



GLOBAL EDITION  
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Number 37

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# DIRECTORY

X-RAY MAG is published by AquaScope Media ApS  
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**PUBLISHER  
& EDITOR-IN-CHIEF**  
Peter Symes  
[Editor@xray-mag.com](mailto:Editor@xray-mag.com)

**SENIOR EDITOR**  
Michael Symes  
[science@xray-mag.com](mailto:science@xray-mag.com)

**PUBLISHER / EDITOR  
& CREATIVE DIRECTOR**  
Gunild Symes  
[Gunild@xray-mag.com](mailto:Gunild@xray-mag.com)

**SECTION EDITORS**  
Andrey Bizyukin, PhD - *Features*  
Arnold Weisz - *News, Features*  
Catherine Lim - *News, Books*  
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Michael Arvedlund - *Ecology*

**ASSOCIATE EDITORS  
& REPRESENTATIVES:**  
**Americas:**  
Arnold Weisz  
[Arnold@xray-mag.com](mailto:Arnold@xray-mag.com)

**CORRESPONDENTS**  
Robert Aston - CA, USA  
Enrico Cappeletti - Italy  
John Collins - Ireland  
Marcelo Mammanna - Argentina  
Nonoy Tan - The Philippines

**Russia Editors & Reps:**  
Andrey Bizyukin PhD, Moscow  
[Andrey@xray-mag.com](mailto:Andrey@xray-mag.com)

Svetlana Murashkina PhD, Moscow  
[Svetlana@xray-mag.com](mailto:Svetlana@xray-mag.com)

**CONTRIBUTORS THIS ISSUE**

Michael Aw  
Morten Beier  
Scott Bennett  
Mathias Carvalho  
Monica Choo  
David Davie  
Joseph C. Dovala  
Göran Ehlme  
Wayne Fenior  
Danielle Heinrichs  
Shawn Heinrichs  
Mike Keleher  
Maximo Laura  
Catherine GS Lim  
Bonnie McKenna  
Bob McNearney  
Svetlana Murashkina, PhD  
Andy Murch  
Catherine Muir  
Mary O'Malley  
Asser Salama  
David Shale  
Sharksavers.org  
Robert Sterner  
Gunild Symes  
Peter Symes  
Christina Ward-Paige, PhD  
Lawson Wood

**South East Asia Editor & Rep:**  
Catherine GS Lim, Singapore  
[Cat@xray-mag.com](mailto:Cat@xray-mag.com)

**ASSISTANT EDITORS  
& REPRESENTATIVES:**  
**Malaysia Editor & Rep:**  
Simon Kong, Kuala Lumpur  
[Simon@xray-mag.com](mailto:Simon@xray-mag.com)

**Canada/PNW Editor & Rep:**  
Barb Roy, Vancouver  
[Barb@xray-mag.com](mailto:Barb@xray-mag.com)

**GirlDiver Editor & PNW Rep:**  
Cindy Ross, Tacoma, USA  
[Cindy@xray-mag.com](mailto:Cindy@xray-mag.com)

**ADVERTISING**  
**International sales rep:**  
Arnold Weisz  
[Sales@xray-mag.com](mailto:Sales@xray-mag.com)

**Asia-Pacific rep:**  
Simon Kong (Malaysia)  
[Simon@xray-mag.com](mailto:Simon@xray-mag.com)

**French speaking territories:**  
Mathias Carvalho  
[Mathias@xray-mag.com](mailto:Mathias@xray-mag.com)

Further information: **contacts page** at [www.xray-mag.com](http://www.xray-mag.com)

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by Göran Ehlme  
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Penguins diving, Antarctica. Photo by Göran Ehlme



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go quietly, amid the noise and haste...

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# The woes of dis-information

Text by Scott Bennett

As far as news goes, it's often said, "If it bleeds, it leads." In the last few months however, bleeds could be easily substituted with spews. Oil, to be specific.

For the last two months and counting, the horrific oil spill in the Gulf of Mexico has been at the forefront of the news. Hearing the statistics on a daily basis has been something that has been nothing short of heartbreaking for untold millions of people around the world.

For those in the diving community who share an unbridled love for the ocean and its inhabitants, it has been especially tragic.

Yet for all the information that bombards us, sensationalism yet again rears its ugly head. Thoroughly inaccurate news reporting has many convinced the spill has totally ravaged the entire Gulf of Mexico, halt-

ing all recreational diving and fishing. As a result, the region's recreational diving industry has been drastically impacted.

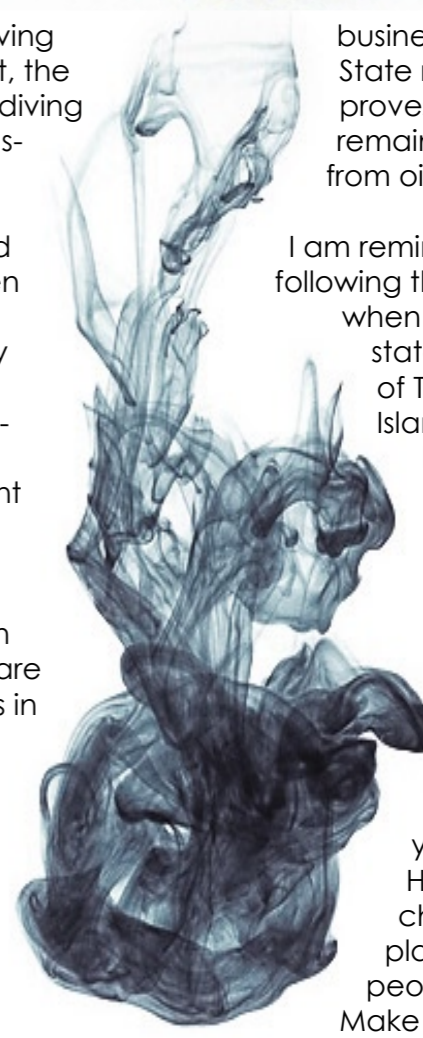
Many have cancelled holidays, causing even greater economic impact to the already embattled residents. However, the perception created by the media is quite different than the reality.

Most of Florida's Gulf coastal waters remain clear and oil free, as are numerous other areas in the region. To combat these misconceptions, DEMA has recently launched a new website: [www.gulfstatediving.com](http://www.gulfstatediving.com). Frequently updated with "real-time" posts by dive stores, dive boat operations and other dive industry related

businesses in the Gulf State region, the site proves that dive sites remain open and free from oil.

I am reminded of the days following the tsunami of 2004, when so-called "news" stated that the reefs of Thailand's Similan Islands had virtually been wiped out, when the reality was altogether different.

There is no doubt the BP oil spill is an environmental disaster whose effects will linger for years to come. However, before changing travel plans, check with people at the source. Make an informed decision based on facts, not hype. ■





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X-ray mag

News edited  
by Peter Symes  
& Catherine G S Lim

Remembering Jacques-Yves Cousteau

# What? **Happy Birthday** NEWS

June 11, 2010, marked the centennial of the late underwater filmmaker, explorer and conservationist, Jacques Cousteau.

Many generations remember him for introducing them to the wonders of the oceans through his award winning films and documentaries taken as he explored the seas aboard his ship, the *Calypso*.

Text by Monica Choo  
All photos courtesy of the Cousteau Society



Before him and his crew, little was known about the underwater world and even less documented through a medium as far-reaching as television and film. There is much to remember him for, from his technological innovations, films, television series and books, to his work as a voice for the oceans and the life it contains in his

later years.

However, if you only came into existence within the last decades of the 20th century, like I did, perhaps Jacques Cousteau only registers dimly on your awareness as some guy who was a pioneer in SCUBA. That is a good enough reason for any diver to commemorate him, but by delving into his

life, perhaps you may find that his story is one worth remembering not only for his achievements and honors, which are numerous, but also for his spirit and the qualities that he embodied.

### Who was the Manfish?

Jacques-Yves Cousteau was born in France in 1910 to Daniel and Elizabeth

Cousteau. He was a quiet child but discovered his place behind the lens when he made a film of his cousin's wedding. The reception he received from his little gift was so astounding that he never put the camera down again. By the time he was 19, he was on his way to being a Navy aviator, but his dreams were dashed after meeting with a near fatal car accident just before getting his wings in 1936.

As part of his rehabilitation to recover strength, he started swimming in the sea with his friends and soon, he became fascinated with skin diving. Through the war years, he started combining his two loves—film and the underwater world. In order to film and stay underwater longer, he experimented with re-breathers, underwater housings, wetsuits and regulators. (Interestingly, his first camera housing was a fruit jar.) It was his curi-

osity and innovation that eventually led to him to developing the Aqua-Lung, with engineer, Emile Gagnan.

Through his years, he designed and tested many of his inventions such as underwater scooters, camera and lighting equipment, mini submarines and wetsuits. He also was a pioneer in underwater habitation with the Conshelf Projects that demonstrated that



THIS PAGE: Jacques-Yves Cousteau



CLOCKWISE FROM LEFT: Coral diver; Diver with dolphins; Jacques-Yves Cousteau's grandson, Philippe Cousteau, who continues the family's work in environmental education; The refurbished *Calypso* at the centennial celebration of Cousteau



**Wes Skiles has died**

**The internationally acclaimed cave diver and filmmaker Wes Skiles, 52, was found motionless at the bottom of a reef while filming underwater off Florida's east coast**

As this issue goes to press, the details of the accident are unknown.

Wes Skiles was best known for his work in educational and adventure science films and for his pioneering exploration and documentation of Florida's springs. His death comes days before publication of his cover story on the Blue Holes of the Bahamas in the August issue of *National Geographic*. He also directed the IMAX film, *Journey Into Amazing Caves*, which takes viewers to Greenland and Mexico; and photographed underwater caves in Brazil, Puerto Rico and Australia. He has been involved in the production and filming of more than 100 films.

"He was the consummate professional who could go into the most difficult places that had never been explored before," said Chris Johns, *National Geographic's* editor in chief. "He could not only explore them, but came back with amazing photographs that captured the majesty of these places, places no one had seen before." ■

humans could live under the sea for extended periods of time.

With his new scuba gear, he and his friends started exploring wrecks and recovering artifacts and filming underwater, allowing the public to live vicariously in the new aquatic environment as he explored

it. He became famous in the Western world through his books, television series and films that he made about his explorations of the seas on board his boat the *Calypso*. His film, *The Silent World*, won both the Academy Award for Best Documentary Feature and the Palme d'Or at the Cannes Film Festival

in 1956. Later on, his film *The World Without Sun*, which chronicled the month-long life of "oceanauts" in an undersea base built in the Red Sea, also won an Oscar for Best Documentary Feature in 1964.

But it was while he was aboard the *Calypso* that Jacques first started noticing the devastating impact humans were having on the underwater environment through over-fishing, pollution and climate change. He was one of the first to draw attention to these problems, and teaching people to respect and protect the ocean environment became his main occupation for the remainder of his life up until his death in 1997. Cousteau set up two non-profit organizations specifically for the protection of ocean life, the Cousteau Society and l'Equipe Cousteau.

This year, we saw and are still seeing the worst oil spill in our history. The damage is extensive. Failing to find the balance between the sea and us, perhaps we should look to Jacques Cousteau for a better understanding of our role. We should not just commemorate his curiosity and inventive-

ness that led to technological advancement in marine mobility and equipment, but also remember Jacques Cousteau for being an active voice for the sea, someone who saw a problem and did something about it. We are not masters, but protectors of the planet, stewards of the sea, like how Jacques Cousteau was before us. ■



# The oil spill and the dive industry Gulf State and Florida Dive Report

Wayne Fenior reports

**While efforts to stop the Gulf of Mexico oil spill top the world's news, divers and dive operators in Florida and the Gulf States remain optimistic while still enjoying the best diving of the summer. It is evident that the media commotion is doing more harm than good to the people who are being affected by the disaster.**

*Favorable south-east winds have kept the majority of the oil away from favored dive spots.*

Near ground zero of the origin of the spill in Baton Rouge, Louisiana, Mark Smith owner of **Underwater Adventures** reports that they have had excellent diving on the oil rigs to the west of the spill epicenter. Favorable south-east winds have kept the majority of the oil away from favored dive spots. Since the oil that has leaked is not refined (is naturally occurring), the natural break-down of the oil is expected over time.

Jerry Adkinson of **The Dive Shop**, LLC in Biloxi, Mississippi said, "They are still diving even though the threat of nearby oil has driven most people away." They are diving oil rigs 30 to 40 miles offshore, and enjoying pristine conditions. Visit the website for recent video and photos.

In Panama City Beach, Florida, Tony Snow of **The Dive**

**Locker** reports that they continue to remain oil free and operating their two Newton dive boats sometimes twice a day. Other dive boat operators in the area have shifted into the oil business leaving the 30 wrecks within five miles of shore and other artificial reefs to those

lucky enough to find Tony's operation. Also a lot of divers located closer to the spill are just traveling a little further from his location and finding some of the best diving available in the lower 48 states. "The perception that all of Florida is under oil is incorrect, and at a distance of more than 225 miles from the Deepwater Horizon site, they have seen little if any impact."

## DEMA

The Dive Equipment Manufacturers Association, (DEMA), has set up a web site for information for divers, and as a resource for dive operators at [www.gulfstatediving.com](http://www.gulfstatediving.com). Numerous forums have sprung up on the site. Harry's Dive Shop in hard hit Louisiana has posted a comment we want everyone to see: "Because the likelihood of getting into the Gulf of Mexico for diving in our region is extreme-

ly slim, we chose an alternate inland freshwater dive site for certification purposes. Speaking negatively about how the disaster is affecting us is not permitted on the premises of the business. Our action is to accept change and look forward to new opportunities ... On the brighter side, we have scheduled trips to farther destinations

that can be reached by car and do not require a passport. We anticipate getting to see and dive locations we would have otherwise neglected. And wishing the drive to these new locations was not so long does not make it so. Knuckle Down, Buckle Down and do it (or

*Since the oil that has leaked is not refined (is naturally occurring), the natural break-down of the oil is expected over time.*

don't). Put a smile on your face, look in the mirror and say to yourself, 'It's Show Time.' Then walk away and make the best of your day."

With summer diving in full swing in the Gulf states, now is the time to book your trip to explore the many diving opportunities that you are able to drive to, free of the normal crowds typical of this season. ■

*The perception that all of Florida is under oil is incorrect, and at a distance of more than 225 miles from the Deepwater Horizon site, they have seen little if any impact."*



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# Protecting Corals Increase Fishing Profits

Closures and gear restrictions implemented in fishing areas can increase fishery revenue and net profits a new study finds. Meanwhile marine scientists from Stanford find that establishing sustainable fisheries, even at remote islands and atolls, could significantly slow the decline of many reefs.

"We know that fishing can dramatically change the composition of a reef ecosystem," said Fiorenza Micheli, a professor of biology at Stanford University's Hopkins Marine Station. "By confronting overfishing immediately, we may increase the resilience of coral reefs to global warming and other threats."

Micheli and a team of Stanford researchers compared two isolated Pacific atolls—Palmyra and Tabuaeran—which are located about 1,000 miles south of Hawaii. Separated by only 250 miles of ocean, the two atolls are worlds apart in terms of fishing pressure.

Palmyra, a protected U.S. wildlife refuge, is virtually uninhabited and bars fishing along its shores and has some of the highest densities of sharks and other large fish of any coral reef in the world.

Tabuaeran, part of the island nation of Kiribati, on the other hand, is home to about 2,500 people who depend on the reef for food and income, but sharks and other large species are in short supply. This surprised the researchers because Tabuaeran is only lightly populated and most people arrived only a few decades ago.

## Sensitive populations

Big fish grow and reproduce slowly, so their populations take longer to recover, and it appears that it takes very little harvesting to reduce populations of these sensitive, large reef fish.

Trophy catches like sharks and the 100-pound bumphead parrotfish were the first to decline.

Highly prized by Tabuaerans, parrotfish are capable of physically altering their environment. The parrotfish's large size allows it to break off and crunch up whole branches of coral, and the species plays a unique and important role in reef ecology that's simply not achieved by other fish species.

## Sharks don't stay put

Sharks are also important for healthy coral reef ecosystems. For decades, conservationists have tried to protect reef sharks by setting aside reserves like Palmyra that provide a safe space to grow and reproduce. But sharks tagged at Palmyra have been caught by fishermen at reefs hundreds of miles away, and since managers can't protect them outside the sanctuary borders, it seems that effective management strategies for gray reef sharks and other similarly wide-ranging species will need to be thought out at much larger scales.

## Sustainable future

Because the livelihoods of so many Tabuaerans depend on healthy fisheries, locals are eager to preserve fish numbers. To engage the next generation of Tabuaerans, researchers

taught science classes at local schools three times a week on topics such as reef ecology and genetics. The Stanford team also conducted town hall meetings at every village on the atoll.

To broaden the scope of the project, team members have shared their results with Kiribati government officials, who face the twin challenges of geography and poverty. With a population of about 100,000, the Republic of Kiribati is one of the least developed countries on Earth, consisting of more than 30 atolls spread across about 1.3 million square miles of open ocean.

In 2006, the government established one of the world's largest and most isolated marine reserves—the Phoenix Islands Protected Area, a chain of virtually untouched atolls west of Tabuaeran.

## The lesson from Kenya

An extensive 12-year study recorded information on 27,000 fish caught within three fishery locations on Kenya's coast: one abutting an area closed to fishing; a second located far from the closure area and with restrictions on seine nets in place; and a third open to fishing without restrictions and located far from

closure areas.

In the first area, results showed that fish migrating into the fishery from the closure area included more preferred species, as well as larger fish. These fish commanded higher prices per pound. The surprising effect of the closure was an increase in revenue to the fishers. Furthermore, the

study found that restrictions on the use of seine nets in the second area also increased fishery revenue.

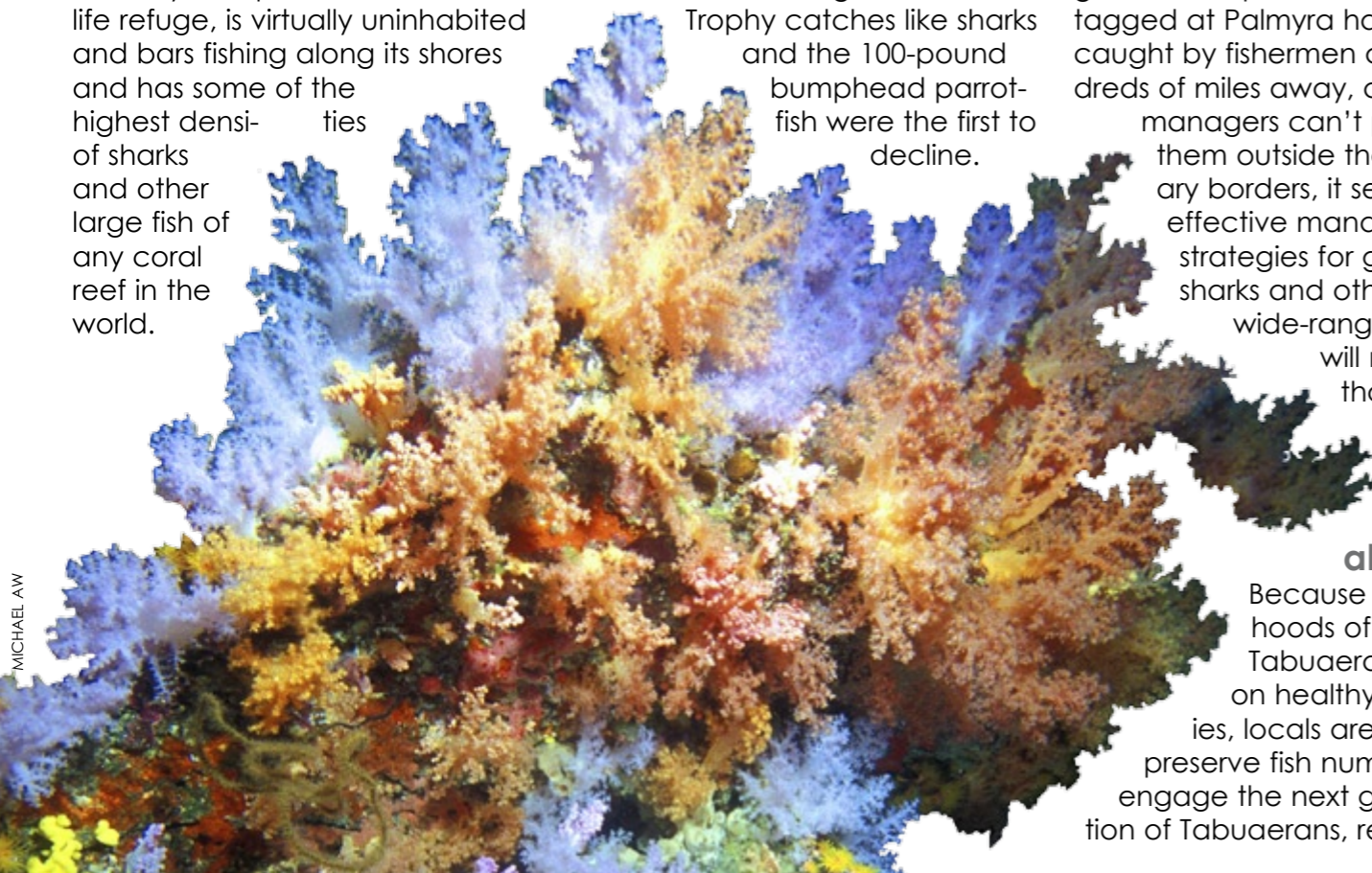
The results indicated that the existing simplifications used in fisheries economic models tell only part of the story. By identifying the role that closures play on the types and size of fish caught, and the corresponding effect on pricing, McClanahan uncovered a more accurate and informative evaluation of fishers' incomes—a discovery with potentially profound implications.

