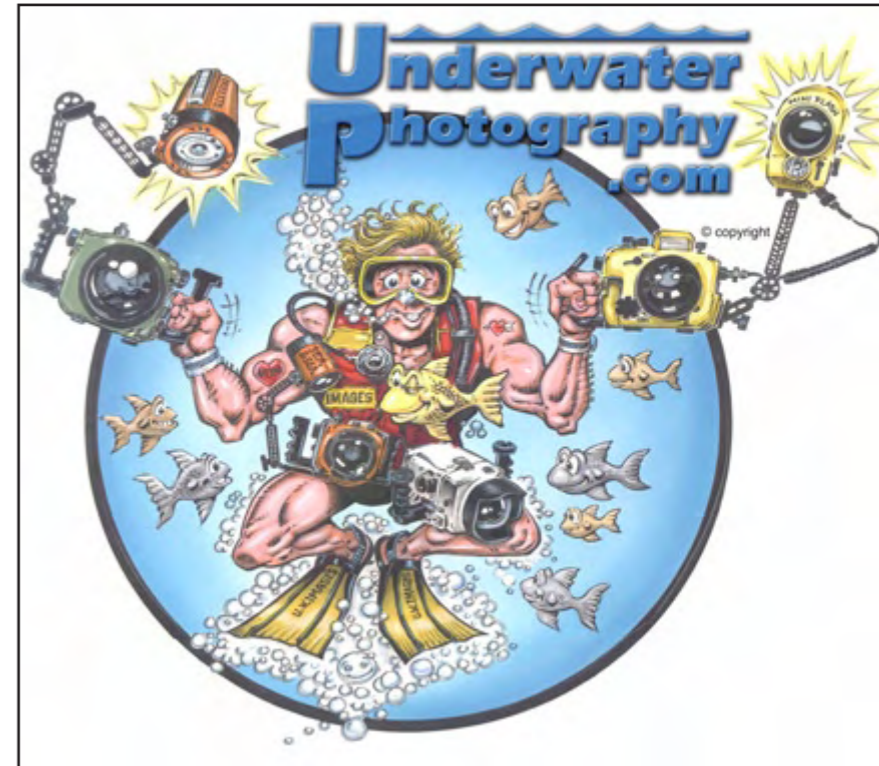
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Edited by
Peter Symes

High Numbers of Right Whales Seen in Gulf of Maine

NOAA Researchers Identify
Wintering Ground and Potential
Breeding Ground

Image and text by NOAA

A large number of North Atlantic right whales have recently been seen in the Gulf of Maine, leading right whale researchers at NOAA's Northeast Fisheries Science Center (NEFSC) to believe they have identified a wintering ground and potentially a breeding ground for this endangered species.

44 individuals

The NEFSC's aerial survey team saw 44 individual right whales on December 3 in the Jordan Basin area, located about 70 miles south of Bar Harbor, Maine. Weather permitting, the team regularly surveys the waters from Maine to Long Island and offshore 150 miles to the Hague Line (the US-Canadian border), an area about 25,000 nautical square miles.

"We're excited because seeing 44 Right whales together in the Gulf of Maine is a record for the winter months, when daily observations of three or five animals are much more common," said Tim Cole, who heads the team. "Right whales are baleen whales, and in the winter, spend a lot of time diving for food deep in the water column. Seeing so many of them at the surface when we are flying over an area is a bit of luck."

Just a few days later, on December 6, the team observed only three right whales on Cashes Ledge, about 80 miles east of Gloucester, MA, Cole says the whales are known to be in the region, but actually seeing any of them on any given aerial survey is unpredictable. On December 14, the team saw 41 right whales just west of Jordan Basin.

We're excited because seeing 44 right whales together in the Gulf of Maine is a record for the winter months, when daily observations of 3 or 5 animals are much more common





Many female North Atlantic right whales head south in winter to give birth in the waters off Florida and Georgia, the only known calving ground for this population.

Many female North Atlantic right whales head south in winter to give birth in the waters off Florida and Georgia, the only known calving ground for this population. Little is known about where other individual right whales go in winter, largely due to surveying conditions. Bad weather, the challenges of finding whales in such a large area, and the resources required to assess their distribution make sightings in winter especially difficult. The aerial surveys, conducted year-round, began in the 1990s.

"Sometimes we will see a whale we haven't seen in years, while other individuals are sighted fairly often," team member Pete Duley said, noting the existing library of photographs of individual right whales that observers have come to know by name based on the patterns of callosities, like barnacles, on the animal's heads. "Because only about 100 right whales, mostly females and their calves, are sighted each year in aerial surveys off the southeast coast, we know the remainder of the population must be somewhere else. We don't know much about where these other whales spend the winter or breed, but we have recently started to look in the Gulf of Maine in winter."

With a population estimated to be about 325 whales, knowing where the whales are at any time is critical to protect them. Finding an aggregation of whales can trigger a management action affording protection, such as slowing ship speeds in the vicinity of the whales. On December 9, new federal speed rules for large ships went into effect to reduce ship strikes of whales, to which North Atlantic right whales are particularly vulnerable.

Since the National Marine Fisheries Service, also known as NOAA Fisheries Service, has federal responsibilities for right whales and other marine mammals under the Marine Mammal Protection Act and Endangered Species Act, the NEFSC is a primary source of information about North Atlantic right whales in the northeast region. The Center conducts scientific research, while the agency's regional office in Gloucester handles policy and regulatory issues. NOAA Fisheries Service also funds research and conservation efforts of many other organizations, including support for stranding networks.