"Resistance to closures and gear restrictions from fishers and the fishing industry is based largely on the perception that these options are a threat to profits. These findings challenge those perceptions," said McClanahan.

*"Resistance to closures and gear restrictions from fishers and the fishing industry is based largely on the perception that these options are a threat to profits."*

"By showing that prized species and larger fish are entering fisheries indirectly through the closures, we see that closures are a direct benefit to the fishers."

The study by Wildlife Conservation Society Senior Conservationist, Tim McClanahan, appeared in the May online edition of the journal *Conservation Biology*. It is the first long-term study on the effects of fishery closures on fisher profits. ■



MICHAEL AW

MICHAEL AW



# Pristine ecosystems can still be found

But you may have to go out of your way to find them. Millennium Atoll, home to some of the most pristine coral reefs, is also one of the most remote atolls on Earth.



NASA

A large central lagoon accounts for the majority of the center of the atoll, measuring about 6 km by 0.5 km, and the shallow perimeter reef supports most of the approximately 39 islets.

Millennium is distant from human population centers—the closest being 834 km away at Papeete, Tahiti—and has historically been relatively undisturbed by human activity. Formerly known as Caroline Atoll and Caroringa, Millennium is a member of the southern group of the Line Islands chain in the equatorial Central Pacific. Millennium spans approximately 10km from north to south and about 2km east to west.

## Largely uninhabited

Millennium has been largely uninhabited since the early 1940s, likely due to its remoteness from major population centers, lack of fresh water, and difficulty of anchorage and entrance to the lagoon. Despite sporadic settlements and brief business ventures on the island, the flora and fauna have recovered well and remain in good condition. Millennium has abundant native flora and fauna. A joint expedition led by

the United States and the USSR in 1988 included the only known surveys of the marine fauna in the lagoon, but due to time and logistical constraints excluded the majority of the lagoon.

In April 2009, a series of underwater surveys were conducted throughout the lagoon to characterize the diversity and abundance of fish and benthic organisms during a research expedition to the Southern Line Islands. This is the first extensive survey of the marine natural history of Millennium lagoon. Also included in this report are observations of indications of human activity in the lagoon, which were present despite its remote location, and the potential significance of this activity on the marine communities surveyed.

## Numerous sharks

Lagoon and back reef habitats at Millennium Atoll appeared to provide important habitats for

recently recruited and juvenile fishes. For example, numerous blacktip reef sharks, many of which were estimated to be juveniles, were observed inhabiting shallow back reef habitats throughout the lagoon's perimeter. Similarly, the lagoon at Palmyra Atoll is an important habitat for both adult and juvenile blacktips. In addition, many of the larger adult female sharks on the fore reef during concurrent surveys exhibited mating scars and appeared to be pregnant.

Another notable sighting within the lagoon included the Napoleon wrasse (*Cheilinus undulatus*), which was found around many of the patch reefs. Millennium Atoll may represent one of the few remaining sites in the tropical Pacific where Napoleon wrasse populations can flourish. It is imperative that efforts be made to protect the unique resources and habitats found in the lagoon of Millennium Atoll. ■

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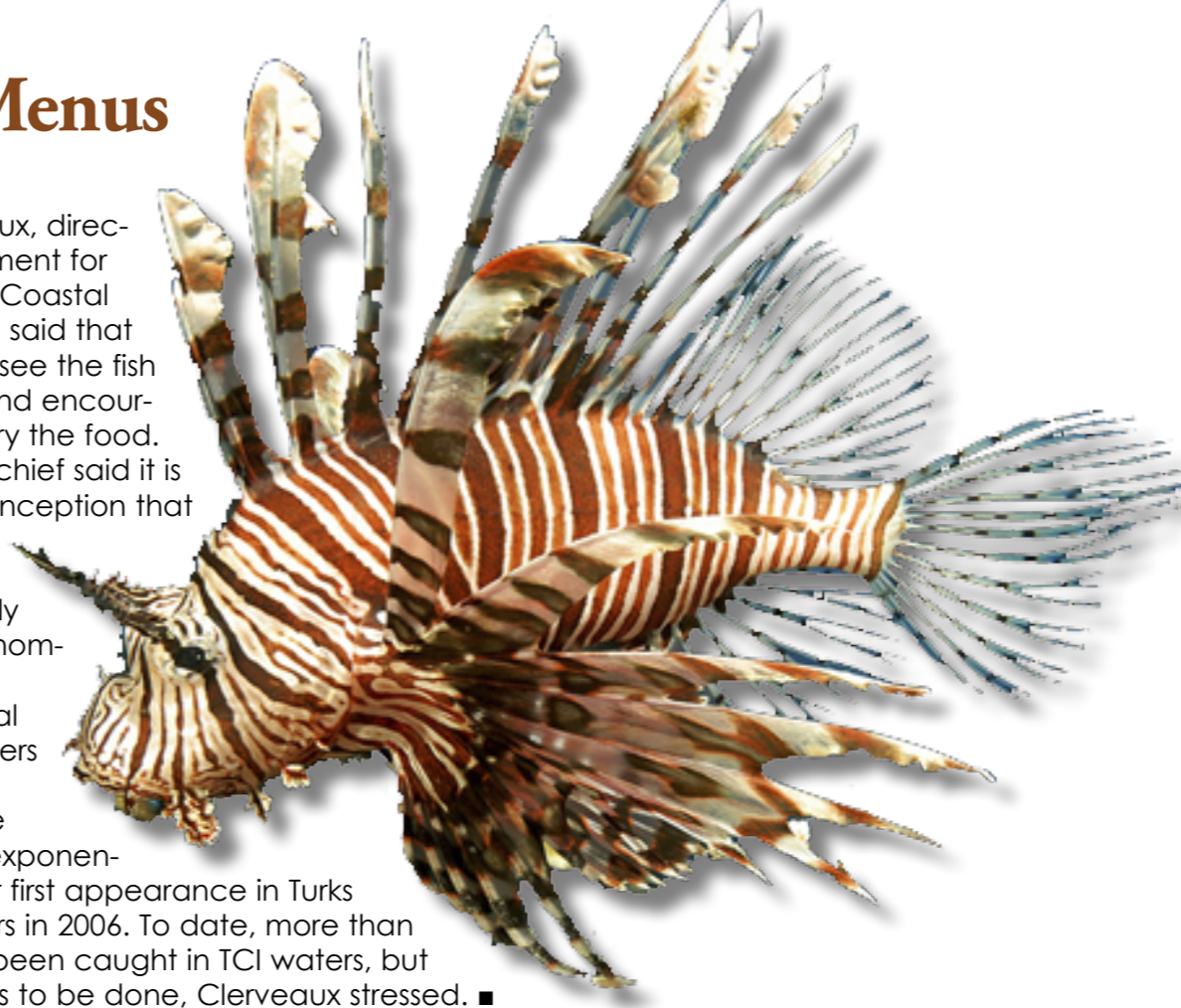
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## Lionfish Hits Turks and Caicos Menus

Restaurants in the British Caribbean territory are starting to feature lionfish on their menus, as part of a strategic campaign to stamp out the invasive species. Staff at the Department of Environment and Coastal Resources (DECR) has been encouraging local chefs to create dishes using the tasty seafood to help eradicate them from the waters around Turks and Caicos Islands (TCI). The first to jump on board was Mother's Pizza in Downtown Providenciales with their innovative lionfish pizza. Justin Bates from Mother's Pizza said that he was delighted to be helping in the fight against the unwanted predator. He stressed that lionfish is cheap, edible and versatile and hopes that the new pizza will encourage other restaurants to follow suit.

Wesley Clerveaux, director of the Department for Environment and Coastal Resources (DECR) said that he was happy to see the fish on local menus and encouraged people to try the food. The environment chief said it is a common misconception that the fish is poisonous. The flesh is safe to eat, as only the spines are venomous. Since their arrival in Caribbean waters in the 1990's, lionfish numbers have increased at an exponential rate, with their first appearance in Turks and Caicos waters in 2006. To date, more than 500 lionfish have been caught in TCI waters, but much more needs to be done, Clerveaux stressed. ■



## Know what you eat

Several landmark studies have highlighted the problem of mislabelled fish. One-third of fish on sale in the United States is not the species it is sold as, and one-quarter of cod and haddock sold in Ireland is neither of these.

A certification scheme run by the Marine Stewardship Council (MSC), a global not-for-profit organisation, offers a way of ensuring you get what you think you're buying. In a blind study, Rob Ogden of the Royal Zoological Society of Scotland tested 240 MSC-certified samples bought at supermarkets, restaurants and markets in the

United States, United Kingdom, Japan and Germany. He compared their DNA with validated reference samples. "Nothing came back as anything other than what it should have been," he says. The study was able to differentiate between species such as farmed Atlantic salmon and the more expensive but sus-

tainable Alaska salmon, and various populations of toothfish. This opens the possibility of telling apart sustainable and unsustainable fisheries of the same species. Ogden now plans to develop tests to distinguish between different populations of cod, herring and hoki. ■



The MSC is the world's leading certification and eco-labelling program for sustainable seafood. Look for the blue MSC ecolabel when shopping or dining out

NEXT time you spot the telltale blue label at your fishmonger's counter, you needn't worry about whether your supper of "sustainable Alaska salmon" actually came from depleted stocks in the Atlantic



WWW.DDIVERS.ORG



PHOTO: DAVID PILSOF



ABLE TO DIVE

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## How fins became limbs

A study has shed light on a key genetic step in the evolution of animals' limbs from the fins of fish.

A team of researchers identified two new genes that are important in fin development. Dr Marie-Andree Akimenko, from the University of Ottawa in Canada, and her colleagues began their study by looking at the development of zebrafish embryos. They discovered two genes that coded for proteins that were important in the structure of fins.

These proteins were components of the thread-like fibres known as "actinotrichia". These are found in fish larvae, and they eventually

develop into the bony fin rays of mature fish. "We found there were no equivalent genes in limbs, so this suggested these may have been lost in evolution," explained Akimenko.

The scientists were able to manipulate zebrafish development, to study these changes in more detail. They inactivated the newly discovered genes in a developing zebrafish embryo. When they did this, they found that it developed shorter "truncated" fins with no bony rays.

The loss of these fin rays, the scientists say, was a key step in fin-to-limb evolution. The team then compared the development of normal zebrafish embryos with that of mouse embryos.

"When we compared fin development and limb development, the early steps are very similar," Akimenko said. "But at one point there is a divergence, and that correlates with the beginning of the expression of these genes." ■

SOURCE: NATURE (466) PP. 234-237 (08 JULY 2010)

## Cleaner water mitigates climate change effects on Florida Keys coral reefs

Improving the quality of local water increases the resistance of coral reefs to climate change.

Florida Institute of Technology coral reef ecologist Robert van Woesik and his student Dan Wagner led a study that provides concrete evidence for a link between environmental health and the prospects for reefs in a rapidly changing world. Van Woesik and his team showed that when waters in the Florida Keys warmed over the last few summers, corals living in cleaner water with fewer nutrients did well. On the

other hand, corals in dirtier water became sick and bleached.

"Regulating wastewater discharge from the land will help coral reefs resist climate change," said van Woesik. "In the face of climate change and ocean warming, this study gives managers hope that maintaining high water quality can spare corals."

Shallow-water coral colonies and corals at localities with high pro-

ductivity, in the form of chlorophyll a and dissolved inorganic nitrogen concentration, showed higher bleaching prevalence than both deep coral colonies and corals at localities with low productivity. By locally regulating waste-water discharge from the land, and thereby reducing local primary productivity, the severity of coral bleaching may be reduced when subjected to high regional water temperatures. ■

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DANIELLE HEINRICHS



MARY O'MALLEY



SHAWN HEINRICHS

# Raja Ampat Petition

Text and photos courtesy of Sharksavers.org

**Indonesia presents a paradox. It enjoys the most biodiverse ocean environments on the planet. Unfortunately, Indonesia is also the world's largest shark fishery, having all but emptied its waters of a valuable resource: its sharks.**

Raja Ampat, in Eastern Indonesia, is the crown jewel of the Coral Triangle that boasts the greatest concentration of coral and fish spe-

cies on earth. In May 2007, the Raja Ampat government declared seven Marine Protected Areas (MPAs) to protect these important ecosystems, together with the effort of The Nature Conservancy, Conservation International, and WWF Indonesia.

The Raja Ampat MPAs cover almost 3,474 square miles of coral reefs and mangroves. Perhaps 20 percent of that area comprises no-take zones where fishing is prohibited. A new Marine Conservation Area has also been established in the Misool region of Raja Ampat by Misool Eco Resort (MER). Its entire 174 square miles is a no-take zone and a shark sanctuary

CLOCKWISE FROM TOP LEFT: Manta ray; Blacktip shark; Fisherman transporting their catch of the day, a manta ray



RIGHT: Raja Ampat. BELOW: Sharks with their fins cut off being sold at market

that is constantly patrolled with the help of grants from WildAid and the Coral Reef Alliance. Within just two years of establishment, shark numbers have increased dramatically and sharks are already returning to, growing, and mating in this small shark sanctuary!

Nevertheless, shark fishing and finning continues unabated in the vast majority of Raja Ampat's waters that are beyond the protection of

the no-take zones. It is now very rare to see a shark in Raja Ampat outside of a no-take zones. Shark finners, having fished out the mature sharks in the area, are now moving against the last very young sharks they can find, even though their fins are small and only fetch about 35 cents each. Now, as even these catches have diminished, fishermen are shifting their sights to manta rays and mobula rays.



SHAWN HEINRICHS



Fisherman catch baby Hammerhead sharks

Based on initial discussions with the Fisheries and Tourism Departments in Raja Ampat by MER, it is a real possibility that we can help establish a shark sanctuary in Raja Ampat to cover all of the 40,000 square miles, providing legal protection to all shark, manta and mobula species.

Shark Savers is supporting the effort with this petition. The Raja Ampat Fisheries and Tourism Departments needs to hear that there is great international interest in prohibiting shark fishing—especially among the eco-tourists and divers who are attracted to sharks.

Please sign the petition calling for a shark sanctuary throughout Raja Ampat! ■

SIGN THE PETITION HERE:  
[www.sharksavers.org](http://www.sharksavers.org)

Manta rays for sale at market



SHAWN HEINRICHS



Southern purple type with wings of Enteropneust from the North Atlantic Ocean

# New Critters

Scientists have just returned from a voyage with samples of rare animals and more than ten possible new species in a trip that they say has revolutionised their thinking about deep-sea life in the Atlantic Ocean.

All photos courtesy of David Shale

One group of creatures they observed—and captured—during their six weeks in the Atlantic aboard the *RRS James Cook* is believed to be close to the missing evolutionary link between backboneed and invertebrate animals. Using the latest technology, they also saw species in abundance that until now had been considered rare. Researchers were also surprised to discover such diversity in habitat and marine life in locations just a few miles apart.

## 300 hours of diving

Scientists were completing the last leg of MAR-ECO—an international research programme, part of the Census of Marine Life—which is enhancing our understanding of the occurrence, distribution and ecology of animals along the Mid-Atlantic Ridge between Iceland and the Azores.

The University of Aberdeen is leading the UK contribution to the project, which involves scientists from 16 nations. Key collaborators in the UK include Newcastle University and the National Oceanography Centre.

During more than 300 hours of diving - using *Isis*—the UK's deepest div-

*Researchers were also surprised to discover such diversity in habitat and marine life in locations just a few miles apart.*



Scale worm

ing remotely operated vehicle (ROV) to depths of between 700m right down to 3,600m—researchers surveyed flat plains, cliff faces and slopes of the giant mountain range that divides the Atlantic Ocean into two halves, east and west.

## Two areas

The research was focused in two areas: beneath the cold waters north of the Gulf Stream and the warmer waters to the south.

Professor Monty Priede, Director of the

**Marine scientists return with rare creatures from the deep**



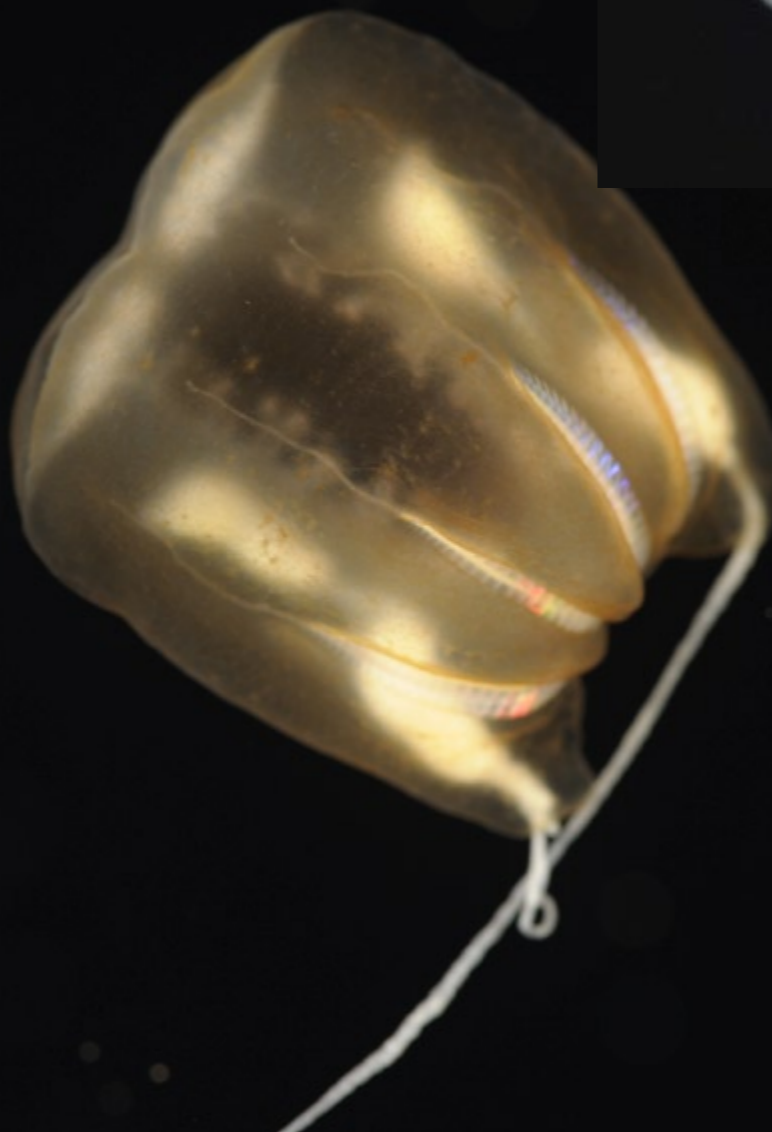
Southern white type of Enteropneust from the North Atlantic Ocean



Sea Cucumber



Deepsea jellyfish that forages near the sea floor



Incredible bathypelagic ctenophore - comb jelly that anchors to the sea-floor using its tentacles



Sea cucumber found swimming above the mid atlantic ridge

were previously known to science. "These worms are members of a little-known group of animals close to the missing link in evolution between back-boned and invertebrate animals.

"The creatures were observed feeding and leaving characteristic spiral traces on the sea floor.

"They have no eyes, no obvious sense organs or brain, but there is a head end, tail end and the primitive body plan of back-boned animals is established. One was observed showing rudimentary swimming behaviour.

"By the end of the expedition three different species were discovered each with a different colour, pink, purple and white with distinctly different shapes."

### ROVs

Using the remotely operated vehicle, high quality complete specimens of all three

different-coloured species were captured and will be sent to specialists for further investigations.

Sea cucumbers, or holothurians, normally seen crawling incredibly slowly

University of Aberdeen's Oceanlab, said: "We were surprised at how different the animals were on either side of the ridge which is just tens of miles apart.

"In the west the cliffs faced east and

in the east the cliffs faced west. The terrain looked the same, mirror images of each other, but that is where the similarity ended. It seemed like we were in a scene from *Alice Through the Looking*

*Glass*.

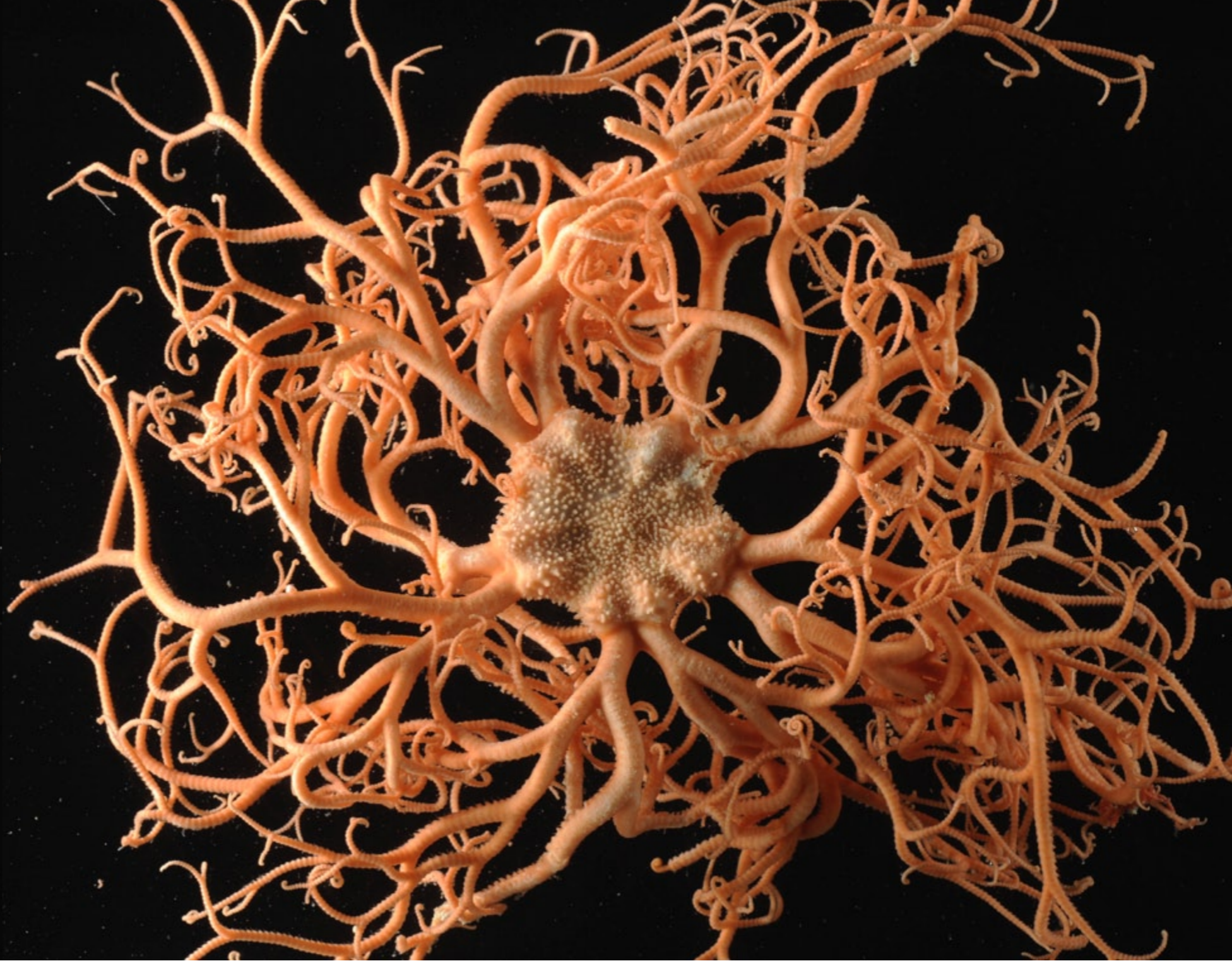
"In the northeast, sea urchins were dominant on the flat plains, and the cliffs were colourful and rich with sponges, corals and other life.

"In the northwest, the cliffs were dull gray bare rock with much less life. The northwest plains were the home of deep-sea enteropneust acorn worms. Only a few specimens, from the Pacific Ocean,





Sea cucumber found swimming above the mid atlantic ridge



Basket star Gorgonocephalus

over the flat abyssal plains of the ocean floor, were found on steep slopes, small ledges and rock faces of the underwater mountain range.

Researchers were also surprised to see that they were very able and fast-moving swimmers, and unique video sequences were recorded of swimming holothurians.

Professor Priede said: "This

expedition has revolutionised our thinking about deep-sea life in the Atlantic Ocean. It shows that we cannot just study what lives around the edges of the ocean and ignore the vast array of animals living on the slopes and valleys in the middle of the Ocean.

"Using new technology and precise navigation, we can access these regions and discover things we never suspected

existed."

Dr Andrey Gebruk, Shirshov Institute, Moscow, said: "We were surprised how species, elsewhere considered rare, were found in abundance on the Mid Atlantic Ridge, and we were finding

*Only a few specimens, from the Pacific Ocean, were previously known to science.*

new species up to the last minute of the last dive in the voyage."

Dr Dan Jones, National Oceanography Centre, Southampton, surveyed over 50,000 square metres of sea floor in high definition detail and said: "We successfully completed one of the most detailed video

surveys of the deep sea ever attempted. The Isis ROV, with its cutting-edge technology, gives us the potential to understand more and more of the mysterious deep sea environment."

Newcastle University's Dr Ben Wigham has been working on the project for the past four years studying the biology of animals living on the ridge. "We are interested in how these animals are

feeding in areas of the deep-sea where food is often scarce" he said. "The differences we see in the diversity of species and numbers of individuals may well be related to how they are able to process and share out a rather common but meagre food supply, we certainly see indications that there are differences between the north and south regions of the ridge." ■



The fish, known as *Pseudoliparis amblystomopsis* can be seen darting about in the darkness of the depths, scooping up shrimps



## More fish than thought may thrive in the ocean's depths

### Call for Entries: Sharkfest 2010

Underwater filmmakers and videographers are called to enter their shark videos into the film competition of Sharkfest presented by Elasmodiver and Olympus Dive Center 6-8 August 2010, in Morehead City, North Carolina.

"Sharkfest is a celebration for shark people comprising of three days of shark diving and a film festival just about sharks. This isn't Sundance so leave the tuxedos at home. Movies will be screened on a digital projector in the lodge or outdoors on the back deck of the dive center (weather permitting). Sharkfest is a long overdue opportunity for all shark fans and shark divers to get together, dive and talk about sharks. If you're a shark junkie you belong at Sharkfest." --Andy Murch, Elasmodiver.com

For more information and competition details, visit: [www.Elasmodiver.com/sharkfest.htm](http://www.Elasmodiver.com/sharkfest.htm)

A study of the occurrence of fishes in the oceans' deepest reaches—the hadal zone—has provided evidence that some species of fishes are more numerous at such depths than experts had thought. Observations at such extreme depths within oceanic trenches that plummet from 6,000m to the full ocean depth of almost 11,000m are technically demanding and consequently rare, and few biological studies have investigated the hadal depths.

Authors of a new study, which is

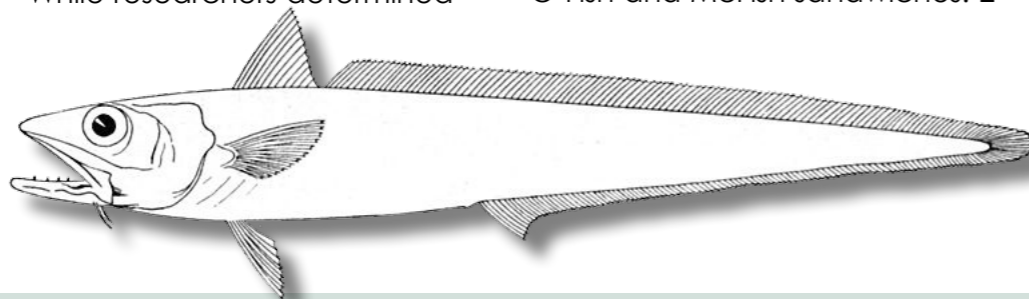
published in the July/August issue of *BioScience*, observed ten to 20 snailfish congregating at a depth of 7,703 meters around a baited video lander in the Japan Trench. The observation period lasted only five hours, but the number of fish observed was unexpectedly higher than trawl catch records of any known hadal fish. Together with a critical review of past records of fishes found at great depths, the observations suggest, however, that few species of fishes survive in the darkness of the hadal zone. ■

### Deepwater Shark Diet Includes other Sharks

One of the most extensive studies on the diets of deepwater sharks reveals these toothy animals may eat everything from discards tossed off commercial fishing vessels to other sharks. Shark edibles are usually too digested or fragmented, but collected DNA can be matched to animals recorded in the database.

While researchers determined

that the shark diets varied, depending on the species, nearly all of the studied deepwater sharks ate what appears to be the hamburger of the sea: hoki, which is the most abundant fish in the study area. Beyond being common, they also appear to hold universal appeal. Hoki is one of the species used in McDonald's Filet-O-Fish and McFish sandwiches. ■



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# Fish language recorded

Under water grunts, chirps and pops recorded by an Auckland scientist have revealed a mysterious language used by New Zealand fish.

Fish communicate with noises including grunts, chirps and pops, University of Auckland marine scientist Shahrman Ghazali has discovered. Ghazali has been listening to underwater recordings at Leigh Marine Reserve, trying to decipher who's making the grunts, growls, chirps and pops—and what they mean.

To discover which fish was making each noise, Ghazali brought groups of individual species from the sea to a tank at the laboratory. By placing the fish into tanks and coaxing them to continue vocalising (noise made by vibrating their swim bladder) he is working to identify which fish makes which sound and why.

"All fish can hear, but not all can make sound—pops and other sounds made by vibrating their swim bladder, a muscle they can contract," Ghazali said. "Bigeyes are producing something like a popping sound, but they organise them temporarily, so it's like morse code. Gurnard were found to be making distinctive grunts, which followed a particular pattern throughout the day."

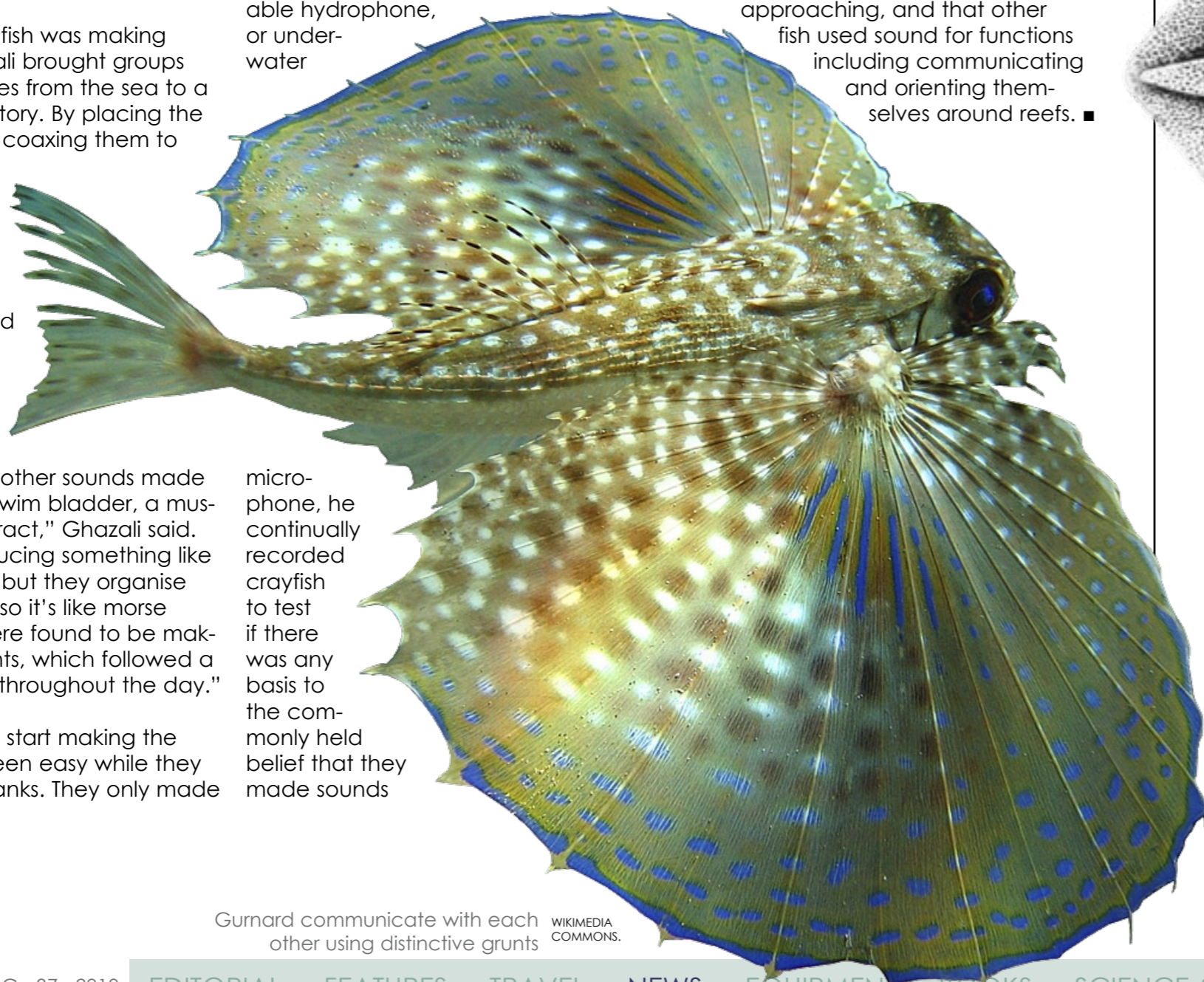
Getting any fish to start making the sounds had not been easy while they were held in the tanks. They only made

sounds in groups, and also took some time to adapt to their new environment.

His study began two years ago, when he started listening to recordings taken by colleagues studying ambient noise in the Leigh Marine Reserve north of Auckland. Using an easily obtainable hydrophone, or under-water

when divers approached.

"Funnily enough, I didn't get any sound from any of them." Instead, he repeated the test with bigeye, an endemic nocturnal fish that lives in similar environments, and found they were making the noises. It was possible they made sounds in response to divers approaching, and that other fish used sound for functions including communicating and orienting themselves around reefs. ■

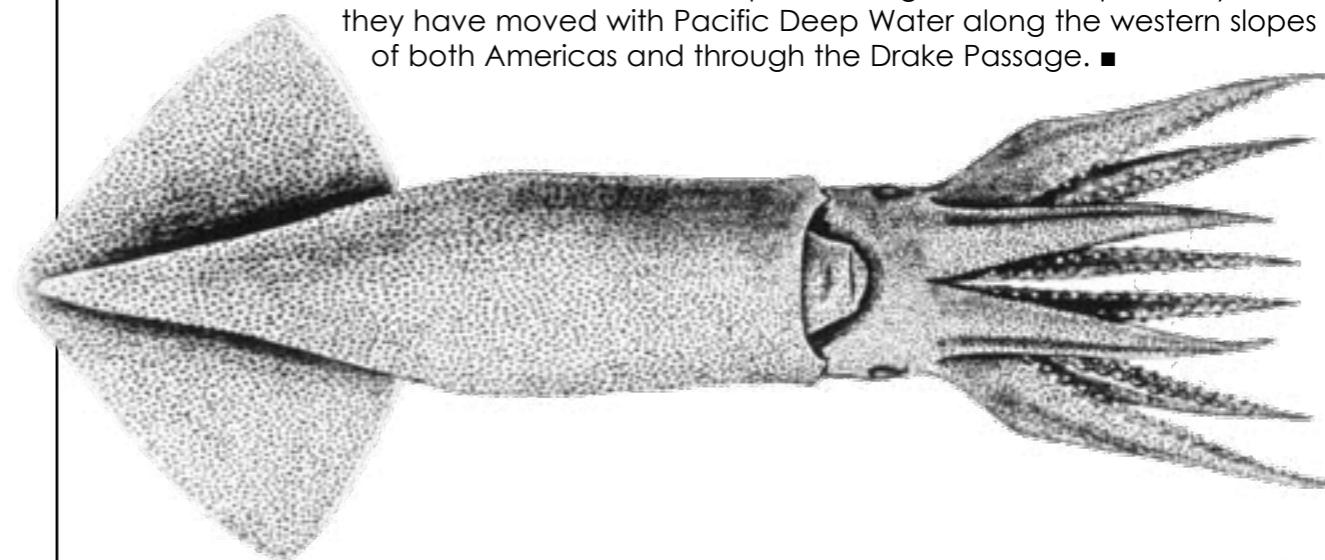


Gurnard communicate with each other using distinctive grunts  
WIKIMEDIA COMMONS.

## North Pacific deepwater fish show up the Southwest Atlantic

Several endemic species of North Pacific deepwater fish and squid have been caught on the continental slope of the Falkland Islands in the Southwest Atlantic, on the other side of the world.

It is unclear how the animals, a giant rattail grenadier, pelagic eelpout and deep sea squid, travelled so far. The discovery of these deepwater dwellers more than 15,000 km from their common species ranges raises the possibility that they have moved with Pacific Deep Water along the western slopes of both Americas and through the Drake Passage. ■



## Shrimps on meds

Rising levels of antidepressants in coastal waters could change sea-life behaviour and potentially damage the food chain.

Research into the behaviour of shrimps exposed to the antidepressant fluoxetine, showed that their behaviour is dramatically affected. The shrimps are five times more likely to swim toward the light instead of away from it—making them more likely to be eaten by fish or birds, which could have devastating effects on the shrimp population. "Crustaceans are crucial to the food chain, and if shrimps' natural behaviour is being changed because of antidepressant levels in the sea this could seriously upset the natural balance of the ecosystem," said Dr Alex Ford from the University of Portsmouth's Institute of Marine Sciences. ■

SOURCE: AQUATIC TOXICOLOGY

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# IANTD UK changes ownership

Following an 18-month hiatus, the UK franchise of IANTD (International Association of Nitrox and Technical Divers) has been bought by the dream team behind the revitalised Vobster Quay—Martin and Amy Stanton.

Text by Roz Lunn

"In the early 90's when Kevin Gurr set up IANTD UK, it was the first technical diver training agency in Europe," stated Martin Stanton, Director of IANTD UK. "We're therefore genuinely excited that the mantle is now passing to us. We'd like to thank Kevin Evans and Simon Watton for caretaking the agency since 2008, and wish them well in future

projects. Now, we're in for a very exciting time because currently IANTD UK ([www.iantd.uk.com](http://www.iantd.uk.com)) is in a very good position to grow and expand. After all, virtually every experienced diver and instructor in the UK has done an IANTD training course at some point in their career.

Whilst this announcement doesn't immediately seem to be that important to the-diver-in-the-sea, it's of more significance to the UK dive shops and training centres.

*I was very lucky to be introduced to the world of technical diving and the diving opportunities it could offer me by Kevin Gurr.*

Stanton said: "From today, we are delighted to announce fulltime superior support ensuring same day despatch of materials, efficient processing of qualification cards and high quality assurance. We know that, at the end of the day, a good course primarily comes down to the quality of the instructor rather than the agency. A good way of demonstrating this is by looking at Mark Powell (TDI), Phill Short (IANTD) and Rich Walker (GUE) in the water—there's not much to tell them apart. So, get a well-trained, experienced instructor, and you gain so much more from your course. Hence, it's very important to us that we focus on high quality assurance and training, delivering from the top downwards. Consequently, we're delighted to announce that Phill Short will be the new UK Training

Director whose remit will include Standards of Training."

### Fortunate

"As an Instructor, Instructor Trainer and Instructor Trainer who has maintained loyalty to one technical agency

throughout my career—IANTD—I'm honoured that Tom Mount and Joe Dituri have asked me to be involved with the new management team at IANTD UK," stated Phill Short. "I was very lucky to be introduced to the world of technical diving and the diving

opportunities it could offer me by Kevin Gurr. Over the years, I've gained experience through teaching and knowledge on further instructor courses and diving on many cave and wreck expeditions. I also consider myself fortunate that I've been trained and evaluated as a Cave Instructor by Tom Mount.

"Being appointed UK Training Director and work alongside Martin Stanton is very exciting because it gives me the perfect opportunity to share some of the incredible things I've learnt over the last 15 years. I very much look forward to raising the quality training bar with my colleagues to help create safer and better educated divers at all levels."



From rookie to tekkie  
In 1990, Short completed his PADI Open Water Course in order to use SCUBA to pass

short flooded sections of dry caves in Mendip and South Wales. His passion at the time (which he maintains to this day) was dry caving and climbing. Short, however, was bitten by the diving bug, and he continued his diving education under the guidance of Course Director Steve Axtell.