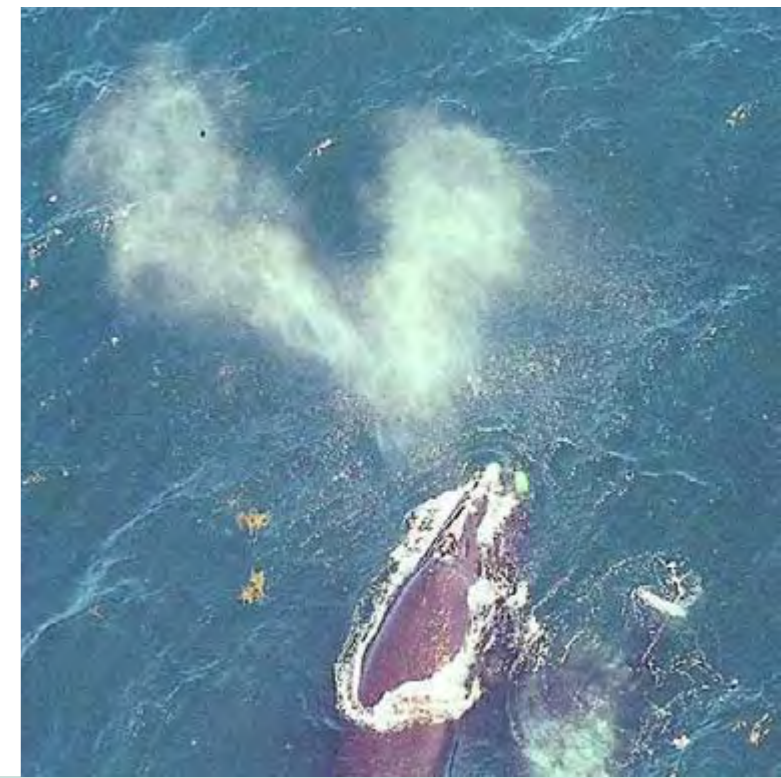
The aerial survey team is part of the NEFSC's Protected Species Branch based at the Center's Woods Hole Laboratory, which conducts research needed to manage protected species off the northeast coast of the U.S. from Maine to North Carolina. The Southeast Fisheries Science Center in Florida, which also deploys aerial survey teams, has similar responsibilities for the southeastern U.S. region, which includes the Gulf of Mexico.

"We regularly exchange information with our colleagues in the southeast, who are currently doing aerial surveys of the right whales now in that region, so we know which whales are there over the winter based on their sightings and can track births," said Allison Glass, another member of the NEFSC survey team. Glass and other team members, who

are marine biologists, have flown surveys and worked in the southeast region as well, so they know the individual animals. "It is a very small community, both of whales and of those who study them."

Team members carry a pager to keep up to date on right whale sightings. When a sighting is reported, the maritime community is immediately notified via email, the sighting web site and other automated means. Some days, especially in the summer when many people are out on the water, they receive more than a dozen sighting reports.

Given the large geographical area over which North Atlantic right whales can occur, Cole and NEFSC colleagues developed an aerial grid system a few years ago for the Gulf of Maine and waters around Cape Cod to ensure complete coverage of the region. The grid resulted in consistent surveys of areas infrequently surveyed in the past, like Jordan Basin and the Great South Channel. Those surveys have shown that whales





Only right whales are uniquely suited for individual identification from the air.

congregate in certain areas at certain times, so the most effort is placed on surveying these areas, with the entire grid still surveyed but on a less frequent basis.

"The whales appear to follow the circulation system of the Gulf of Maine and Georges Bank and pursue their food," said Cole, who has been flying surveys for more than 15 years. "In the winter many of the right whales seem to be in the middle of the Gulf of Maine and off Portsmouth, New Hampshire, and by early spring move into Cape Cod Bay, then the Great South Channel and then eastward toward Georges Basin. By mid-summer they head north into the Bay of Fundy."

The survey team has used a variety of aircraft through the years, from helicopters to seaplanes to the current Twin Otter based at the nearby U.S. Coast Guard Air Station Cape Cod. On each flight, which generally lasts five to six hours, there are two pilots for safety, two observers and a data recorder. Special domed or "bubble" windows on each side of the aircraft permit each observer to scan a wide range of ocean surface. A removable window in the back of the plane allows them to take clear photographs of any right whales they see. Other species of whales and marine mammals sighted are recorded into the data logging system but are not individually photographed.

Only right whales are uniquely suited for individual identification from the air.

The pilots are also NOAA employees, part of the agency's Office of Aviation and Marine Operations. Coast Guard Air Station Cape Cod supports the mission, providing their air field and even hangar space as needed for the NOAA plane. "This is a very resource intensive operation," Cole said. "The Coast Guard provides not only financial support but access to their facilities when we are on the Air Station. Like us, they have a responsibility to protect marine resources, so we share this mission with them." ■

DR. LOUIS HERMAN / NOAA



Diving humpback whales

Whale hot spot discovered off East Timor

A "hot spot" of marine cetaceans migrating through deep channels off the Timor coast, including blue and beaked whales, short-finned pilot whales, melon headed whales and six dolphin species was uncovered in a study for the Timor government.

"We were all amazed to see such an abundance, diversity and density of cetaceans. Most of them are actually protected," principal scientist Karen Edyvane told Reuters.

Channels

Deep ocean channels of the Wetar and Ombai straits, which plummet more than 3,000 metres (9,800 ft), are a major migratory route for marine wildlife moving between the Pacific and Indian oceans, including large sharks and turtles, the study found.

The channels are also used by US nuclear and Australian navy submarines travelling through the Indonesian islands. The research highlighted the threat posed by

unregulated fishing in the region as cash-strapped East Timor looks to develop its fishing industry while searching out potentially lucrative eco-tourism opportunities like whale-watching.

1000 individuals a day

"We are committed to ensuring that this marine biodiversity is protected," said Celestino Barreto de Cunha, director of fisheries management for East Timor's government.

In just one day, more than 1,000 individuals and possibly as many as 2,000 whales in eight separate pods—each one containing up to 400 mammals—were spotted over a 50-kilometre (31-mile) stretch of coast, Edyvane said. ■

Are whales getting thinner?

According to a controversial new Japanese study whales are losing weight. Antarctic minke whales shed nine per cent of the blubber over 18 years, corresponding to an annual weight loss of 17 kilograms. Blubber is vital for whales because it helps to retain heat in cold waters and store energy and nutrition.

The study, led by Kenji Konishi of Japan's government-backed Institute of Cetacean Research, called for further study on krill, saying that the very future of the eco-system was at stake. Investigating "the dynamics of the widely distributed krill population is quite difficult, so that monitoring energy storage by a krill consumer, such as the minke whale, can be most useful," it said.

The study was published in *Polar Biology*, a journal with editorial offices in Germany and Alaska, after several other journals rejected it, a researcher said. Critics said the recent study, which involved the slaughter of thousands of whales, is little more than window-dressing for Japan's pursuit of commercial whaling. Conservationists dismissed the study and said that researchers could also use non-lethal methods such as sonar to gauge krill populations or ultrasound to monitor whales.

"There is no need to kill whales to study them. 'Research' whaling is just commercial whaling under another name," said John Hocevar, oceans specialist at Greenpeace.

Gourmet Dolphins

Text by Arnold Weisz

The way dolphins look upon their food is remarkably similar to humans—well, in some ways at least. Scientists have taken a closer look at dolphin habits regarding food and found out that they are capable sea chefs, that female bottlenose dolphins work long hours for their food, and that female dolphins use sponges to cover beaks when

Dolphins are the chefs of the seas, having been seen going through precise and elaborate preparations to rid cuttlefish of ink and bone to produce a soft meal of calamari, Australian scientists say.

A wild female Indo-Pacific bottlenose dolphin was observed going through the same series of complicated steps to prepare cuttlefish prey for eating in the Spencer Gulf, in South Australia state.

foraging in sand for food. Janet Mann of Georgetown University in Washington, DC, and colleagues have now reviewed data collected during 20 years spent monitoring this group of dolphins and found that, while mothers show both their male and female calves how to use sponges, female calves are almost exclusively the only ones to apply this knowledge.

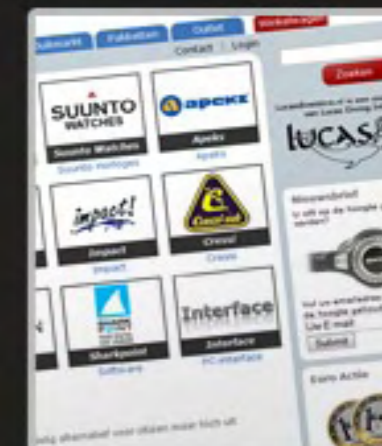
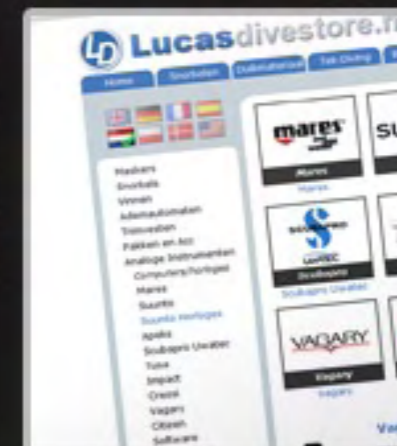
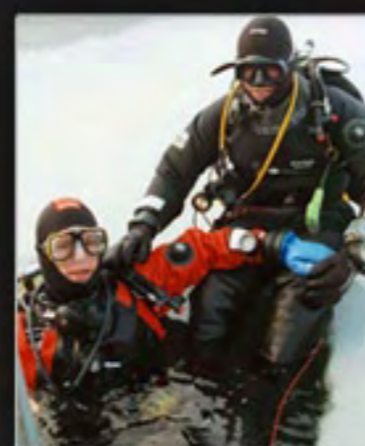
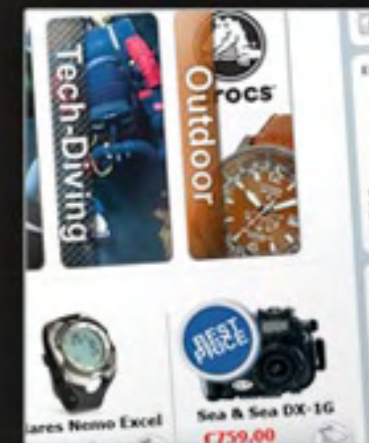
Males don't seem to care
Male dolphins on other hand, it seems, are not interested in learning how to use a sponge. During foraging, sponge-carrying dolphins wore conical marine sponges

(10–25cm from base to top) over their beaks, cupping the jaw completely. Dolphins have been seen going through precise and elaborate preparations to rid cuttlefish of ink and bone to produce a soft meal of calamari, according to Australian scientists. After catching the cuttlefish and killing it, the dolphin lifted the body up and beat it with its nose to drain the toxic black ink, which cuttlefish squirt into the water to defend themselves when attacked. Next, the prey was taken back to the seafloor, where the dolphin scraped it along the sand to strip out the cuttlebone, making the cuttlefish soft for eating. ■



Tool use is rare in wild animals, but of widespread interest because of its relationship to animal cognition, social learning and culture. Despite such attention, quantifying the costs and benefits of tool use has been difficult, largely because if tool use occurs, all population members typically exhibit the behavior. In Shark Bay, Australia, only a subset of the bottlenose dolphin population uses marine sponges as tools.

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Pantropical Spotted Dolphin

HOWARD GOLDSTEIN, NMFS SOUTHWEST FISHERIES SCIENCE CENTER

whale tales

Dolphin Populations Still Stunted by Fishing Activities

Despite broad “dolphin safe” practices, fishing activities have continued to restrict the growth of at least one Pacific Ocean dolphin population, a new report by a Scripps Institution of Oceanography has concluded.

“The results of this study clearly show that depleted dolphin populations have failed to recover in part due to a decline in reproductive output, and that fishing has had an effect on reproduction. This shows that the fisheries indeed are still having an impact.”

Populations of dolphins in the Eastern Pacific were expected to increase in abundance after successful regulations and agreements were enacted to reduce dolphin deaths as a result of fishing “bycatch,” cases in which animals are caught unintentionally along with intended targets.

But the new study, published in the October issue of *Marine Ecology Progress Series*, reveals that negative impacts from fishing activities remain. Instead of reducing numbers through direct mortalities, the study shows that fishing activities have disrupted the reproductive output of the northeastern pantropical spotted dolphin. The researchers note that reproductive output of the eastern spinner dolphin also declined, but a direct link to fishing effort was inconclusive.

The new conclusions are based on broad surveys conducted by NOAA Fisheries Service between 1987 and 2003 designed to assess the size and health of dolphin populations in the eastern Pacific Ocean. The surveys included military reconnaissance camera images of more than 20,000 animals. ■

A new study reveals that while direct mortalities have been reduced, depleted dolphin populations have failed to recover as a result of a reproductive decline related to past fishing activities. The northeastern pantropical spotted dolphin is primarily affected. It’s also noted that the eastern spinner dolphin is in decline, but a direct link to fishing is inconclusive.

Alert from WDCS — The Whale and Dolphin Conservation Society

Dolphins are still being exported from the Solomons

Further export of wild caught bottlenose dolphins from the Solomon Islands

WDCS is very concerned about new reports of the further export of wild caught bottlenose dolphins from the Solomon Islands.

This is the second export of wild caught dolphins from these waters in two months. In December 7, dolphins were transported by plane to the Philippines.

Live exports of dolphins were banned in the Solomon Islands after an export to Mexico in 2003 (from which 12 dolphins eventually died) but the ban was overturned in 2007. Since then, the Solomon Islands has exported 28 dolphins to Dubai in 2007 and two shipments to the Philippines. Unknown numbers of animals have been captured in the Solomon Islands to support these exports.

Removing dolphins from a wild population has serious consequences for both conservation and the welfare of individual animals. Capture is incredibly damaging to both the animals that are removed and also those left behind. Dolphins live in social groups, and when animals are taken from these groups, important relationships are disrupted. There is also the possibility that animals that hold important roles, such as breeding females, are being removed in large numbers.