In 1991, Short qualified as a PADI Instructor and began teaching full time, working his way up to Master Instructor. During this period, he began developing his technical diving skills through training with Kevin Gurr, and in 1993, was involved in forming one of the first Trimix wreck diving teams in the UK. He



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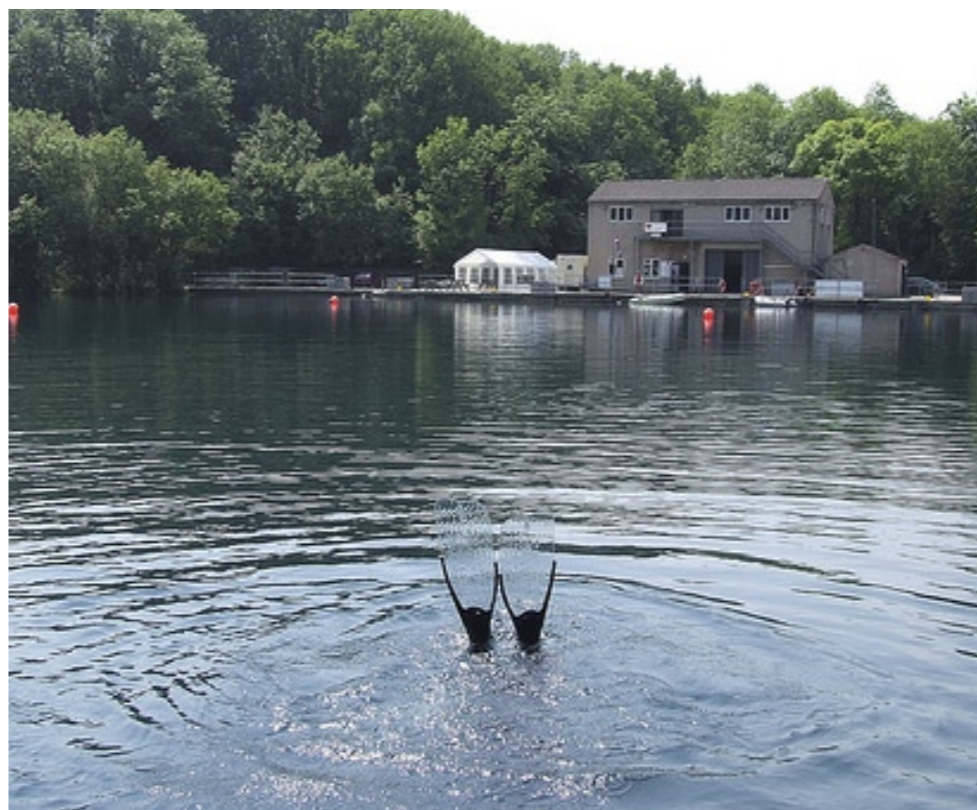
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Phill Short joins new IANTD UK team



Vobster Quay

PHOTO COURTESY OF EMMA & MICHAEL'S EXCELLENT ADVENTURES / CREATIVE COMMONS

is now one of the UK's foremost IANTD Instructor Trainers.

## Film work

Having spent three years developing his technical skills, Short began to use them for cave diving, his true passion, on expeditions to Mallorca, France and Spain. At the same time, he began teaching technical diving full time for Phoenix Oceaneering.

Over the years, Short has been involved in film projects for ITV, BBC and Channel 4 on the M1 submarine, the shipwrecks from the battle of Jutland and cave diving projects in Northern Spain and the UK. He recently trained the pre-

senters and assisted with the filming of the BBC Oceans series. He has also taken part as a closed circuit rebreather diver in several shipwreck search projects in the Western Pacific and the Gulf of Mexico.

Short has also been leading a continuing cave exploration project in the Ural Mountains in Russia and digging underwater in his pet project (Swildon's Hole) in the Mendips, England. He has been diving professionally for 15 years and has logged over 5,000 dives in caves and open water using both open and closed circuit equipment.

## A bit about Stanton

Martin Stanton is a highly successful businessman, having owned, managed and sold a number of multi-million-pound businesses. A proven self-starter, with management experience at the highest levels in a UK plc, Stanton demonstrates commitment, leadership and strength in even the toughest

of commercial environments. With a strong IT background, Stanton has developed systems for some of the largest firms and institutions in the world.

Stanton and his wife, Amy, decided a number of years ago to combine their passion for diving with their business skills to develop a centre of excellence for diver training in the UK. The first step of this vision was realized when they acquired Vobster Quay, one of the UK's premier diving facilities and recently voted the UK's favourite inland site by an online poll. The Stantons are extremely proud of Vobster Quay, and many would say rightly so. Having spent the last two years developing Vobster Quay, the Stantons are now embarking on the next leg of this adventure by taking on the UK license for IANTD, the world's senior technical diving agency.

IANTD UK can be contacted by email: [info@iantd.uk.com](mailto:info@iantd.uk.com), or telephone 0845 644 0635. ■

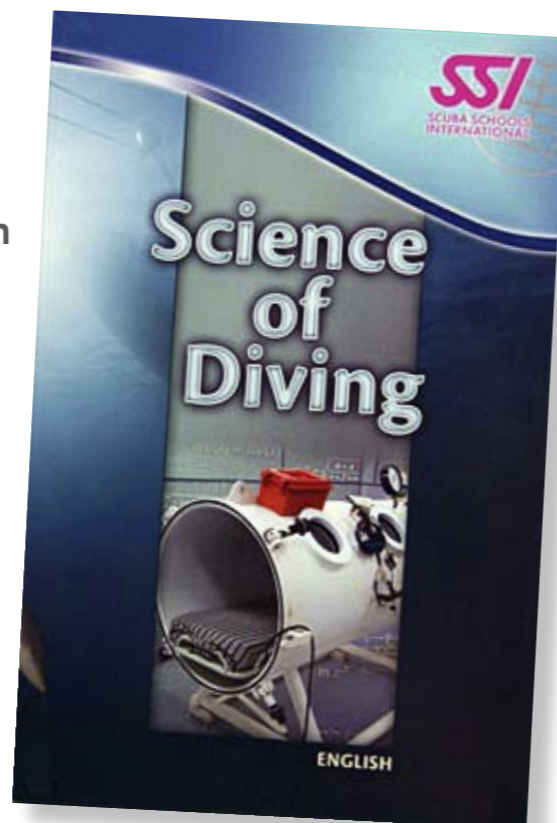
## SSI releases new *Science of Diving* manual

Scuba Schools International's (SSI) *Science of Diving Student* manual is a full-color, 280-page manual with comprehensive content and graphics that provide an in-depth study into the disciplines of diving.

SSI's *Science of Diving* presents the knowledge to mentally prepare divers for all types of diving experiences. The information covered in this manual provides divers the knowledge they seek about how depth and time can affect the body. The manual offers a detailed look into diving physics and physiology, decompression theory, the components of the Total Diving System and the aquatic environment.

"We are excited to debut the *Science of Diving*. It was an ambitious project that became a labor of love. The result is a manual filled with invaluable information for the individual thirsty to learn more about all facets of diving," stated Doug McNeese, SSI President and CEO.

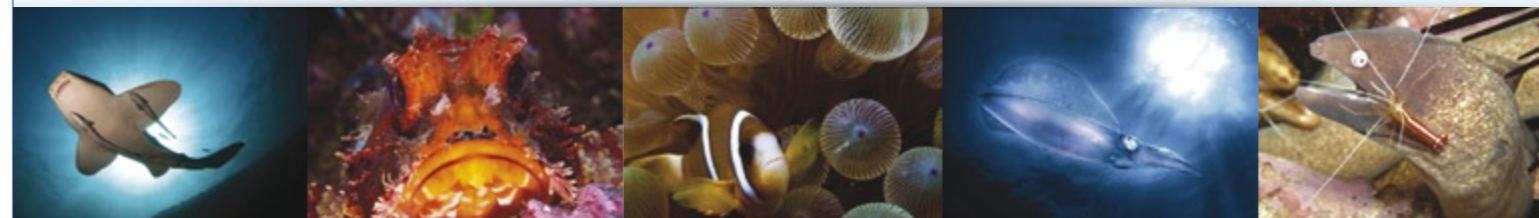
For more details visit [www.divessi.com](http://www.divessi.com) ■



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# Cages or no cages?

*Whose business is it anyway*

Are divers tempting fate with Guadalupe Island Great White sharks? Tour operators engage in a war of words over shark diving practices.

Weighing in at up to 3,000 pounds and attaining lengths of 18 feet, Great White sharks are among the ocean's most feared yet revered inhabitants. Having a face-to-face encounter with the ocean's apex predator is a bona-fide adrenaline rush, with divers worldwide shelling out mega bucks and traveling great distances for the privilege. Boasting pristine blue water with 100-foot visibility, Guadalupe Island situated west of Baja California, Mexico, is one of the world's premier Great White destinations.

Edited by  
Scott Bennett  
and Peter Symes

In a bid to promise visitors the ultimate shark experience, Guadalupe outfitters have introduced cage diving to the area. The stakes are high and the competition fierce, with six outfitters vying for the attention of well-moneyed tourists. "It is an unforgettable rush when a Great White looks at

you from 50 feet away and then swims over for a very close look," said Daniel Dayneswood, who works for the British Columbia-based *Nautilus Explorer*.

However, the evolution beyond the traditional stern-attached surface cages has been swift. Divers in these submersible cages can enjoy the

race, and it's the worst example of one that I've ever seen," said Patric Douglas, who runs Shark Divers, a shark-

related tourism, filming and consulting business.

The battle commenced when Lawrence Groth of Shark Diving International started submerging cages to depths of 50 feet, so he wouldn't have to rely on "chumming" them to the surface—a practice that is now illegal, but still practiced by some. In addition to constructing a submersible "cinema cage" allowing film crews unobstructed views, Groth's latest invention is a horizontal two-person cage with the client laying in front with a camera and Groth in back driving with a joystick.

## Ultimate encounters

Renowned photographer, Amos Nachoum, has raised the bar to what some might consider the ultimate level. Through his company, Big Animal Expeditions, Nachoum offers trips allowing divers the opportunity to swim freely among the sharks outside the cage. The privilege doesn't come cheap, with a US\$5,900

company of Great White sharks from behind steel bars or stand atop a deck with experienced dive masters for an open-water experience. "It's an arm's

price tag for a week-long trip. Running only one trip annually with a maximum of ten people, Nachoum maintains all guests have extensive scuba experience and must bring lawyer-signed and notarized documents stating that they are aware of the risk of death and serious injury. Only one diver is allowed to venture outside the cage at a time, with a second dive master swimming behind the customer with a stick to push the shark away if it gets too close.

The enterprise has sparked a war of words with some of the other operators. "He's new to the whole thing," said Groth, a pioneer at Guadalupe who himself has been referred to as a "cowboy" using questionable tactics. "He has an inexperienced boat crew, and he's doing this stupid stuff with anyone who will pay him the money," he recently told GrindTV.com

Nachoum counters that he has made a business and a living out of "taking and managing risks" for over 30 years, and that he has an immaculate safety record.

"The risk I am taking by diving

without a cage comes not from the shark. It is from the public opinion which is not based on fact or experience, just on panic and scare tactics."

"I dive every dive with my clients and take only one at a time out of the cage. I am escorted at all times by a safety diver, and I do not chum or bait the water," said Nachoum.

"The sharks come to Guadalupe on their own accord to hunt young Elephant seals and chumming and baiting just irritates the sharks. That is why they bang against the cage with open jaws and teeth protruded," said Nachoum.

"Seeing the shark as entertainment rather than respecting and understanding them is only making the mistake from the *Jaws* movies all over again—it never seems to end. These movies were seen by millions of people, but the sharks do not know what we expect them to do when we cross the line and venture underwater to see them. That is why operators

## so far, so good



SCHLOMO COHOME



need to harass and aggravate the shark to show teeth. That is not environmentally correct at all and against any reason and moral values," said Nachoum.

There are more accidents of divers inside the cages versus out of the cage. As a matter of fact, there is no record of any accident or attack by a Great White on any sport or filming team while diving without cages.

Nachoum also points out that it is also a matter of logistics: "While they [the other operators —ed.] are operating full boats servicing anywhere from 18-24 guests, I only conduct one or two trips with a maximum of ten guests. Of these, only five are screened and allowed to go cageless, and only one at a time.

"I am sure that when it comes to movie and TV projects, they will and do go out of the cages, too. But they are not able to offer that same thing for their regular clientele. It is simply down to the difference between mass production and hand made products," said Nachoum.

### Freaking out

Mike Lever, owner of the *Nautilus Explorer*, which goes to Guadalupe, told us that diving without cages like Nachoum does is not permitted according to the local regulations. But he is also concerned that Nachoum's operation is an accident waiting to happen. "What concerns me is that someone outside the cage gets freaked out by a shark, and it's easy to get

aware of the prophecy of 'what if'—I do everything humanly to avoid it and withdraw when there are more than two sharks around us."

Nachoum said other operators—who will remain unnamed—are in violation of regulations by using whole tuna attached to ropes to lure sharks to surface cages and inspire them to open their mouths for camera-toting passengers. The crews yank the tuna away before the sharks can snatch them and this, Nachoum says, "makes the sharks crazy."

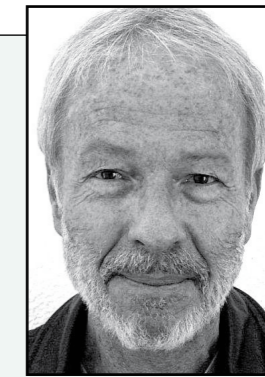
However, what's legal and illegal is largely moot because Guadalupe is 160 miles off the Baja California coast and enforcement of any rules is difficult. Mostly it's up to the operators to watch each other, and they do so with great suspicion. One thing they all agree on is that if a fatality occurs, Mexico might immediately shut down all operations. In turn, that would open the island to poaching and shark numbers would be decimated. In the end, it's in everyone's best interest to work together, keeping both sharks (and customers) alive. ■

### SNIPPETS FROM WIKIPEDIA:

*In 2007, a commercial shark cage was destroyed off the coast of Guadalupe Island after a 15-foot Great White shark became entangled in it and tore the cage apart in a frantic effort to free itself. Tourists captured video of the incident, which quickly spread throughout the Internet.*

*Opponents of the cage diving industry, such as marine biologist, Craig Bovim,*

Wolfgang Leander, who free dives with Tiger sharks in open water, writes:



"Out of principle, I would never go into a cage just as I would not visit a zoo, where "dangerous" animals are kept behind bars. But I do understand that most divers would not venture into the territory of [Great] whites without the protection of a cage. Diving with whites outside of a cage is not for everyone.

"Whites, as any other sharks, are very sensitive, and basically shy animals. Thus, if you want to dive with them—on scuba or free-diving—you have to have a lot of experience to feel very comfortable interacting with large sharks, and you have to know how to interpret their body language.

"Some whites could display a merely inquisitive behavior while others could be either aggressive or not interested in interacting with you at all.

"All sharks have different personalities, but as circumstances could change quickly, you always have to be on the lookout and never feel over-confident. I would act like that with whites all the time, as they are not as forgiving as tigers.

"I have had many Tiger sharks sneaking up to me from the back and touching me with their noses. These were not dangerous situations as the tigers were clearly just curious and really quite gentle. I would not want to be in such a situation with a Great White shark though. Whites are ambush predators one shouldn't ever overlook that."

— Wolfgang Leander

*believe that the constant shark-baiting used to lure sharks to tourists' cages creates a "Pavlovian response" in the sharks, causing them to become eager to attack humans for food. Bovim's opponents, such as noted marine environmentalist, Wilfred Chivell, contend that there is no correlation between shark-baiting and shark attacks against humans. ■*

Have your say and win a Shark Tee

## What do you think?

Is it just crazy to dive with big sharks without a cage?

It is anybody else's business if you want to encounter wildlife close up?

Is this just a war of words between competing operators?

We would like to hear what you think. Let's hear your opinion and post a comment on our **Facebook page**.

Three SharkTees with designs by diving legend Schlomo Cohen will be awarded the to the writers of the three best entries. Debate closes Aug 15.

More info on the **Sharktees here**



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 January 15 - 21st 2011

freaked out by a shark—I've been freaked out by them," he said. "If that person bails to the surface, what kind of reflex are they going to trigger in that animal? And then that person is on the surface thrashing, and then what happens?"  
 "Yes, I am





# Historic Ship Rediscovered Off Anguilla Coast

In the late 1980s, on the tiny island of Anguilla (1992 population: 9,000) in the British West Indies, a group of visionaries decided to clear abandoned, derelict ships from the beaches and harbors and create artificial reefs and dive sites off-shore. By 1990, a total of seven ships were refloated, towed off the north coast of Anguilla and scuttled in 60–80 feet of water. Unfortunately, in September, 1995, category five hurricane, Luis, made a direct hit on Anguilla, destroying the buoy marking the location of one of the wrecks—the 130-foot inter-island freighter *M/V Meppel*—along with records and maps kept at the Fisheries Department that showed the location of the wreck. Because of the usual poor underwater

visibility in this area, after the hurricane this wreck was never found. In 2009, Anguilla Archeological and Historical Society (AAHS) board member, Steve Donahue, received an email from a LCpl. Rebekah Anderson in the UK, enquiring about the location and condition of the *Meppel*; her grandfather had once been its captain in the 1940s when it was named *Hilda*. Questions were asked of local dive operators and fishermen, and most thought the wreck had been moved by Hurricane Luis—or possibly even torn apart—as it had not been seen since 1995. When Anderson was told that the wreck was lost, she wrote back with some additional information, which led



the AAHS to make a more detailed search of the area for the ship. The society also researched the history of the ship through public records and Anderson's family. "Operation Dynamo"—the May 1940 evacuation of 338,000 Allied troops from Dunkirk on the north coast of France—was one of the most celebrated military events in British history, and ironically, a direct result of one of the vessel's most crushing defeats. That same month, the 130-foot Dutch freighter, *Hilda*—owned by Geert Zoutman and captained by his son Hemmo Zoutman (Anderson's grandfather)—was "loaned" to Britain for the duration of the war, and immediately placed into service in "Operation Dynamo". Geert was later imprisoned in occupied Holland because he refused to tell the Germans where his boat was, and then escaped.

The *Hilda* arrived at Dunkirk on May 28, put into the beach (her draft was only 8.5 feet) and took on 500 allied troops who waded out. These troops were delivered to waiting destroyers; then, another 400 troops were shuttled out; and finally that day, 100 serious casualties were shuttled to destroyers.

On the 29th, the *Hilda* took on another 600 evacuees, but because of heavy shelling of destroyers, was forced to deliver the troops directly to Dover, in the United Kingdom. The ship returned to Dunkirk on the 31st towing six smaller boats to be used for the evacuation, and evacuated another 600 troops to destroyers. The ship's final pick up was

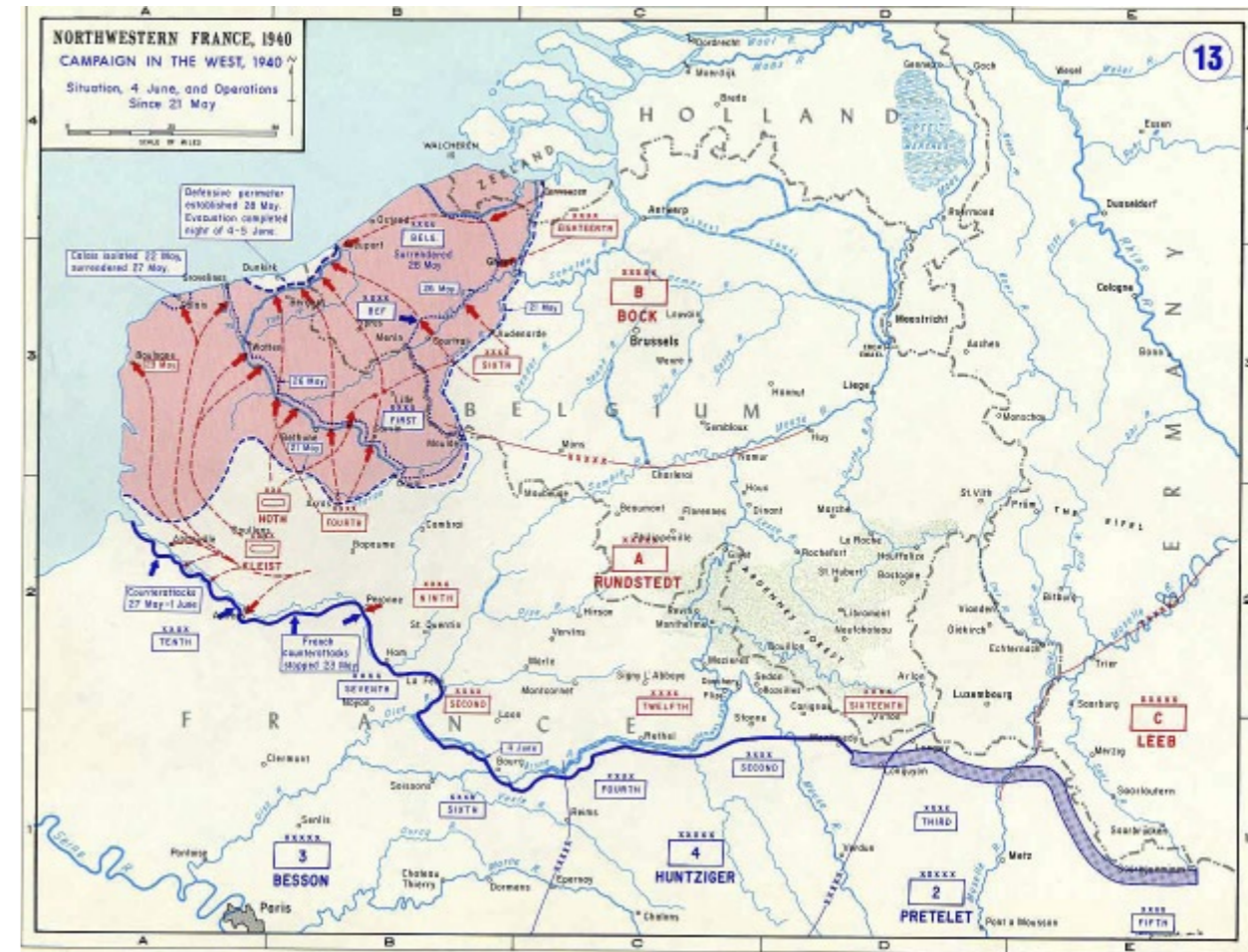
RIGHT: The *Hilda* in action

BELOW: Map of 21 May to 4 June 1940 Fall of Gelb



100 troops on June 1. But while delivering these troops to the destroyer *Keith*, both the *Keith* and the smaller *M/S Skipjack* were shelled, and *Hilda* picked up the

she also picked up these survivors, disembarking a total of 530 troops and survivors at Ramsgate. The ship returned to Dunkirk one last time on June 3, but found no



survivors from both. Finally, while returning two smaller private boats—the *Scotia* and *Brighten*—in convoy with *Hilda*, so

troops to evacuate. Official records show that *Hilda* evacuated a total of 835 troops to the United

Fierce fighting forces British troops to retreat at Dunkerque during WWII



THIS PAGE: The wreck of the WWII vessel, the *Hilda*, renamed the *Meppel* in 1970

of the AAHS, along with marine archeologist Lilli Azevedo, and dive operator, Douglas "Dougie" Carty, began a further search for the wreck.