These wide-ranging and intelligent mammals are not suited to captivity, and many suffer from the impacts of confinement. Life expectancy is shorter for animals in captivity and interaction with humans, such as the swimming-with-dolphin experiences offered at huge expense at many resorts internationally, put animals and people at risk of injury and infections. ■

A Percent for the Ocean

Carlos Hiller is a painter of ocean light and life



CARLOS HILLER

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Impressive teeth,
but weak muscles

Sharks have weak bites

A new study by the University of Tampa in Florida has found that sharks have very weak jaws for their size and can bite through their prey because they have very sharp teeth and can grow to be so big.

The researchers came to the conclusion after studying ten different shark species and measuring the bites of small sharks such as sand sharks. In fact, they tested larger sharks by sedating them and using electricity to stimulate jaws. "Pound for pound, sharks don't bite all that hard," lead researcher Daniel Huber told the British newspaper *The Daily Telegraph*. Mammals have evolved much more efficient jaw muscles and lions or tigers win hands down when it comes to jaw strength, but sharks prevail in the water because of their wide jaw size. Sharks do a lot of damage simply because their teeth are so sharp and their jaws are so wide.

"Our analysis showed that large sharks do not bite hard for their body size, but they generally have larger heads," the researchers said. A six-metre great white shark can "bite through anything that you come across", the team added, noting that all species often have to resort to a sawing motion to break apart their prey.

Huber said that the research could lead to advances in protective swim wear and shark-proofing equipment. It could also contribute to the understanding of the flexible cartilage that forms sharks' skeletons.

The study has been published in the *Physiological and Biochemical Zoology* journal. ■

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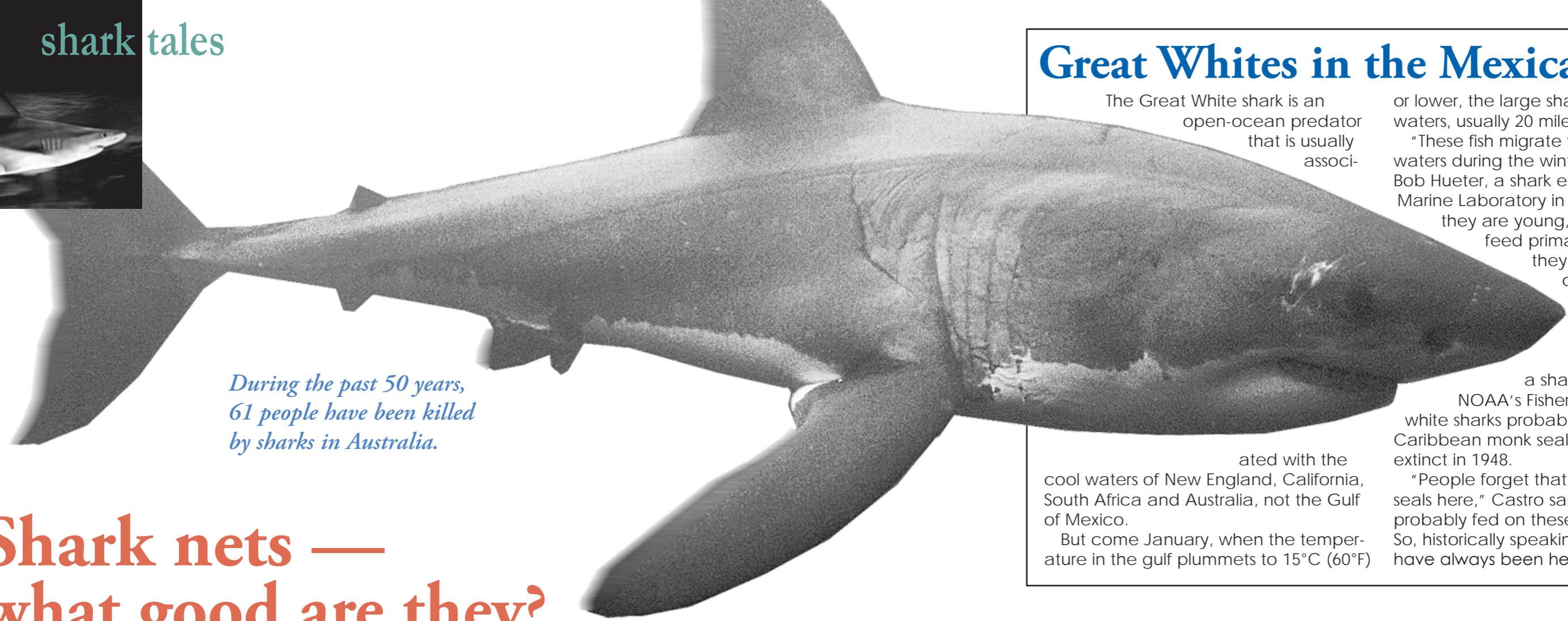
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TONY WHITE



Great Whites in the Mexican Gulf?

The Great White shark is an open-ocean predator that is usually associ-

ated with the cool waters of New England, California, South Africa and Australia, not the Gulf of Mexico.

But come January, when the temperature in the gulf plummets to 15°C (60°F) or lower, the large sharks move into area waters, usually 20 miles or more offshore. "These fish migrate from northern waters during the winter months," said Bob Hueter, a shark expert with Mote Marine Laboratory in Sarasota. "When they are young, white sharks feed primarily on fish. But as they age, their teeth change so they are better equipped to eat marine mammals."

Jose Castro, a shark specialist with NOAA's Fisheries Service, said white sharks probably once fed on Caribbean monk seals, which became extinct in 1948.

"People forget that we once had seals here," Castro said. "White sharks probably fed on these marine mammals. So, historically speaking, white sharks have always been here." ■

During the past 50 years, 61 people have been killed by sharks in Australia.

Shark nets — what good are they?

"The shark meshing program works extremely well with only one recorded death on a netted Sydney beach in the last 71 years. Of course, the public needs to remember there are no 100 per cent guarantees and the ocean is the shark's natural habitat."

Shark nets are effective, but they are not an absolute barrier between swimmers and the ocean predators.

In Australia, recent shark attacks have caused a flurry of concern about swimmer safety. Last month, a navy diver on exercise was attacked in Sydney harbour and badly mauled by what is alleged to be a bull shark. He subsequently lost a hand and a leg.

Bull sharks are extremely active this time of year, when the female have their pups their bodies are depleted of nutrients, so they are very active in their search for food. It is, unfortunately, also a time of year that everyone wants to use the waterways.

Shark nets along the Gold Coast in Queensland were effective but not absolute. The nets are moved between 51 beaches stretching from Newcastle to Wollongong, but not every beach is defended each day.

"The shark nets are about 600 metres long, and they're about five metres deep and the sharks can swim all around them," he said. Unfortunately, what it does is create a perception that there is a net between the people who swim and the sharks. In actual fact, that's not the case.

Location not advertised
The state government could soon tell swimmers which beaches are being protected by its shark nets each day.

Until now, the government has refused to even consider telling the public where the nets are placed. The government's main concern is that if the locations were advertised, the beaches where the nets are placed would be swamped by swimmers.

In New South Wales, a major review of the "shark meshing program" is about to be revealed by NSW Department of Primary Industries Minister, Ian Macdonald. The main focus of the review will be measures to reduce the likelihood of other marine life, such as sea turtles, dolphins, harmless sharks and rays, being caught in the nets. The shark meshing program has come under sustained attack by green groups for the effect it has on other marine life.

"The shark meshing program works extremely well with only one recorded death on a netted Sydney beach in the last 71 years," said Macdonald.

45,000 sharks netted
More great whites have been caught off the Queensland coast than the NSW coast. There were 577 great whites netted off NSW between 1950 and 2008, while 901 have been caught off Queensland since 1962. In Queensland, more than 45,000 sharks have been caught in nets since they were introduced, according to the Department of Primary Industries and Fisheries. Last year, 578 sharks—more than 260 of them longer than two metres—were netted off Queensland beaches,

"We would expect that the rain and warmer weather in recent weeks in southeast Queensland will see a further increase in shark movement, particularly bull sharks," said Primary Industries and Fisheries Minister, Tim Mulherin. Swimmers are warned to avoid river mouths, canals and artificial waterways, especially at dawn and dusk. ■

The large mesh size of shark nets is designed specifically to capture sharks and prevent their escape until eventually, they drown. Due to boating activity, the nets also float four meters or more below the surface and do not connect with the shoreline, thus allowing sharks the opportunity to swim over and around nets. One downside to shark nets is the high incidence of bycatch, including threatened and endangered species including sea turtles, dugongs, dolphins and whales. ■



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Frank Russell



P O R T F O L I O





These days anything we can do to help the environment and recycle is a good idea.

American artist Frank Russell of North Carolina takes recycling to another level, transforming it into an art form with his fantastic sculptures of underwater creatures created with found objects and scrap metal.

Text by Gunild Symes
All images of sculptures created by Frank Russell courtesy of the artist



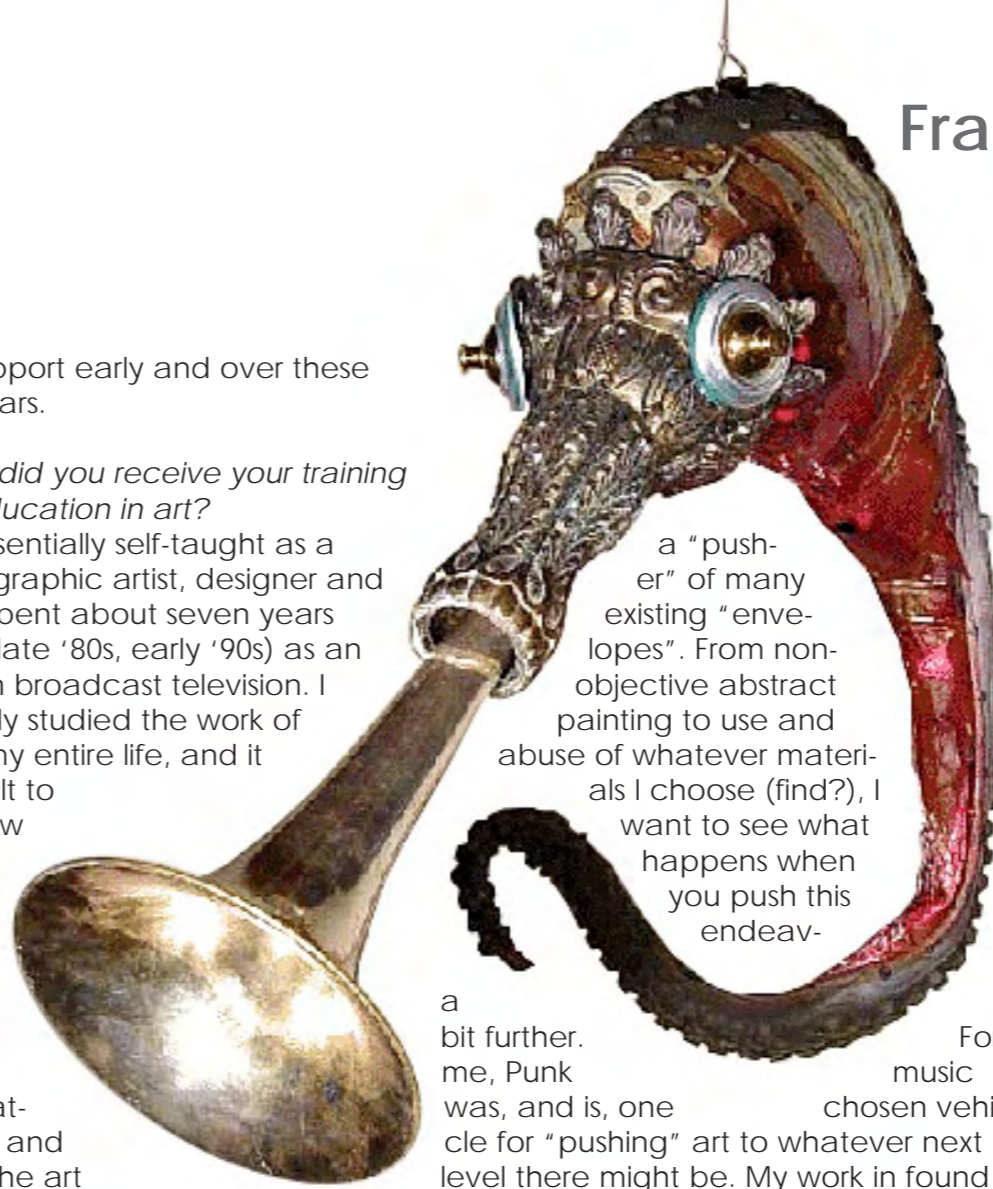
What made you go into art?
Some of my earliest childhood memories are of drawing with pencil and crayon on paper at the feet of my young father who patiently helped me shape simple stick figures and then current automobile styles (rounded little VWs and wild Cadillac fins) in a loving and nurturing manner.

This intimacy with my idol prepped me well for development of ritual of deeply satisfying personal reward earned for sincere attempts at my own creative realization. I owe so very much to my father for his emotional and

spiritual support early and over these many years.