In October 2009, the governor's office arranged for the loan of the helicopter from the visiting *HMS Iron Duke* in an unsuccessful attempt to locate the wreck from the air. Carty continued the search on many of his dive trips at his own expense, and finally, on 23 March 2010, he located the wreck by chance off the north coast of Anguilla.

The wreck is in an upright position and in excellent condition in 80 feet of water. Anguilla is proud to be the final resting place for this heroic little ship,



Kingdom, while experiencing constant shelling from shore batteries, but as can be seen from the ship's log entries, the *Hilda* rescued many hundreds more from the beach to waiting destroyers.

The *Hilda* served the remainder of the war years doing barrage balloon duty, and after

the war, went back into service with the Zoutman family. The vessel was finally sold in 1970, renamed the *Meppel*, then sailed many years as an inter-island freighter in the Caribbean until the mid-1980s, when she was abandoned in Anguilla.

Once the true history of the *Meppel* was learned, Donahue

and encourages anyone interested to visit the dive site. Much additional information provided by the family, including a copy of the actual ship's log from "Operation Dynamo", as well as pictures of the wreck today can be found at [www.anguilla-diving.com/meppel.htm](http://www.anguilla-diving.com/meppel.htm) ■

In October 2009, the governor's office arranged for the loan of the helicopter from the visiting *HMS Iron Duke* in an unsuccessful attempt to locate the wreck from the air

## Six German WWII U-boats found in the "wrong" places

It seems that many more German submarines were sunk by Allied mines during World War II than previously thought, the British newspaper, *The Independent*, writes.



German U-boat *U-243* being attacked by a RAF aircraft some 170 nautical miles west of St. Nazaire, France, on 8 July 1944

The final resting places of six German U-boats sunk in the final months of the Second World War's greatest naval conflict have finally been identified.

Four of the submarines were found in completely different locations than expected. The explanation is probably that the Allied fleet and air forces had repeatedly mistakenly believed that it had managed to reduce the German submarines, which in actuality survived the attacks and only sank later when they sailed into the mines.

### Several hundred miles away

For example, submarine *U-1021* was not found off the Scottish coast where it was allegedly sunk by British warships, but several hundred miles away, just north of the town of Cornwall in southwestern England.

Also the submarine, *U-400*, previously believed sunk by Royal Navy depth charges south of Cork in Ireland, has now been identified off the coast of north Cornwall. The German sub was on its very first patrol in December 1944 when it hit a mine, underwater photography suggests.

The *U-326*, also on its first patrol when it was destroyed by a U.S. aerial depth

charge attack in April 1945, has been identified 100 miles off the coast of Brittany. The *U-325*, sunk on its second patrol in May 1945, was thought to have been destroyed by Royal Navy depth charges in the Irish Sea. Now, marine archaeology and underwater photography have identified it on the seabed 230 miles away off Lizard Point, south Cornwall.

Thus, it seems that the Allies should be happy for the mine fields they set to hit German submarines, which alone—between 1939 and 1943—sank about 2,500 Allied merchant ships and about 50 Allied warships.

The discoveries came from a survey of the western English Channel and adjacent areas, undertaken by the U.S. firm, Odyssey Marine Exploration. Dr Axel Niestlé, a German U-boat historian involved in the project, told *The Independent*: "It is a fine example of successful teamwork between marine archaeologists and historians rewriting naval history. The underwater photography gave us an unparalleled opportunity to learn how different types of Second World War anti-submarine weaponry worked." ■



AUSTRALIAN WAR MEMORIAL (AWM) CATALOG NUMBER UK2511







# Startling underwater discovery at Gallipoli battlefield

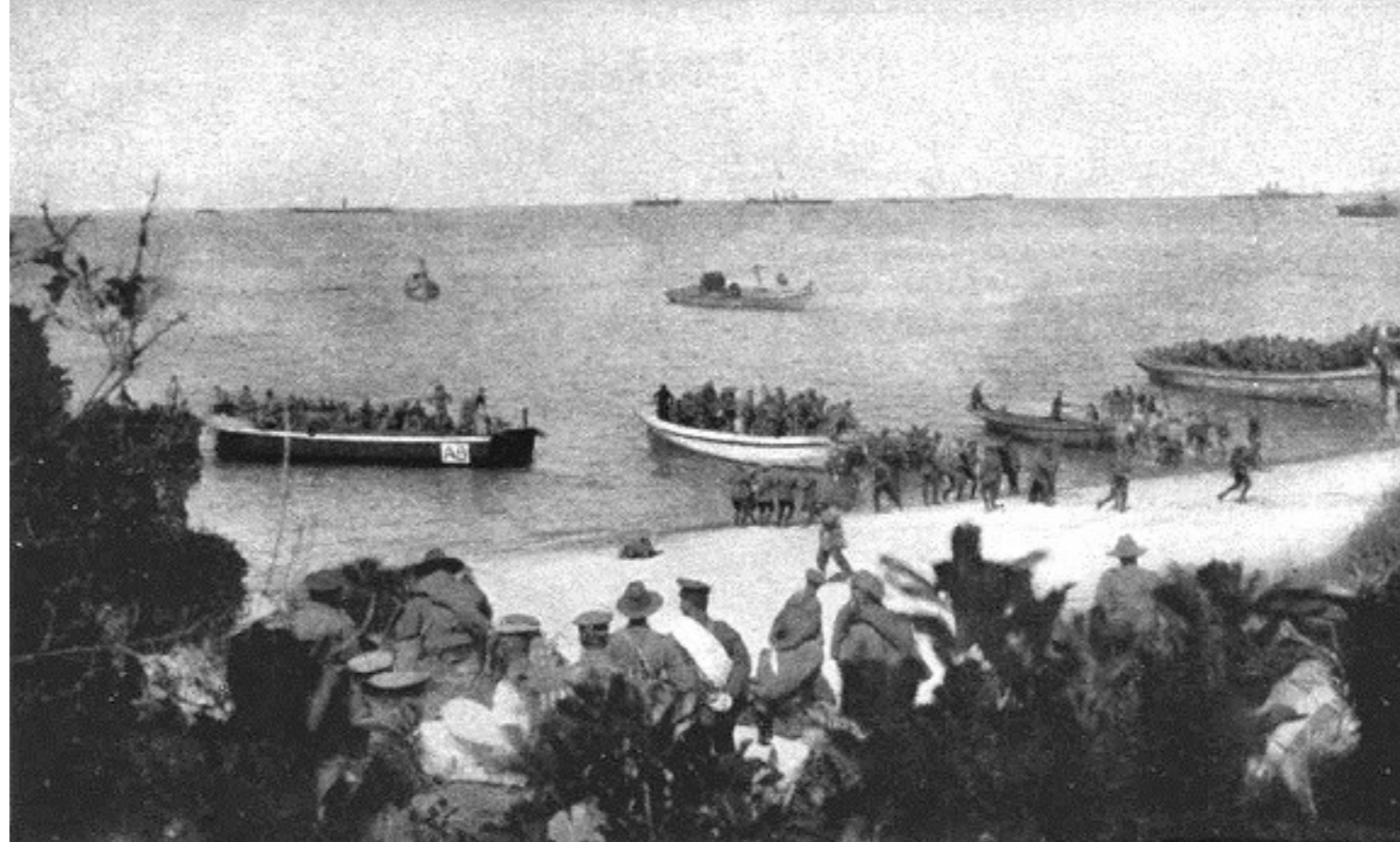
Underwater archaeologists exploring Turkey's Gallipoli coast have discovered a somber relic from the famous WWI battle. A barge that removed dead and wounded soldiers from the beachhead back to a hospital ship was found at the bottom of the sea along with the wreck of the *HMS Lewis*, a British destroyer.

A Turkish peninsula controlling access between the Black and Aegean Seas, Gallipoli also guards the western approach to Constantinople—the capital of the Ottoman Empire—which fought on Germany's side during the First World War. In 1915, the United Kingdom's First Lord of the Admiralty, Winston Churchill, decided it was of crucial strategic importance and landed troops there. What followed was disastrous, as Allied troops got pinned down on the beaches and endured months of constant fighting.

## Anzac cove

The Allied side included not only British, French, and Canadian troops, but also a large number of men from the Australian and New Zealand Army Corps. The ANZACs, as they're commonly called,

4th Battalion lands on ANZAC Beach in the early hours of April 25, 1915



became heroes back home and are national icons to this day.

The hospital barge was found near ANZAC Cove and was probably sunk while transporting casualties from this famous unit. Before they finally pulled out, both Allied and Turkish forces suffered casualties totaling a quarter of a million men apiece.

Minister for Planning, Tony Kelly, said Project Beneath Gallipoli completed the first ever scientific survey of the 1915 campaign. "The joint Australia-Turkish team of 12 experts located and dived a number of new historic shipwrecks from the eight-month battle—sites not previously visited by divers or archaeologists," the minister said.

## Wounded and dead soldiers

"One wreck in particular really brought home the agony of the conflict. Detected 1.3 nautical miles off ANZAC Cove in 55 metres of water, the wreck had only been known as an obstacle to local Turkish fishermen. The shipwrecks were examined during a detailed side-scan sonar survey of the seabed adjacent to the famous Brighton Beach, ANZAC Cove, North Beach and Suvla Bay," said Tim Smith, New South Wales government maritime archaeologist and deputy director of the NSW Department

of Planning's Heritage Branch. "When dived and recorded, we confirmed it was a type of barge known through historic photos for carrying dead and seriously wounded ANZAC troops off the beach in 1915," he said.

## HMS Luis

The expedition team also proved that a known wreck in Suvla Bay was in fact the remains of the British destroyer *HMS Luis*, which ran aground in October 1915, destroyed by Turkish shell fire. The wreck had previously been identified as a vessel engaged in water supply, but the Australian team confirmed it to be a naval warship by its four Yarrow-type steam boilers.

Some of the other discoveries include a shipwreck located in just a meter of water off the beach, British type .303 rifle ammunition, remains of lead balls from Turkish shrapnel shells and remains of several pontoon wrecks. The latter

are believed to belong to the Royal Australian Navy's Bridging Train, an engineering unit based in Suvla Bay and in charge of stores and water.

Other targets are likely to be identified from the sonar data currently being analyzed back in Sydney. Expedition results will then be collated into a report to be provided to both Australian and Turkish governments.

Today, Gallipoli is one of the most popular destinations in Turkey. Faint traces of the trenches from 90 years ago are still visible, and guided tours show visitors the locations of the various armies fighting it out for control of the beach. ■



HMS Luis stranded at Suvla, Gallipoli in 1915. The ship is under artillery fire from the Turks.

## Pieces of Eight



Silver Treasure Coins of the 1622 Shipwrecks  
*Nuestra Señera de Atceña*  
*Santa Margarita*  
& the Portuguese Carrack *São José*

by Carol Tedesco



Fully illustrated with hundreds of finely detailed photographs, *Pieces of Eight* is more than just a reference book. Carol Tedesco not only explains the subtle nuances of the coins themselves, but places them in the context of their moment in history, explaining where they were coming from, where they were going and why.

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## The largest wooden shipwreck in Lake Michigan found after 112 years

The *L.R. Doty*, which sank in Lake Michigan in 1898, has been found. At 300 feet long, she was the largest wooden ship in the lake that had still not been found.

A group of American marine historians and divers from Wisconsin have announced the discovery of the missing steamship *L.R. Doty*, which vanished in a violent Lake Michigan storm 112 years ago on 25 October 1898.

The ship was found with the use of deep-sea technology. When divers hit the bottom of the lake, they knew they had found the *L. R. Doty*, a 300-foot long wooden steamer which was lost with all hands in 1898. The cold Lake Michigan waters have left the *Doty* "perfectly preserved", and it was found "up-

right and intact" settled into the clay at the lake's bottom.

"On 16 June 2010, we were the first divers to reach a shipwreck which lies about 20 miles east of Oak Creek, Wisconsin, in Lake Michigan. The depth is about 310 feet. More dives are planned. Due to the depth, it will take many dives to fully explore this ship."

The *L.R. Doty* was bound from South Chicago to Midland, Ontario, with a cargo of corn and the four-masted schooner, *Olive Jeanette*, in tow when she was struck by a tremendous storm several miles

north of Milwaukee. Waves reportedly reached 30 feet, with 70-mph winds. The *Olive Jeanette* was severely damaged, but survived the storm. The *Doty* however, was never seen again.

The ship was carrying a load of corn at the time it sunk, and even that seemed to be preserved intact. *Doty* will remain on the floor of the lake, as there are no plans to raise it. About 500 unfound ships are still believed to be at the bottom of Lake Michigan. ■



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Edited by  
Scott Bennett



## Beach House Maldives coral project breathes new life into Haa Alifu Atoll

Part of the Waldorf Astoria Collection—the Beach House Maldives—has launched a new environmental initiative to preserve the corals of Manafaru Island's Haa Alifu Atoll and educate guests about marine life at the resort.

Working in conjunction with Malé-based marine consultancy, Seamarc, and newly-appointed marine biologist, Melanie Bon from the Alfred Wegener Institute in Germany, the Coral Project aims to develop the resort's large coral population, particularly under the glass floors of the villas.

Seamarc's unique propagation techniques involve the harvest of broken or threatened corals, which are attached to portable coral trays and then put back into the warm Maldivian waters. As a result, the branching corals will grow faster, rapidly creating new and replenishing old habitats alike. The project also provides alternative employment to residents of nearby B. Fulhadhoo Island who build the structures.

As well as providing valuable data for the Maldivian Marine Research Centre about the Haa Alifu Atoll, the project will set up educational presentations for guests about coral propagation and the extensive marine life found in the surrounding waters, such as manta rays, dolphins and whale sharks.

Guests at Beach House Maldives are also able to get involved by sponsoring a reef, with US\$100 (GB£67.50) covering the cost of construction and implementation of a coral tray. In return, they will receive regular newsletters charting their reef's progress with links to up-to-date photographs on the Beach House Maldives' website: [www.waldorfastoria.com](http://www.waldorfastoria.com). ■

## Google Acquires Flight Information Software Company

Google announced an agreement to acquire ITA Software—a Cambridge, Massachusetts, flight information software company—for US\$700 million. Google's acquisition of ITA Software will create a new, easier way for users to find better flight information online. Passengers, airlines and online travel agencies will benefit by making it easier for users to comparison shop for flights and airfares and by driving more potential customers to airlines' and online travel agencies' websites. Google won't be setting airfare prices and has no plans to sell airline tickets to consumers. ■



## Composite material used in Boeing 787 raises safety questions

When an Airbus A340 landing in bad weather skidded off a Toronto runway in 2005, it broke into pieces and caught fire. But in the minutes before flames engulfed the jet, all 309 people on board evacuated safely. Although such accidents don't always end so well, today's metal airliners are designed to survive in a crash landing.

With a body built largely from carbon fiber infused with epoxy resin, how Boeing's new 787 Dreamliner will fare in such a crash is another story. The new material is tough, but when the impact is hit hard enough, it breaks rather than bends and in a fire, the epoxy resin burns.

In 2005, as the design of the Dreamliner advanced, one early Boeing computer simulation proved disturbing. Analysis indicated a crash survivable in a largely metal 777 would prove deadly in a 787. The resulting impact would shatter the bottom of the 787 fuselage and

deliver a jolt severe enough to kill all the passengers. A Boeing engineering manager called the outcome a "potential showstopper" for the Dreamliner.

Since then, Boeing has announced a key design change, with subsequent physical tests proving the final Dreamliner design is as safe as a metal airplane. Although a few critics remain concerned, the Federal Aviation Administration is close to certifying the jet as safe to fly passengers.

However, running full-scale tests of big jets crashing is considered impractical, as well as prohibitively expensive. Be it on land or water, there are too many possible impact variations to test every scenario. As a result today's metal airplanes have been certified largely using computer simulations. The FAA and Boeing agreed in advance on exactly what testing was needed to prove the 787's safety. ■



## M/Y Indian Ocean Explorer organizes first diving cruises around the Scattered Islands

The M/Y *Indian Ocean Explorer* is officially organizing the very first diving cruises around the Scattered Islands, particularly in Bassas da India and Europa. These trips have been fully allowed by the French Antarctic and Austral Territories Authorities (Taaf) managing the Scattered Islands.

Ecological sanctuaries, the Scattered Islands (Europa, Bassas da India, Juan do Nova, the Glorious Islands and Tromelin) possess remarkable marine and terrestrial biological heritage. Their geographic isolation combined with a very limited human occupation has protected these islands for many decades.

Registered as natural reserves as early as 1975, some of these islands possess near-pristine vegetation, especially Europa with its intact mangrove forest. They shelter extensive marine bird populations including great frigatebirds, lesser frigatebirds, tropic birds and masked, red-footed and brown boobies.

The area is home to thriving coral reefs harbouring abundant fish populations, while the surrounding waters are home to numerous cetaceans. Europa probably is the most important laying spot for marine turtles in the world, such as Green Turtles (*Chelonia mydas*) and Imbricated turtles (*Eretmochelys imbricata*).

The diving cruises, limited in number, will take place under the control of the Taaf authorities that will send an observer on board the ship. The M/Y *Indian Ocean Explorer* chartered by Voyages of Discovery GmbH, is a liveaboard ship 48 m long, based in the Seychelles. Equipped with a hyperbaric chamber, three tenders, it can welcome up to 25 divers. The diving cruises are scheduled in September 2010, depart from Beira, Mozambique. ■



RICHARD PRINS / CREATIVE COMMONS



Edited by  
Scott Bennett



## Don't get cheated at the scale

In the age of ever-tightening baggage restrictions, excessive overweight charges is forever on the mind of many a traveller. The new and improved Balanza Ergonomic Digital Compact Luggage Scale is a welcome addition to help ease the pain. Now you will know your bag's weight in advance before handing it over to the airport agent. Weighing in at only 11lb, the easy to use design can save high fees at the airport. Operation is simple: just lift, wait for the beep and read the weight. With a maximum capacity of 100lbs (44kg), the scale operates with two AAA batteries (batteries included) and comes with a one-year warranty.

[www.balanza.com](http://www.balanza.com) ■



GIBRALTAR TOURISM AUTHORITY

## Gibraltar plan to regulate scuba diving

The Gibraltar Government roll out plans to regulate scuba diving would lead to tighter control over divers and the promotion of the Rock as a premier dive holiday location.

The proposal has two aims: to strengthen the sport's potential as a source of tourism revenue, while promoting it as a leisure activity for locals.

"The government believes that scuba diving has a much greater potential for touristic economic exploitation in Gibraltar than has hitherto been the case," the consultation paper states.

"In order to achieve this, safely and in a way which is respectful of the environ-

ment and of our marine heritage, the government proposes to regulate scuba diving and to provide infrastructure to promote and support it as both a leisure activity for locals and a touristic and commercial activity for visitors."