Where did you receive your training and education in art?
I am essentially self-taught as a painter, graphic artist, designer and sculptor. I spent about seven years (back in the late '80s, early '90s) as an art director in broadcast television. I have sincerely studied the work of others over my entire life, and it is a bit difficult to passively allow the "handle" of "self-taught", as I have learned so much from simply admiring, appreciating, imitating and questioning the art of others. Masters as well as local artists and crafts people have been, and continue to be, my best and only teachers.

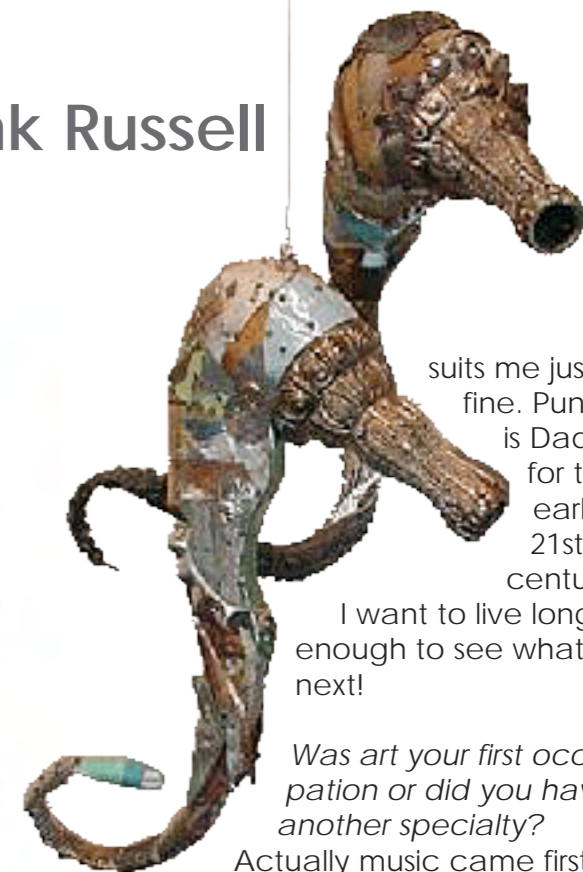
Is there an artist, movement or idea that influences you and your work?
Dada came first, I think, as an initial rather serious realization of the idea of "revolutionary" art. "Outsider-esque" art seems somehow a "truer" creative endeavor for me, and I have typically been known as



a "pusher" of many existing "envelopes". From non-objective abstract painting to use and abuse of whatever materials I choose (find?), I want to see what happens when you push this endeavor

a bit further. For me, Punk was, and is, one chosen vehicle for "pushing" art to whatever next level there might be. My work in found objects has been described as a bit "punk" and "post apocalyptic" and that

Frank Russell



suits me just fine. Punk is Dada for the early 21st century.

I want to live long enough to see what's next!

Was art your first occupation or did you have another specialty?

Actually music came first in my development as an expressive artist. I played in bands (to little or no avail) for several years before I decided to make visual art. It seemed less demanding physically, and I could stay "off the road" and perhaps find more peripheral life outside of art: a wife, a home, etc.

A few years later, I ended up as freelance art director, graphic designer in broadcast television for several years

CLOCKWISE FROM LEFT: Chopper; Piranha Donna; Horatio Hornbower; Wild Seahorses; Swordfish

PREVIOUS PAGE — CLOCKWISE FROM TOP LEFT: Humpy Bogart; Crabola; Good Friends in School; Turtle Recall





LEFT TO RIGHT:
Beneath the Ray of Hope; Crab; Eel
Mannered; Pocket Lobster

before taking the plunge into full time studio art about 17 years ago.

Why did you choose the medium you use? Where do you find your materials? If necessity is the mother of invention, then poverty may be the father. It can be expensive to make fine art. I know of more than one good artist who must keep a "straight job" in order to afford sometimes expensive materials to work on "unsecured" artworks. Without commissioned budget or materials, significant

or larger projects must typically come from working artists' pockets. Hence, a search is on for less expensive raw materials throughout the life of poor working artists. Rock 'n Roll doesn't need an expensive guitar, right?

Most of the furniture in my home was built of recovered, recycled materials on hand at the time they were needed. When my sons were small, they carved their names and whittled quite mercilessly on their old wooden double bunk beds. I used this material to build a rather

handsome seven-foot cabinet for our living room from these "pre-loved" scraps of wood that actually held significant intrinsic value to us. This cabinet means much more now. It tells a story of youth, family history and love.

As a painter of abstract canvas for over 30 years, I have always experimented with atypical materials, textures, shapes... I have worked with asphalt and tar... I began to attach (to the surface), assorted pieces and shapes of textured materials, including fabric, organic

materials, and eventually small sheets of flat metal. I made a series of paintings on recycled tin roofing and sheet copper. As I began to "work" the metal to advance surfacing and to build texture, the metal itself became more and more important in the process. This, combined with the work I was already doing with paper collage images of piranha and sharks, eventually led to experiments with small fish made of metal shapes.

Actual objects (horseshoes, handguns, dental appliances, handlebars,

etc) came next. Interlocking shapes provided even more entertainment, and the rest, as they say, is art history.

One aspect of my work that provides a certain charm is the recognizable aspect of many or most of my materials. I make it a point to use parts and pieces of easily identified objects (musical instruments, household items, bowling pins, cooking utensils, garden implements, farm tools, coffee pots, etc) that the viewer need not be art savvy to appreciate.

It brings an "A-HA!" or a smile to almost

portfolio



CLOCKWISE FROM LEFT: Tuna; Hammerhead; Sir Lampsalot; Dancing Queen Fish; Looper; Peter Pan Fish

Frank Russell

caring heart. This formula will work magic with almost everything, even broken relationships or bad credit!

What is your creative process?

As my audience grows, I find that more and more, I need my experience as an art director to effectively support my work as the creative. Commissioned works typically come with the “baggage” of current fashion, preexisting ideas, spatial requirements, budgets, input from “players”, buyers or designers, etc—so my creative process requires active “people skills”, listening skills—too many meetings and countless hours just on the phone. Only then can I get actual freedom to create something original or fresh, new and (oh, by the way...) suitable.

I need to spend lots and lots of time simply in the close company of raw materials—all stretched out across the floor or the yard, not in neat piles. In fact, I need to regularly stumble over objects I’ve never worked with before in order to find the next piece that will take me on the next journey.

Solitude is imperative at certain stages. Music is always present in my work. Trance music, dub dance music, kick-ass rock and roll, environmental space

music, outsider music, (loud) vintage surf guitar, global ethnic music as a bed of seamless ambience that flows through my studios like the river of junk that flows beneath my feet.