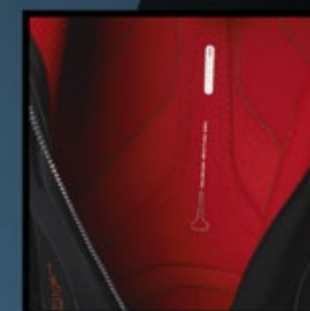
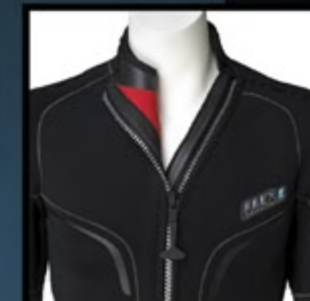
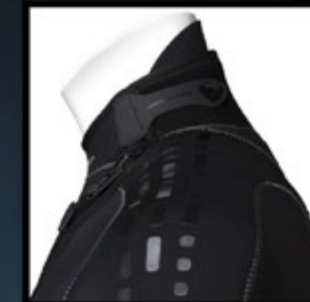
The government proposes that non-profit clubs and commercial operators alike be registered and licensed by the Gibraltar Sports and Leisure Authority. ■

## Three dive operations in Mozambique obliterated by fire

Three holiday resorts in Ponta do Ouro, Mozambique, —which mainly cater to the diving community—were razed by fire after a woman apparently knocked over a candle in her sleep. Nobody was killed or injured when The Whaler, Dolphin EnCOuntours and Simply Scuba burnt down. At least 110 bungalows and various other buildings were destroyed. ■

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# *A Voyage to the* Antarctic Peninsula

Text and photos by Michael Aw

At 2:00 am, it is already daylight on Pléneau Island, a place where floating icebergs become grounded, a graveyard of diverse towering structures of ice articulated in extraordinary forms. In a quintessential snowy landscape, snowflakes of perfect shape fall over me, a moment of utter isolation. I am the only one awake among the few that have chosen to sleep on ice with a sleeping bag, our way of bonding with the final wilderness—Antarctica, the last of our planet's pristine milieu.





Penguins head to the water to feed; Expedition members spent the night in sleeping bags on solid ice; Chinstrap penguins keep close bonds with their young

The mere mention of Antarctica triggers the imagination and evokes stunning images of a majestic frozen continent laden with resident penguins, polar bears and whales. In the real world, there are no polar bears in the Antarctic, and there are no penguins in the north Arctic. Though both the Antarctic and Arctic are high latitude, freezing polar regions, the similarities end there. The enormous Antarctic is an un-colonized continent covered with ice, whereby the north Arctic is comprised of a frozen ocean at the North Pole, surrounded by land masses to the south of which some are heavily populated by humans.

Once the domain of explorers who had fallen under its mystical enchantment and of appalling whalers and sealers who came

to exploit the rich bounty of its frigid waters, Antarctica continues to weave its magic, profoundly alluring the modern day adventurer to its freezing shores. My journey began with a three-day flight and transits to Ushuaia, the southernmost city of the world, about 3,300km south of Buenos Aires.

Indeed, this picturesque town endowed with a unique landscape of high snow-capped mountains, sea, glaciers and forests is a fitting gateway for nature tourists on their way to Antarctica. From here, it is purported to be a dreadful 50 hours crossing the Drake Passage, which has earned a place in history as having some of the roughest sea weather in the world.

Drake Passage is dominated

by fast flowing southern ocean waters squeezed between the land masses of South America and Antarctica. Storms

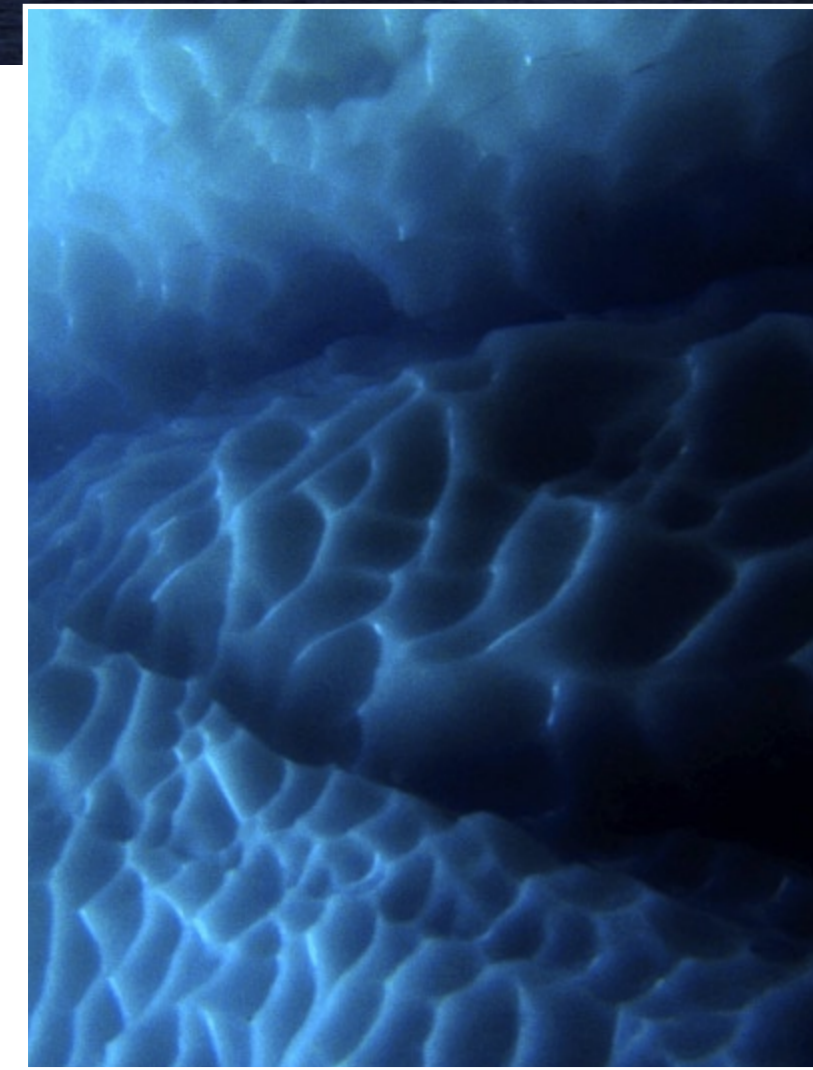
frequently whip the ocean into a gloomy gray tumultuous, heaving mass of water, notorious for sinking many ships. My crossing with the *Polar Pioneer* was to be a lucky one; riding with the southwest wind of 24 knots, the vessel averaging 12 knots, crossing the Antarctic Convergence to see the first icebergs on the second morning. We were in Antarctic water.



Late afternoon, the third day of the voyage, we made landfall and landed on Aitcho Island, named for the British Admiralty's

Hydrographic Office, which I read was covered with extensive beds of moss and lichens. There was hardly any in sight. Instead, there was a Middle Kingdom-like landscape with an expanse of ice inhabited by thousands of Gentoo and Chinstrap penguins.

Much like the animals on Galapagos, these flightless birds have no fear of human



THIS PAGE: Ice! Views of the ice structures and icebergs of Antarctica

intrusion; they happily go about squawking away and doing little penguin chores, from inflating their chest and pointing beaks towards the sky, letting loose a huge lunch-whistle call to mates, to rearranging pebbly rocks for a brand new nest. Whilst we respectfully stayed at a distance, at most times, it's the birds that approached us so close that we could smell their fishy breath.

I walked right to the far side of the island, up the saddle between two hills to take in the panoramic view of Whalebone Beach in the midst of a spectacular vista tainted with little gray blobs of elephant seals, sea lions and penguins. A few of them, seemingly emerging from a snow storm, were staggering up hill towards me.

### Antarctica

Though there is lots of snow and ice around, Antarctica is really a desert environment with less than 4mm of precipitation monthly making it the driest continent on earth. The amount of moisture received by the polar continent is comparable to that falling on the world's hottest deserts. Antarctica is also the coldest continent on Earth. The lowest temperature ever recorded was minus 89.2°C at Vostok, at the Australian Antarctic Territory, in 1983. More than 98 percent of Antarctica land mass is covered with an enormous ice cap with an averaging thickness of 2.2km deep.

The continent itself, which is the size of the United States and Europe combined, is comprised of 5.4 million sq miles, but in the

Split view of iceberg above and below the water's surface; Life on Antarctica—expedition member plays music for the locals; Territorial disputes are bound to erupt amongst close neighbors



Austral winter of June to October, the environ of surrounding heavy pack ice increases in area to more than seven million square miles. If these were to melt with the current trend of increasing global temperature, seven million cubic square miles of water would be released, resulting in the ocean rising between 45 to 60m! This catastrophic event would not only flood numerous coastal cities, but the entire world's weather would be thrown into irreversible mayhem.

**Shooting in Antarctica**

My personal objective for participating in a photography and dive expedition was to capture a sample of an above and below portfolio of the Antarctica Peninsula. I soon realized that I was too ambitious. For the shoot, I had to carry a 30kg backpack of cameras, a pole cam for each landing, and I had to fight with

an expedition leader who had a mission in life to make sure I failed.

Shooting in Antarctica is a challenge for the photographer and equipment to survive the elements; sub-zero temperatures, melting ice, powdery snow and volcanic ash don't really go very well with cameras. To pursue better quality time with the animals and a space to work without the tourists, arrangements were made for me to go off on my own during shore excursions. On every occasion, the expedition leader-from-hell would disrupt the plan, and in one instance, he had me scamper in icy conditions suited up in a dry suit, lugging a polecam, underwater housing, 30kg

backpack and dive gear from the dive deck to join the shore excursion group at the bow! I came to conclude that it was not freezing water of the polar region or the reptilian-like leopard seal that is dangerous, but the thoughtlessness of a

dense expedition leader.

Nevertheless I persevered, grasping on every window of opportunity to encapsulate the splendor of Antarctica's magnificent wilderness. With an intensity unfelt since puberty, I fought to retain the

infinite impressions that flooded the senses.

Towering mountains rose abruptly out of the sea, shrouded with steep glaciers plundering down to deep freezing waters. Superlatives necessitate a new meaning. Sunsets expand the consciousness with colors that I have never seen before, bizarre and vivid, tinted in delicate shades of rose, orange, lavender and gold that never seemed to end.

Icebergs came in a myriad of sizes from the colossal to the petite in fanciful shapes and impossible hues of aqua, palest blue to mint green







## Antarctica



Adelie penguin (*Pygoscelis adeliae*) peeks into the camera; Common seal raises his head; Colony of Emperor Penguins

floated on mirrored waters like rough-cut diamonds sculptured by artisans from heaven. Antarctica fulfills the childhood dream of adventure, exploration, and fantasy with its ethereal landscape. It shimmers with a savage beauty, unique wildlife and raw power exceeding any expectations. The term, *immense*, took on a new-found significance, as I obstinately attempted to freeze the moment onto film. I could only try.

### Abundant life

One morning at Charlotte Bay, while the divers got their first taste of diving in sub-zero water temperature, I managed to find a quiet locale to work on an over and under picture of an ice flow. Nearby, there were two Weddell seals, and a few Gentoo penguins ambled by, going somewhere, going nowhere. In the

distance my lens, fell upon a leopard seal sun-basking on an ice flow right in the vicinity of the divers. That would have made an awesome over-under picture.

Despite the apparent hostility of Antarctica, the coastal region, especially at the peninsula, teems with a profusion of wildlife. However, the animals are highly specialized, and whilst diversity is relatively low, overall densities of individual species are in astronomical numbers; there are tens of millions of penguins alone.

In this most fundamental of environments, this sheer number of wildlife flourishes each spring and into the late summer as the Antarctic Peninsula “reawakens” from its cold dark slumber. As my trip began at the end of November, this was the time for the penguins, seals and birds to start to convene to court and

breed for the next generation.

This proliferation of nature was astonishing to watch as it took place in the frozen, unforgiving landscape, which harbors it. Yes, I did capture quite a few frames of mating Gentoo —my first of penguins doing naughty things. Along with the Adélies and Chinstraps, Gentoos belong to the genus *Pygoscelis*, meaning “brush-tailed” and so-called because of their long paint-brush shaped tails. But really there are only two kinds of penguins in the Antarctica—the white ones walking towards you and the black ones walking away from you. Penguins are mostly white-breasted with a black back!

Though I remember my fingers were numb beyond comprehension submerged for those over and under shots, I was too immersed in enthusiasm to feel the pain and the





THIS PAGE:  
Scenes from  
colony life of  
the Emperor  
penguins  
(*Aptenodytes  
forsteri*)

cold. But as I am writing this back home over a cold Australian winter, how I wish I was born a penguin.

Those tuxedoed birds are a resourceful bunch when it comes to dealing with cold weather; they are able to make their own heat and carry it with them wherever they go. Like seals and sea lions, penguins are also endowed with a natural layer of blubber developed from a diet of krill, squids and planktonic oils. This thick layer of blubber is an excellent insulator and also serves as fuel for the long, cold breeding season. This is nature's evolutionary design in natural heating technology.

We all know that air is the best insulator; any one spending time on the ski field will recognize the

significance of wearing many layers of clothing with plenty of air between them. All outdoor cold weather-wear is borne of this concept.

Now the penguin's equivalent of a PATAGONIA polar suit are their tightly overlapping, ruffle-resisting feathers, which trap a layer of warm air against its skin. Each feather is also fluff down at its shaft, and the down layer provides added insulation. The feathers are also shiny, long, curved and overlapped liked carefully laid roof tiles. So to speak, penguins are ingeniously air and water tight.

### Exploration

Six days into the voyage, we sailed into Galindez Island to visit Vernadsky<sup>1</sup>, the Ukraine Antarctic

Center (UAC). Originally, it was the British Antarctic Survey (BAS) Faraday station first built during the British Graham Land Expedition (1934-37). Vernadsky to date is the oldest operational station in the Antarctic Peninsula area, and it is here where the hole in the ozone layer was first discovered.

I met with the resident marine biologist, Andrei Utevsky, who regularly dives beneath the ice in a 7mm wet suit and is still using some 1950's camera system for his research. Now that is tough, putting those of us in our place who dive in drysuits in 20°C water. His passion is overwhelming, especially to be working 24/7 in one the loneliest outermost posts at the bottom of the





LEFT TO RIGHT: Snow on the deck of the ship; The rugged ice and awesome scenery of Antarctica; What in the world are they thinking?



world. The station is snowed in for about eight months of the year and only receives 250 days of snowfall and barely 800 hours of sunshine—i.e. about 70 days in a year! I am sure he is glad that it's only a 13-month posting.

Human beings are relative newcomers to Antarctica. The search for the continent was the last great achievement of global exploration—an epic tale spanning centuries of high adventure, from the “unknown southern land” of the ancients to the first recorded

sightings in 1820. Of course, Antarctica was finally explored, and plundered, during the Age of Discovery by senseless men through the ages, and it did not take long for our species to take advantage of trusting, defenseless wildlife and ruthlessly plunder the continent's biological richness to the point that the whales and fur seals were commercially extinct. Whaling activities continued into the mid-1980's.

Through the enthusiasm of the great explorers, Robert Scott, Ernest

Shackleton, Douglas Mawson and Ronald Amundsen—who ventured deep into the vast whiteness of the interior in search of the final “holy grail” of discovery, the South Pole—Antarctica did much to generate interest in the frozen continent. The lessons of the 18-month-long International Geophysical Year (1957-1959) shed indepth knowledge on Antarctica, which steered an era of scientific and conservation movements.

The continent's history reached a pinnacle with the signing of the

Antarctic Treaty<sup>2</sup>, protecting the last continent for centuries and future generations. The 1961 treaty is abided by 12 nations: Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the Soviet Union, the United Kingdom and the United States. It recognizes that in the interest of all humankind that Antarctica should continue forever to be used exclusively for peaceful purposes and should not become the object of international discord. Well, that was done with good intent.





Family of Chinstrap Penguin (*Pygoscelis antarcticus*)

Adelie penguin feeds youngster; Spreading their wings at the bottom of the world (below)  
NEXT PAGE: Chinstrap penguins climb up huge hill to reach their nesting sites



**Deception Island**

On the eighth day, we reached Deception Island to land at Bailey Head. Here lies one of Antarctica's biggest Chinstrap penguin rookeries; there are more than 200,000 mating pairs—a magnitude beyond words, beyond imagination. Whatever compels the little penguins to establish nesting sites, some up to 2km up hills, is beyond human comprehension. Especially since it is life's greatest inconvenience, as every so often, it is necessary for them to totter down a 'pink' highway to the sea, porpoise madly for food, returning with a hop, splash on the beach, shake, shake and step, step... and waddle back up the beaten track to their nest.

The penguin highway, as I see it, is the most amazing wildlife phenomenon I've ever seen. As I watched, I stood humbled by the power of nature's resourcefulness. The hundreds and thousands of

Unlike expeditions undertaken by the early explorers, the advent of modern day air travel and special interest agents have made organizing a voyage to Antarctica a relatively easy feat, albeit an expensive one. Compared to some of my diving expeditions, which take sometimes up to a year to organize, an Antarctica voyage is like a walk in the park. All it takes is booking an airline ticket to Ushuaia and a reservation with one of the expedition companies such as Aurora Expeditions aboard the *Polar Pioneer*.

Literally, it is really that simple, and you do not need to have the fitness of an Olympian either; a 12-year-old can do it, as well as a 75-year-old. The average age on board on one of these tourist boats is 50. As such, for the last two summers, approximately 14,000 tourists were carried to Antarctica by 14 IAATO<sup>®</sup> member companies. And if you are one of those who just wants to brag about having been there, there is always the easy, economical couch-potato option of booking a 12-hour turn-around flight from Sydney, Australia, to see Antarctica in the comfort of a Boeing 747.





CLOCKWISE FROM LEFT: Ominous cliffs of an iceberg; Reclining fur seal; Antarctic landscape; Emperor penguins wary of hunting sea lions cautiously enter the water



inscribed into the UNESCO World Heritage list. All competitive feats should be banned. Humans do not have a good track record when it comes to treatment of the ocean; our very existence is very dependent on the world's most isolated continent—the engine room for much of the world's weather. The future of this sensitive region depends on our diligence to protect and manage the wildlife and preventing pollution and contamination of the land, sea, air and ice.

Nature tourism should be carefully reviewed, restricting vessel capacity to 50 or less. Mass tourism of 500 on a cruise ship is making a joke out of our planet's final pristine frontier. Perhaps some rich American should replicate Antarctica right on the Las Vegas Strip, along side the mockeries of the Eiffel Tower and the Pyramids—which



observation point up on the hill, I spotted some birds approaching the shore. I picked out one and watched the swell dump it up onto the beach. It stood erect and step, step, step and halt. Shake. It joined the endless flow of penguin traffic highway, uphill on the left, downhill on the right.

I timed the journey; it took the bird 70 minutes to reach his colony. The hike up that mountain was quite a trek even for the

average person. How a bird the height of my calf and with legs the size of my toe can do it is sheer bewilderment.

As if we need to be reminded

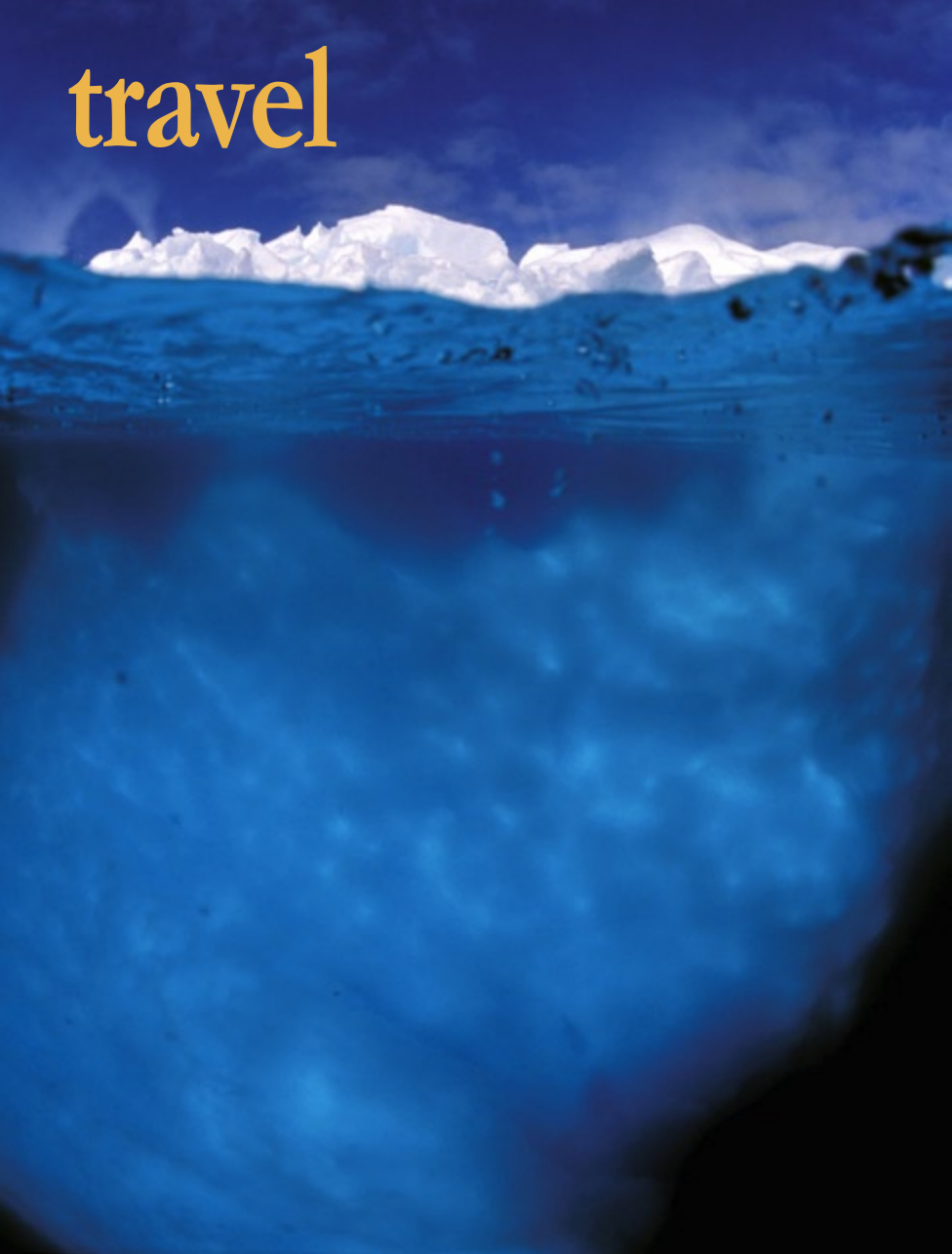
of the errors of the past, after Bailey Head, the *Polar Pioneer* sailed around the corner, negotiated the narrow Neptune's Bellows passage and landed on Whalers Bay, an old whaling station located in the inner caldera of Deception Island—a bleak landscape of decaying buildings, fuel tanks and boats that once supported the outpost of human brutality. The place is a very clear paradigm of human exploitation of the land and the sea; thousands of whales were slaughtered at Whalers Bay during the station's operation. I felt ashamed of the human race.