What is your artistic mission?

I own my gallery here in the city, and it is purposely a gallery that is about mutual respect, creative growth and personalized artist-to-artist support and development. It is not about profit or making a fortune in the art world.

I offer studios to local artists who are working hard to grow creatively as well as professionally. I try to give back a little of so much that has been given me by my community, or tribe, here and at large. We love to see developing artists gather confidence and skills and begin to take their rightful places as honored, respected or revered members of society, community leaders and career artists.

Historically, working artists have allowed themselves to be relegated to sub-status as “social underlings” somehow. We have a tendency to become playthings for the rich as well as prime targets for every other fundraiser in town...

Why did you choose fish and marine life

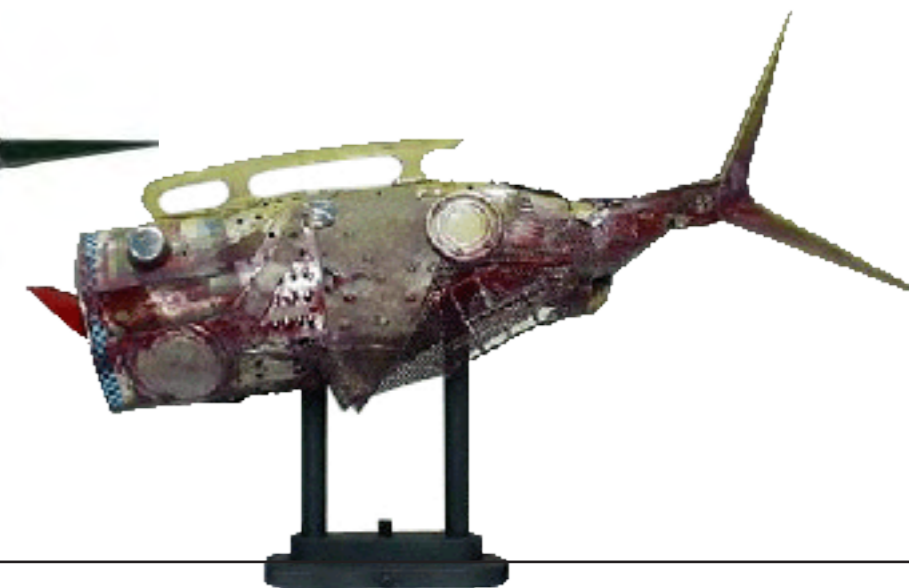
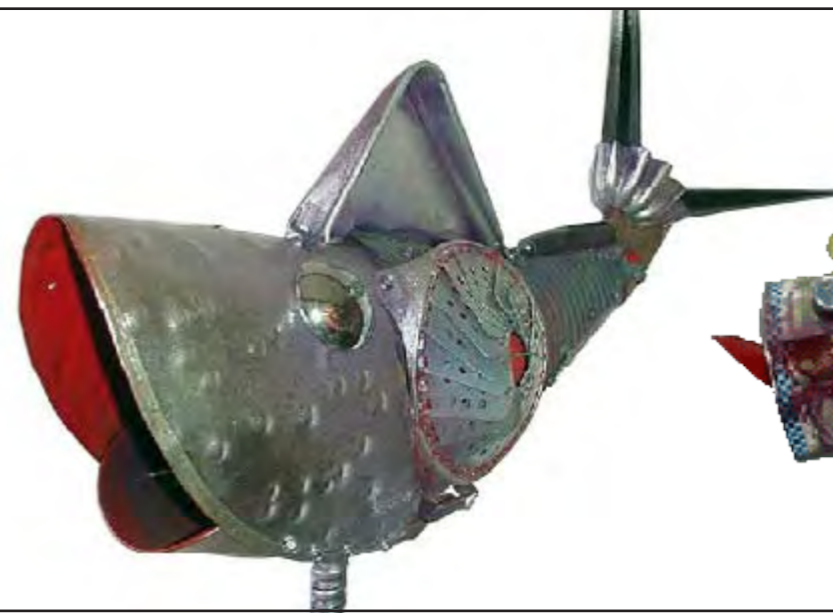


captions this page...

anyone who sees a catfish whose head is or was a frying pan, or a penguin made from an obvious streetlight... it makes my sculptures that much more accessible and much more fun!

I now live knee-deep in a river of cast-off, discarded, recycled materials that somehow find their way to me. Folks know of my work with “junk” and bring really cool things to me simply because they like the idea of them being “re-born to be wild”, as opposed to drag-

ging these items to the curb or to the city dump. I have calls almost daily from donors. I have “pickers” all across the land that keep my work in mind as they peruse potential materials or treasure. As a piece of seemingly useless junk is re-discovered, reconsidered, re-evaluated (“cared about” or LOVED, if you will) it can be given a new life. Worth can be re-assigned by a bit of direct attention, creativity and a



portfolio

as subject matter?

Living at the coast of North Carolina for several years, an acquired passion for pier and surf fishing, snorkelling in the Florida Keys and my enchantment with large aquariums combine to provide my fascination with marine life and underwater beauty. Many of my clients are avid scuba divers. A few are involved in marine research. Fish are also visually an invitation for design. They are so diverse in appearance, size, color, shape, etc. Such diverse beauty one could spend an eternity simply appreciating the minutia of wildly different designs and details.

I am voluntarily working with The Natural Science Center of Greensboro North Carolina in the US to assist in the design, financing and development of one of the largest aquariums in our state. We have a long way to go. We need hordes of local support and some fairly heavy money. This city's Natural Science Center is one of only a handful of accredited science museums in the country that operate also an accredited zoo. A 20,000+ gallon aquarium will make us a triple winner. It is a dream being realized through the vision and leadership of the good folks at the Center. Observing wild creatures living in and under water provides a centering, soothing and healing power that my soul seriously seeks. God seems somehow more visual and readily apparent underwater.



What are your current works or projects in progress?