**Afterthoughts**

I perceive Antarctica in a different light after the voyage. Rather than a destination to conquer, or to prove that one has earned his manhood by reaching the South Pole, or to ski cross-continent, Antarctica should be protected and be

penguins making the trek from their nests in the hills down to the sea to feed required the agility and strength equivalent to a triathlon competitor. From my





seems to satisfy the simple-minded. The preservation of this magical part of our planet is dependent on its remoteness, far away from human encroachment and exploitation. It is an international treasure, a biosphere that we must preserve for future generations. Will I be back? Absolutely, it is a spiritual experience, a place to see before one dies! ■

*NOTES: <sup>1</sup>Vernadsky is the first Ukrainian Antarctic station. It is operated in the field of Upper Atmosphere and Climate Science. Data is collected and analyzed in several scientific disciplines: ionospheres, magnetospheres, geomagnetism, meteorology, glaciology and ozone research. Several of these data sets are the longest continuous runs in Antarctica. According to the Memorandum of Understanding between the UAC and the BAS, Ukrainian scientists will continue and supply BAS and buy all science results of the long-term measurements of total ozone layers, magnetic, meteor and ionosonde data.*

*Michael AW is an internationally published author and photographer. He is a Fellow of the Explorer Club in New York and a Fellow of the International League of Conservation Photographers. He is also Ambassador for Seacam. For more information, visit: [www.MichaelAW.com](http://www.MichaelAW.com) ■*



Chinstrap penguins (below) battle the the surf on their way feed on fish, squid and krill up to 50 miles off shore. RIGHT: Map of Antarctica



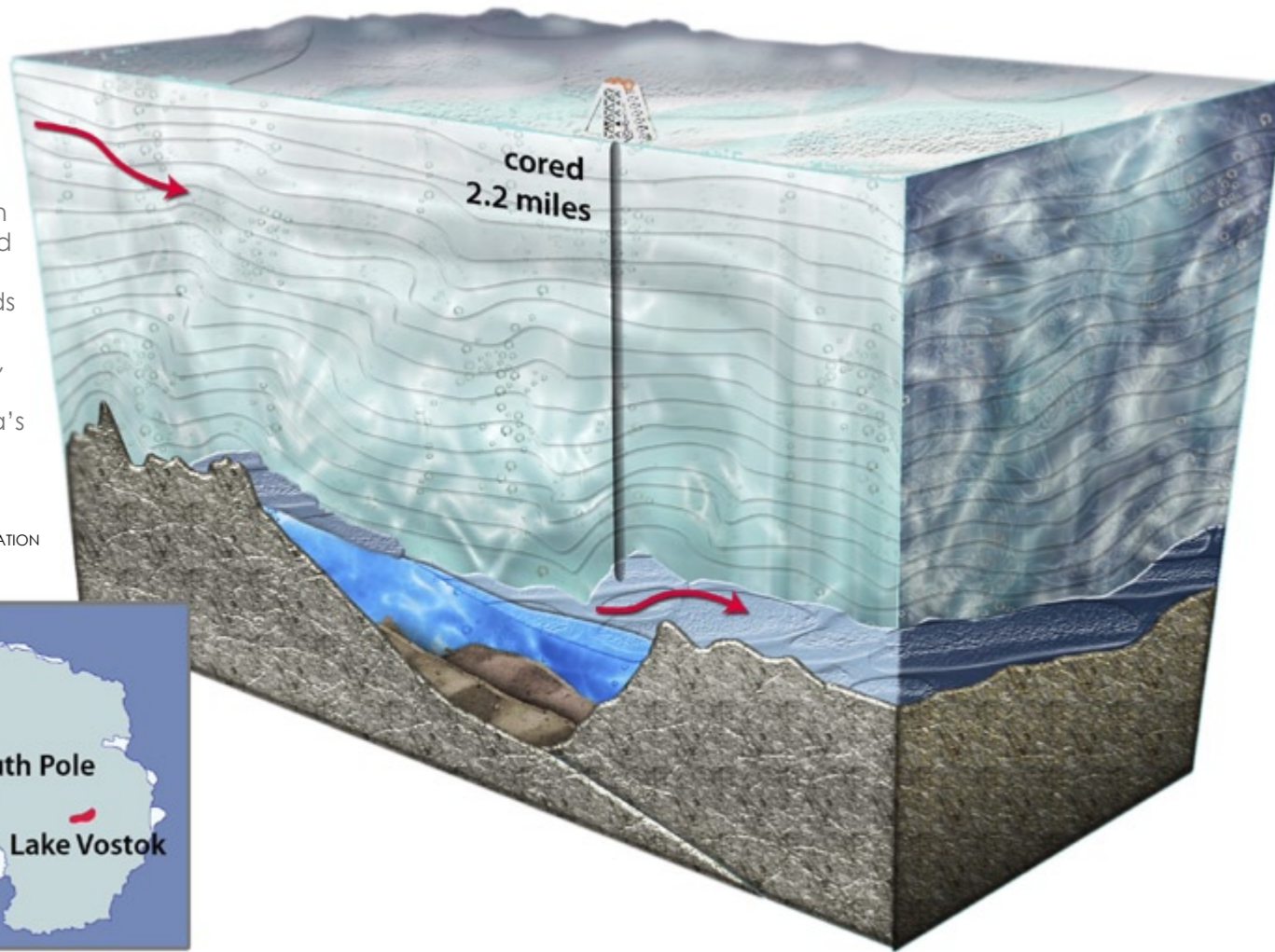
Views of icebergs from under and over the water's surface



# Huge lakes and rivers lie hidden under Antarctic ice sheet

An artist's cross-section of Lake Vostok, the largest known subglacial lake in Antarctica. Liquid water is thought to take thousands of years to pass through the lake, which is the size of North America's Lake Ontario

NICOLLE RAGER-FULLER / NATIONAL SCIENCE FOUNDATION



Lying beneath more than two miles of Antarctic ice, Lake Vostok may be the best-known and largest subglacial lake in the world, but it is not alone down there. Scientists using NASA's ice cloud and land elevation satellite identified a network of rapidly filling and emptying lakes. More than 145 other lakes trapped under the ice have been identified. Until now, however, none have approached Vostok's size or depth.

Lasers beamed from space have detected what researchers have long suspected: big sloshing lakes of water underneath Antarctic ice.

These lakes, some stretching across hundreds of square miles, fill and drain so dramatically that the movement can be seen by a satellite looking at the icy surface of the southern continent.

Glacial lakes have been found

before in Antarctica, but researchers from Scripps Institution of Oceanography at the University of California found a system of fast-flowing rivers and reservoirs underneath the ice.

Scripps says it seems the rivers transport the majority of the water from the deep interior of the ice sheet out to the ice shelves, and ultimately to the ocean.

Dr Helen Fricker, a glaciologist at

Scripps Oceanography, said: "We didn't realise that the water under these ice streams was moving in such large quantities, and on such short time scales.

"We thought these changes took place over years and decades, but we are seeing large changes over months. The detected motions are astonishing in magnitude, dynamic nature and spatial extent."

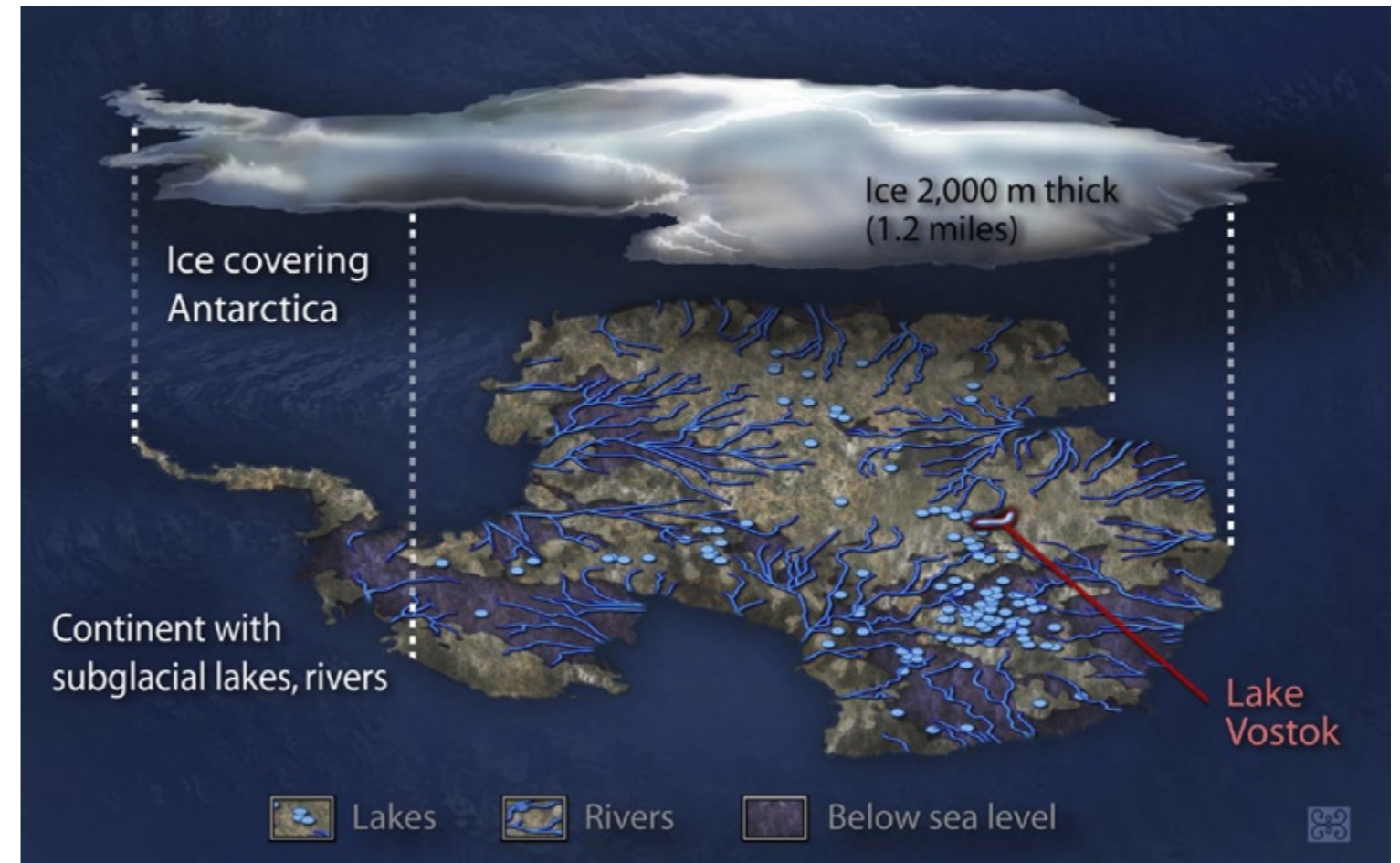
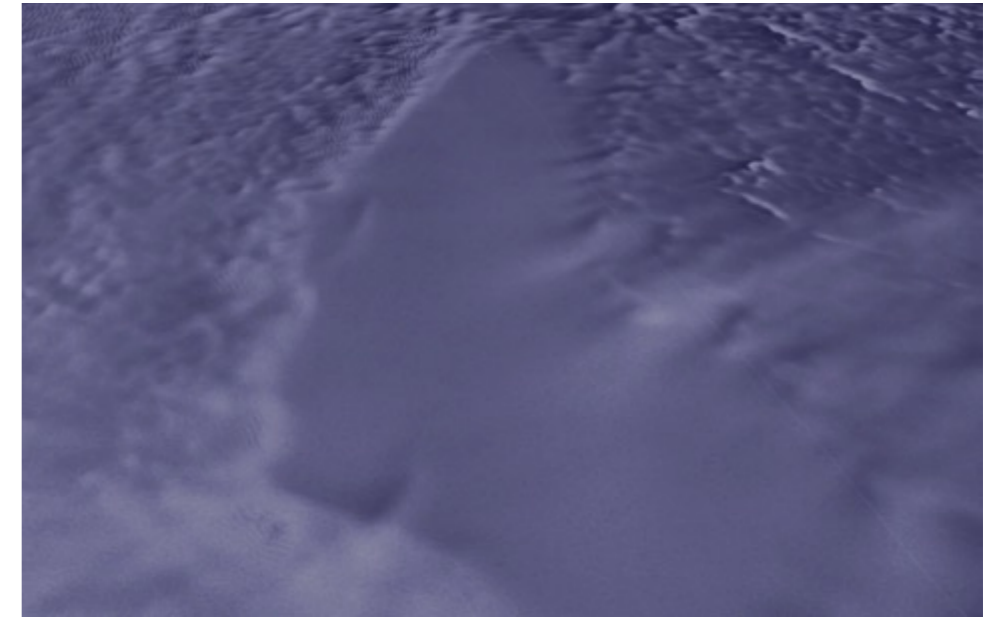
"Quick" can be a relative term

when talking about the movement around glaciers, which tend to move very slowly. But one lake that measured about 30 by 10 kilometres caused a 10-metre change in elevation at the surface when it drained over a period of about 30 months, Fricker said.

Further research will now be undertaken to survey and monitor the subglacial system and its connection to movement of the ice sheet. ■

RADARSAT dataset of Antarctica, another view of Lake Vostok

NASA/GODDARD SPACE FLIGHT CENTER SCIENTIFIC VISUALIZATION STUDIO AND CANADIAN SPACE AGENCY, RADARSAT INTERNATIONAL INC.



An artist's representation of the aquatic system scientists believe is buried beneath the Antarctic ice sheet

ZINA DERETSKY / NATIONAL SCIENCE FOUNDATION





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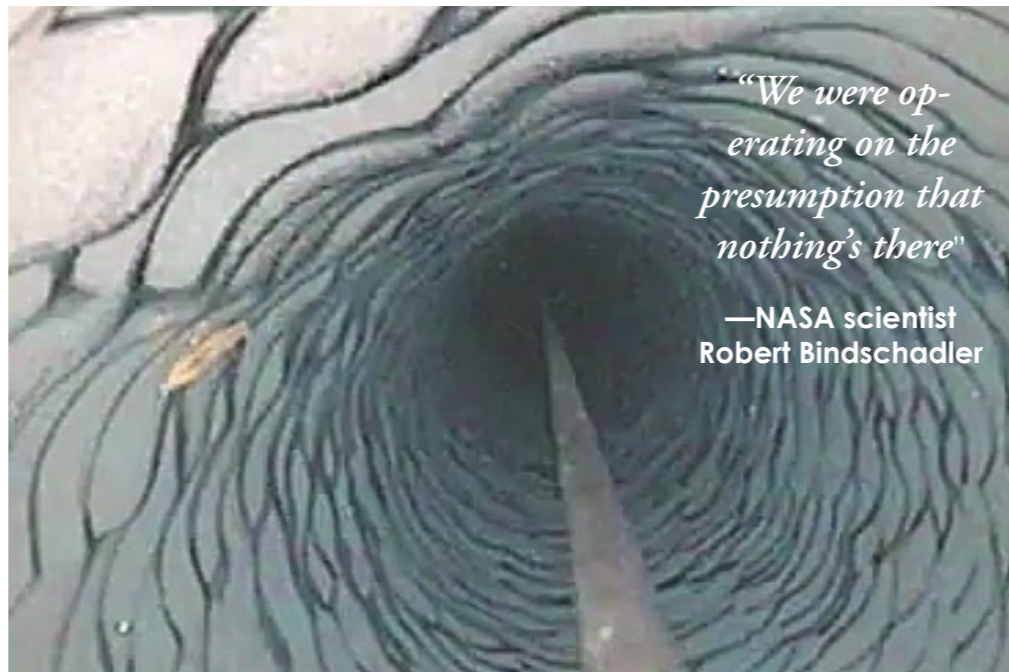
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# Lakes found beneath Antarctic ice sheet could contain unique ecosystems

Lake Vostok may be the best-known and largest subglacial lake in the world, but in February 2006 scientists from the Lamont-Doherty Earth Observatory described for the first time the size, depth and origin of two ice-bound lakes referred to as 90°E and Sovetskaya for the longitude of one and the Russian research station coincidentally built above the other. The scientists' findings also indicate that, as suspected with Lake Vostok, an exotic ecosystem may still be thriving in the icy waters 35 million years after being sealed off from the surface.

A NASA team was surprised when it lowered a video camera to get the first long look at the underbelly of the ice sheet in Antarctica, and a shrimp-like creature went swimming by and then parked itself on the camera's cable. Scientists also pulled up a tentacle they believe came from a foot-long jellyfish.

Stacy Kim of Moss Landing Marine Laboratory was the first biologist to see the video and immediately recognized it as a Lyssianasid amphipod. It was about three inches long and Kim concluded that this meant there was quite an extensive biological community under the ice—even so far (20 miles in this case)



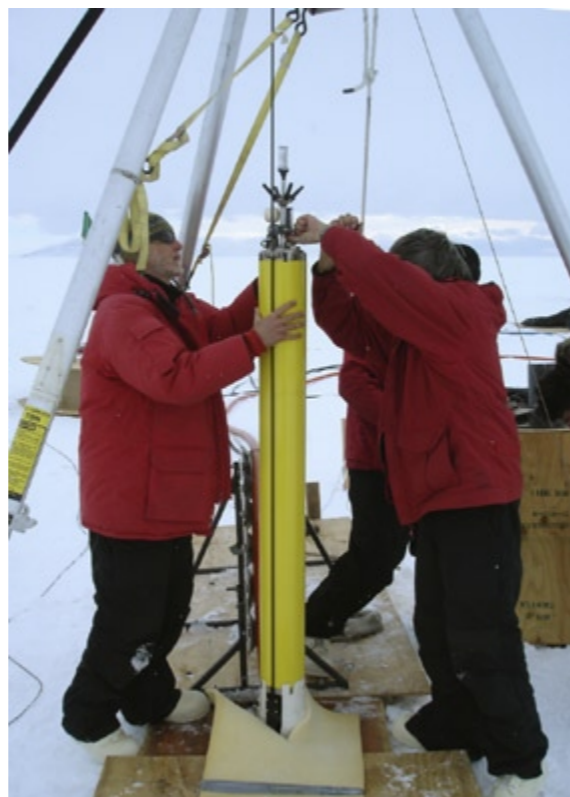
*"We were operating on the presumption that nothing's there"*

—NASA scientist Robert Bindaschadler

The Lyssianasid Amphipod is not a shrimp, just a distant relative that looks like one

from open water.

The camera was lowered nearly a full kilometer down, but it did



not reach the sea floor and very little else was seen—just the deep blackness of the water sub-ice environment. An additional biological tease appeared as the camera was reeled back in—not on the monitor, but on the cable itself. A tentacle was noticed attached to the cable as it returned to the surface.

The video is likely to inspire experts to rethink what they know about life in harsh environments. And it has scientists musing that if shrimp-like creatures can frolic below 600 feet of Antarctic ice in subfreezing dark water, what about other hostile places? What about Europa, a frozen moon of Jupiter? ■



Bright coral beneath the ice — click to play video

## Alien species invading Antarctic

Scientists are calling for action to prevent foreign species from taking hold in Antarctica and wrecking the continent's unique ecosystems.