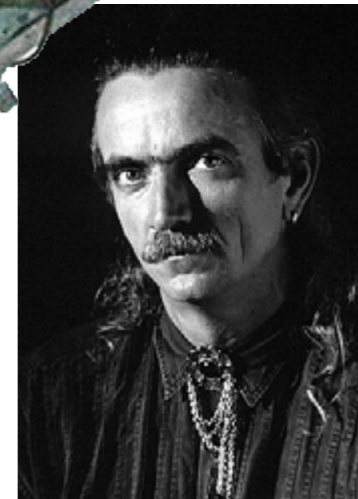
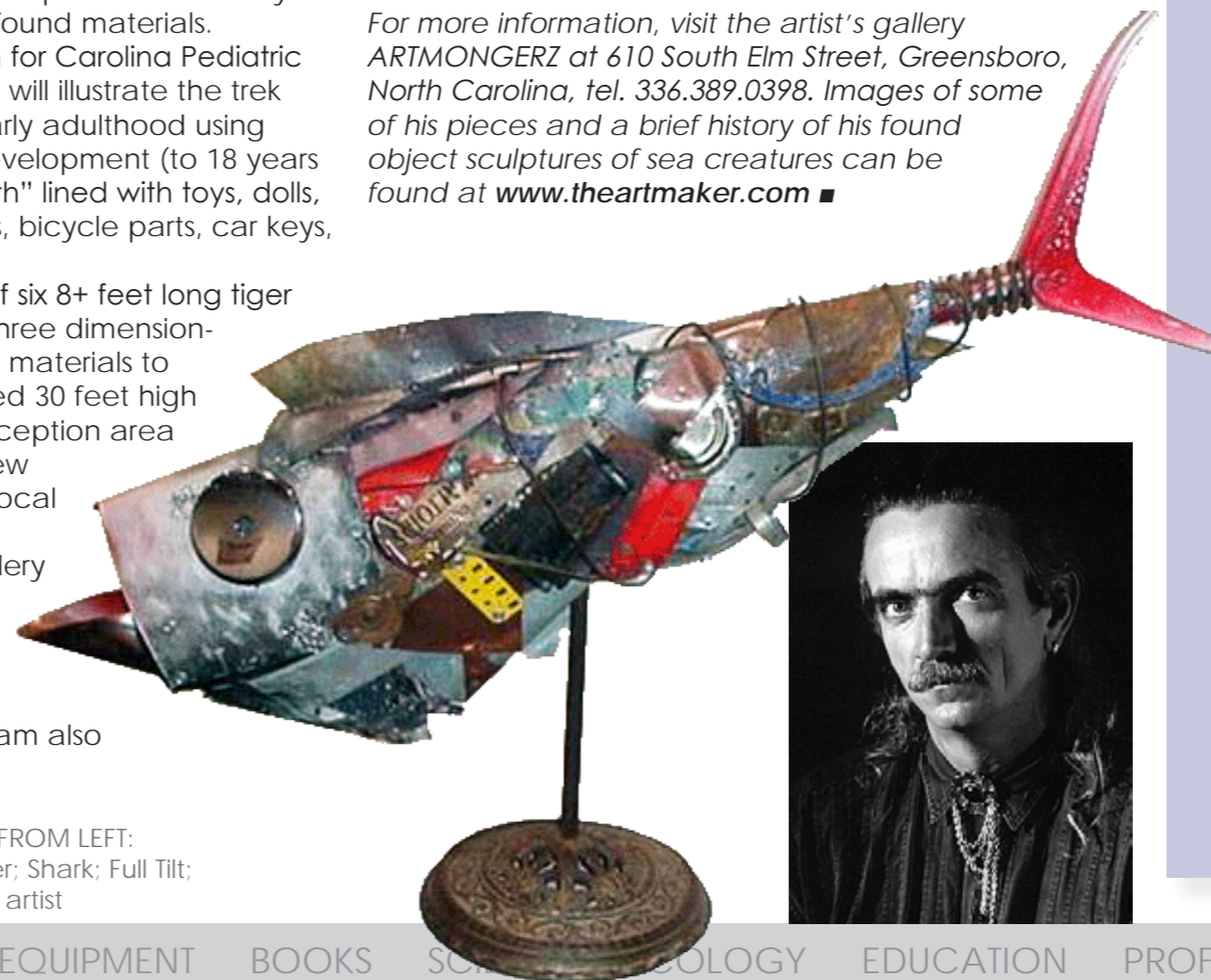
- A 16-foot square coral bed featuring several types of coral (a Brain Coral made from Slinkys), a crustacean or two and perhaps even an octopus made entirely of recycled and brightly colored found materials.
- A large four-panel installation for Carolina Pediatric to be entitled "JOURNEYS" that will illustrate the trek of a child from birth through early adulthood using actual objects of childhood development (to 18 years old) along a 6"x 50' metal "path" lined with toys, dolls, games, computer components, bicycle parts, car keys, etc.

turning a bright yellow Hypertech Pro 40 underwater camera case into a life-sized Anglerfish... any takers out there?

For more information, visit the artist's gallery ARTMONGERZ at 610 South Elm Street, Greensboro, North Carolina, tel. 336.389.0398. Images of some of his pieces and a brief history of his found object sculptures of sea creatures can be found at www.theartmaker.com ■



- A school of six 8+ feet long tiger sharks built three dimensionally of found materials to be suspended 30 feet high in a large reception area fronting a new facility of a local law firm. Also, our gallery celebrates four years next month and we are delighted! I am also



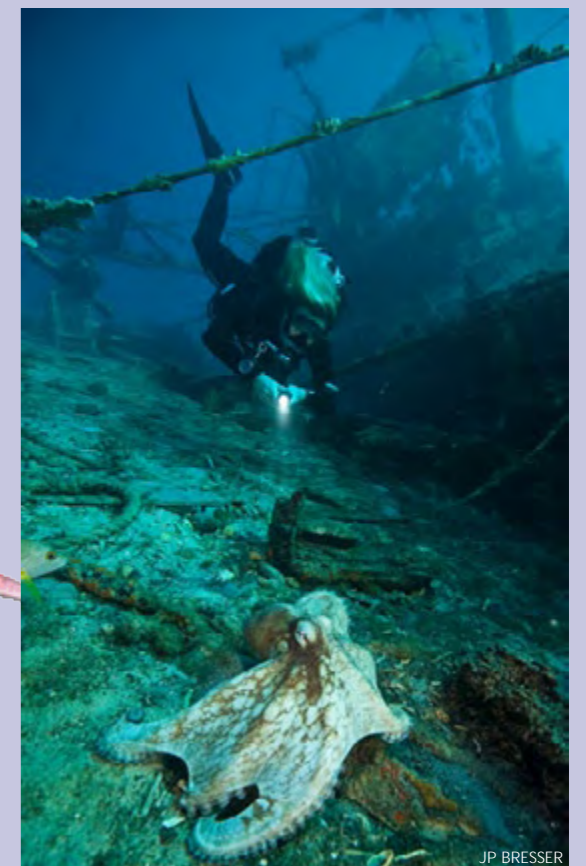
CLOCKWISE FROM LEFT:
Grouper; Kisser; Shark; Full Tilt;
Portrait of the artist

IN OUR NEXT ISSUE

Fiji
Bonaire
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SCOTT JOHNSON



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