Despite Antarctica's inhospitable environment, non-native species introduced by tourists, scientists and explorers are gaining a foothold. More than 26,000 international tourists visit Antarctica each year and numbers grow by the thousand each season.

"Antarctica has long been considered as an isolated continent with a harsh environment. So the general perception has been that we don't need to worry about non-native species. We know better now," Dr Niel Gilbert, environmental manager at Antarctica New Zealand, told BBC News.

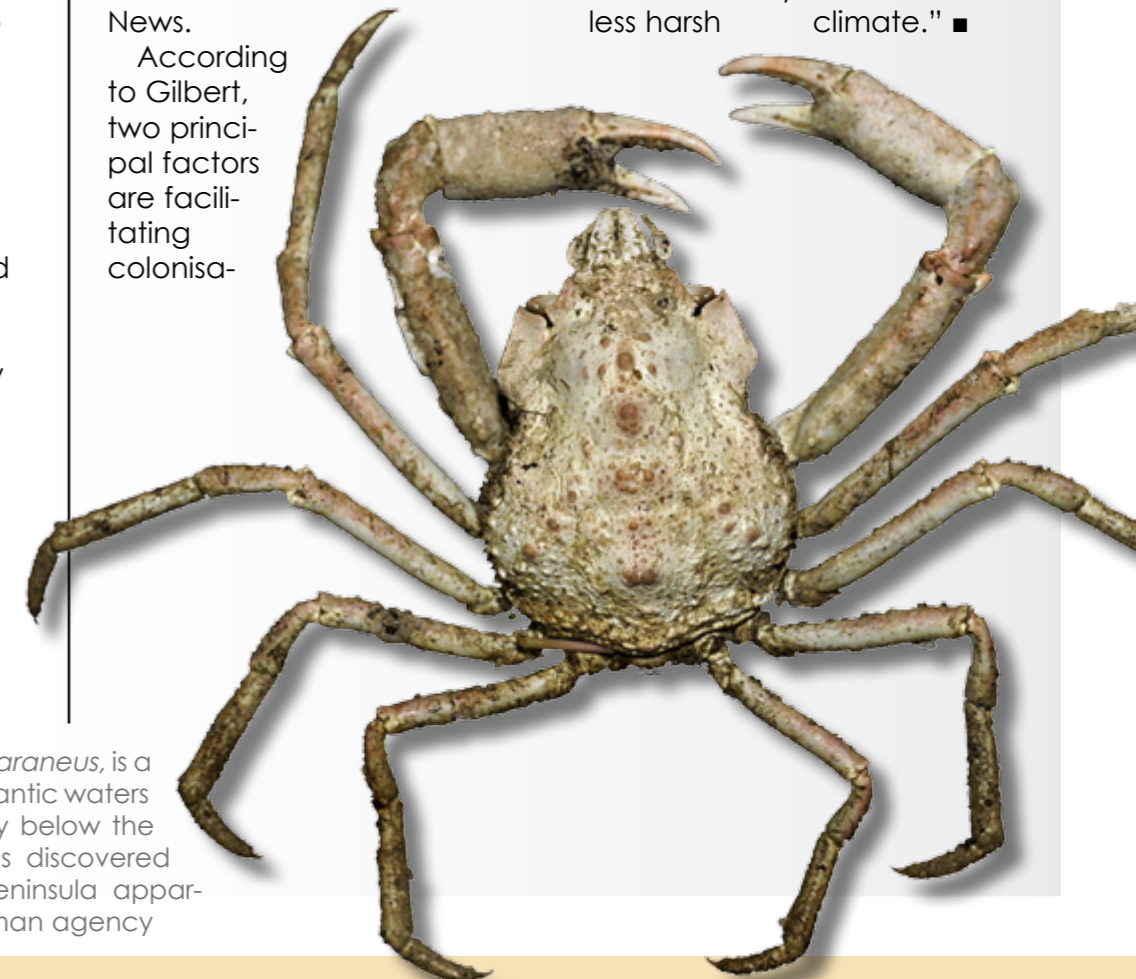
According to Gilbert, two principal factors are facilitating colonisation

of Antarctic habitats by foreign species: the increased numbers of people travelling to the continent and climate change.

### Visitor growth

"There are more and more people going to Antarctica, and we know that people and ships and planes carry plant seeds and other non-native species," Gilbert explained.

"The Antarctic Peninsula region is warming more quickly than anywhere else on the planet. Those species capable of surviving in polar climates are more likely to survive in a less harsh climate." ■



The great spider crab, *Hyas araneus*, is a species of crab found in Atlantic waters and the North Sea, usually below the tidal zone. In 2003 it was discovered around the Antarctic Peninsula apparently transported by human agency

# How Penguins and Seals Survive Deep Dives

KATHI PONGANIS, SCRIPPS INSTITUTION OF OCEANOGRAPHY AT UCSD

**Jessica Meir from Scripps Institution of Oceanography went to extreme environments to learn how birds and mammals thrive in conditions that humans cannot tolerate.**

Her recent doctoral dissertation focused on the diving physiology of some of the most accomplished diving animals: emperor penguins and elephant seals. Her work, funded by the National Science Foundation (NSF), has revealed extraordinary physiological responses and adaptations that contribute to the diving abilities of these animals.

## **A two-hour dive**

Emperor penguins can dive for almost 30 minutes on a single breath, and the record dive of a northern elephant seal is almost two hours. Both species can also dive to great depths—greater

than 457 meters (1,500 feet) for the emperor penguin, and almost 1,524 meters (5,000 feet!) for the elephant seal. It is well-documented that animals that can dive well have enhanced oxygen-storage capability in their bodies, a feat accomplished by increased blood volumes and higher levels of hemoglobin and myoglobin—the proteins that carry oxygen in the blood and muscle.

## **Three beats per minute**

For example, one study revealed that diving emperor penguins have heart rates significantly lower than that of their heart rates at rest. During one emperor pen-

guin's impressive 18-minute dive, its heart rate decreased to as low as three beats per minute, with a rate of six beats per minute lasting for over five minutes during the dive. As heart rate is a very good indicator of how much oxygen is utilized, decreased heart rates during dives correspond to conservation of oxygen, enabling the animals to dive for a longer time.

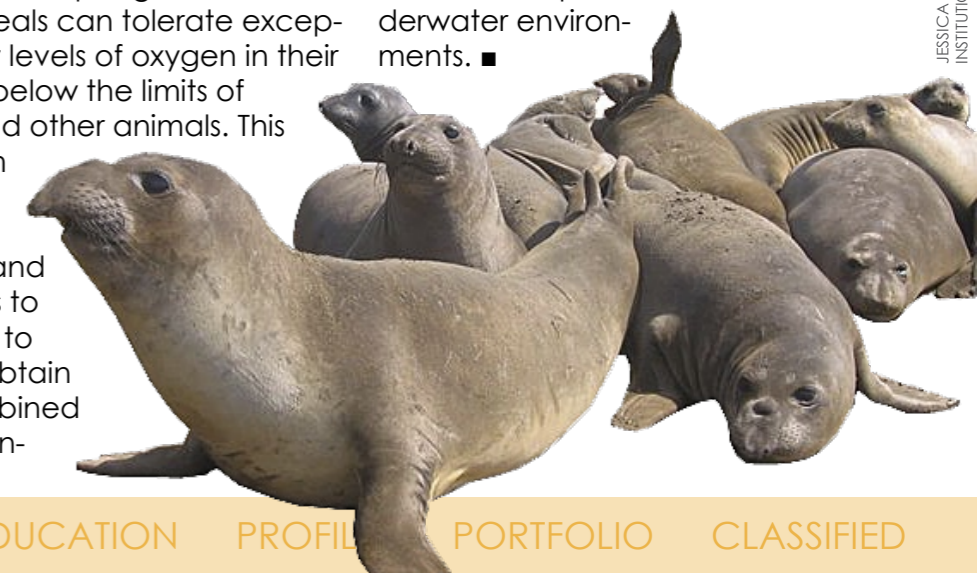
## **Exceptional tolerance**

To provide a direct look at oxygen depletion, Meir also measured the levels of oxygen in the blood during the dive using an oxygen electrode. This electrode continuously measured the amount of oxygen in

the blood, documenting the rate and extent of oxygen depletion during the dive and providing us with knowledge of how these animals manage their oxygen stores.

Both emperor penguins and elephant seals can tolerate exceptionally low levels of oxygen in their blood, far below the limits of humans and other animals. This assists them in managing oxygen efficiently and contributes to their ability to dive and obtain food. Combined with their en-

hanced oxygen stores, other physiological responses like reduced heart rates, and factors such as swimming styles and their hydrodynamic body shape—these animals are well-adapted to flourish in underwater environments. ■



JESSICA MEIR, SCRIPPS INSTITUTION OF OCEANOGRAPHY



The opening of a new frontier

# Spitsbergen

80°north

In 2007, Norwegian dive operator, Strømsholmen, launched another spectacular diving experience—liveaboard cruises to Svalbard (Spitsbergen), Norway's northernmost outpost in the high Arctic.

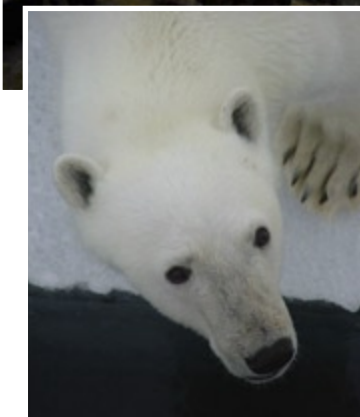
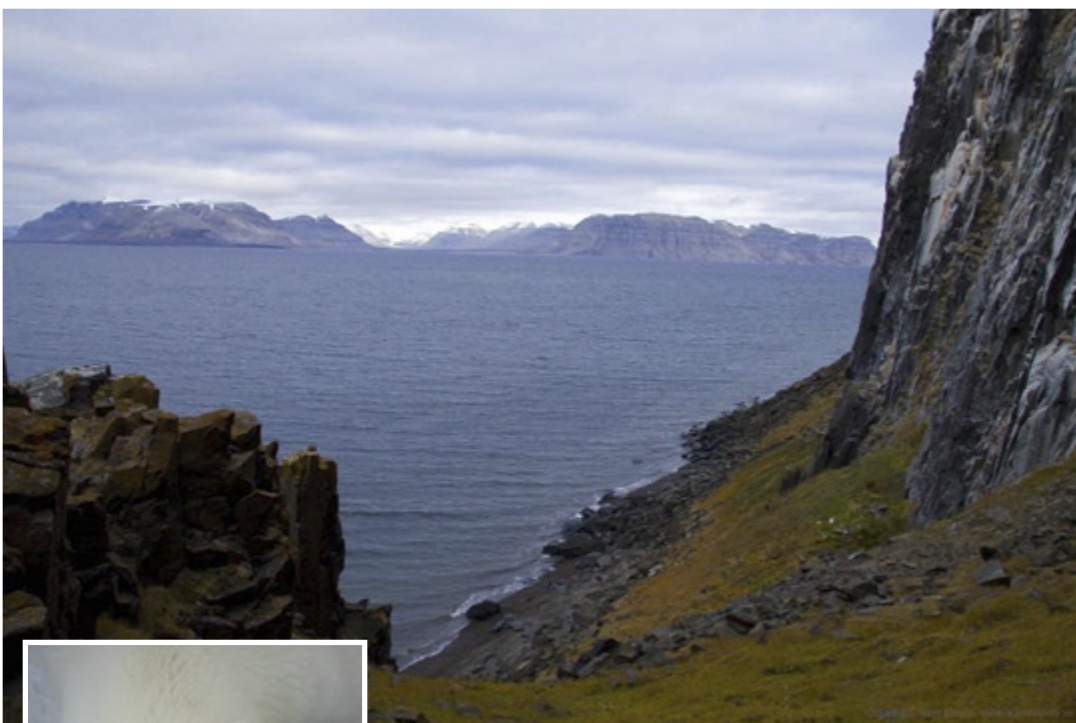
The exclusive trips, which are only conducted in August, offer the guests unparalleled opportunities to dive close to icebergs, snorkel with belugas and possibly encounter big whales such as the bluewhale, narwhas, bowhead, fin and seiwhale as well as the always enchanting humpbacks. Itineraries start at Longyearbyen and move outside Prins Karls Forland to Ny-Aalesundal; then they onto to Danskoeya, Moffen,

Widjefjorden, on the way to Hinlopen and Gyldenoeyane. Next, are different locations around Nordaustlandet before moving on to Sjuoeyane and returning back to Woodfjorden. From Woodfjorden there's a return back to Ny-Aalesund and Longyearbyen. During this leg of the trip, several stops are made for both diving and topside adventures. [www.stromsholmen.no](http://www.stromsholmen.no) ■

The 90-foot *M/S Sula* is certified to carry 12 guests who can be accommodated in two cabins with four beds, five cabins with two beds and one cabin with three beds. The cabins have upper and lower beds except one cabin. There is one lounge with sitting areas, room for diving-equipment, space for drying clothes and suits, washing machine and tumble dryer. There are three toilets and two showers onboard. All cabins have a wash basin, warm and cold water, and 220V electricity



Svalbard is an archipelago in the Arctic, located about midway between mainland Norway and the North Pole. Spitsbergen is the largest island, followed by Nordaustlandet and Edgeøya. The administrative center is Longyearbyen, and other settlements, in addition to research outposts, are the Russian mining community of Barentsburg, the research community of Ny-Ålesund and the mining outpost of Sveagruba. The archipelago is administrated by the governor of Svalbard



# Greenland

*Realm of Arctic Ice*



Text and photos by Morten Beier

Recently, I had the pleasure of joining a team of media production professionals on a trip to Greenland—a German crew from Nord Deutscher Rundfunk (NDR—North German Television) working on an underwater ‘road movie’ and a wildlife photographer from Denmark. The adventure started in Sisimiut just north of the polar circle and finished in a load of ice cubes up north somewhere in Disco Bay.

I'd dived several times before in the Arctic waters of Greenland, but it would be very interesting to witness the making of a film on that very topic.

The NDR crew and I met Sara Lindbæk, the photographer, in Kangerlussuaq Airport (don't try to pronounce it without local guidance). Sara had already spent some days in the snow, taking pictures of things she didn't intend to... that's how it goes, but the results were stunning! By the way, the rest of the crew were Thomas (editor and cameraman), Wolfgang (cameraman), Andreas (topside cameraman) and Ulrich (cameraman).

Arriving in Sisimiut, we found out that the sonar system had given up a few hours earlier. Sailing in Greenlandic waters,

RIGHT TO LEFT: The Greenlandic landscape; Soft coral and polyps; Bleached whale bones

where we often went into uncharted territories, was no joke, and sailing without a sonar was an absolute no-go.

After lunch in the newly opened café in Hotel Sisimiut, we said hello to the chopped-off heads of two walruses at the bulwark, as we went on board the boat, *VEGA*—traces of wildlife... for Sara.



## Borgin

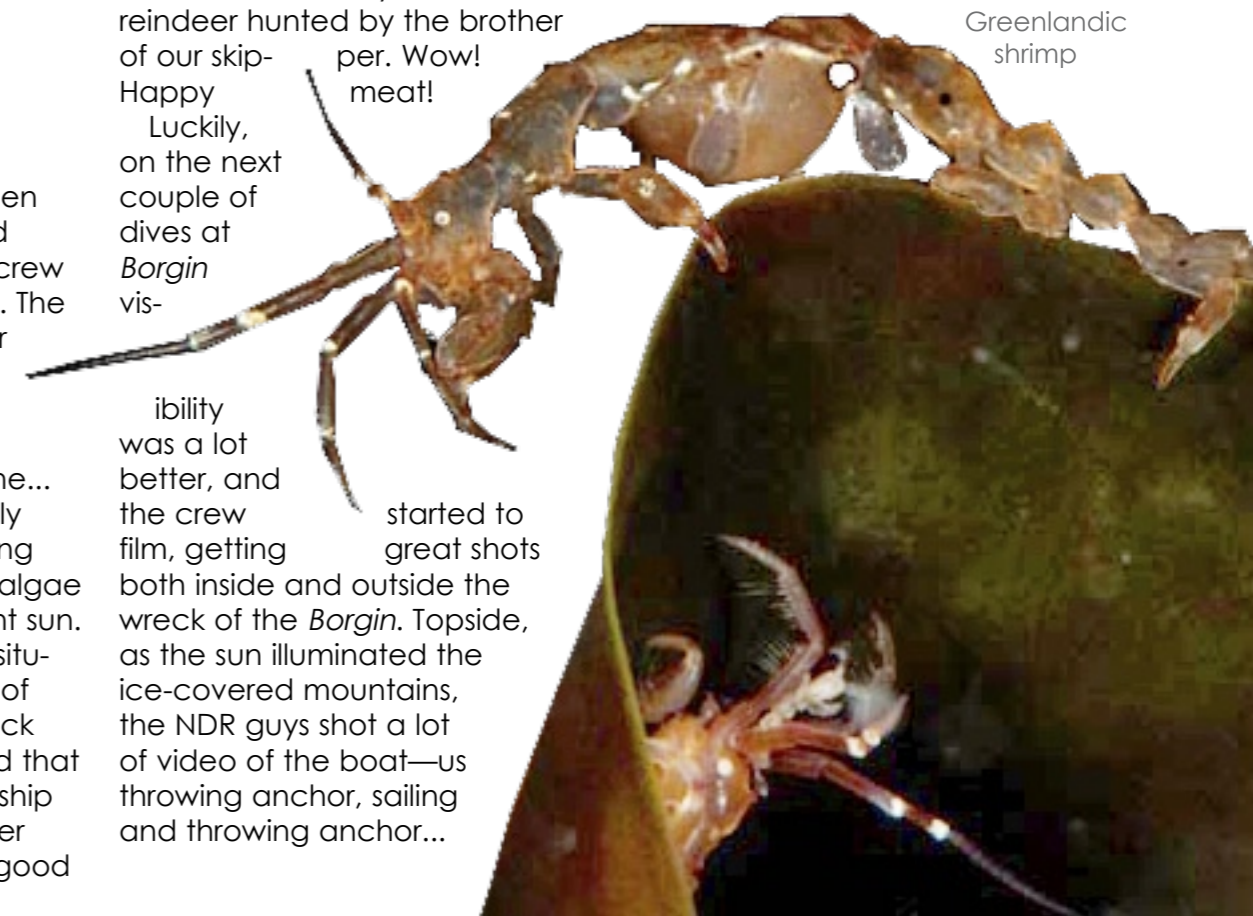
*Borgin* is the wreck of a wooden schooner that caught fire and went down in 1954 while the crew were having a party on shore. The wreck lies in a natural harbour well-protected from the sometimes very harsh, icy environment.

Quite a bad dive this first one... disappointing visibility probably caused by melt-water dragging sediment from the fjords and algae producing rays of the midnight sun. Hoped this would not be the situation on all our dives. On top of this, the anchor chain was stuck on one of the masts. I guessed that someone had to liberate the ship and our vessel from each other the next morning. But on the good

side we had a very nice dinner—reindeer hunted by the brother of our skipper. Wow! Happy meal!

Luckily, on the next couple of dives at *Borgin* vis-

ibility was a lot better, and the crew film, getting started to great shots both inside and outside the wreck of the *Borgin*. Topside, as the sun illuminated the ice-covered mountains, the NDR guys shot a lot of video of the boat—us throwing anchor, sailing and throwing anchor...



Greenlandic shrimp



A village in Greenland (left); Close-up of unidentified fish in Greenlandic waters (below)

# Greenland

village as if abandoned. With 600 inhabitants, this village was one of the largest settlements in Greenland. Photographer, Sara, clicked off a shot of a polar bear with skin flapping like laundry in the breeze. Still no people.

But then the sun came out. First, children, and then, the rest trickled out of their homes

to start the daily grind. Back in the harbour, NDR got an interview with an old ex-fisherman. Thomas wanted to know about the climate change and how it affected a fisherman's life, but this old geezer only wanted to talk about the closing of the local Royal Greenland fish factory and the tough times ahead.

Royal Greenland is the biggest company in Greenland, employing close to 3 percent of the workforce, thus having a major influence on Greenlandic society.

## Capital of whaling

We wanted to find the whale graveyard near Aasiaat, and after a bit of poking around

## A few days on land

Travelling Greenland underwater is fantastic, but don't forget to "come to the topside, Luke". The film crew spent a few days shooting footage back in Sisimiut—the church, the view, the landing dash of seven aircrafts, life from the harbour and Tele Island, where traces of the Saqqaq culture going back some 4,500 years can be seen. We even found some traditional graves a few hundred years old, the crouching corpses staring out to sea.

Sara and I continued out to the edge of town, to the area of the dogs. This is where all the townsfolk kennel their hunting and sled-dog dogs. When you smell and hear it, you understand why it's on the edge of town. It seemed that hunters and people with sled dogs were not all that keen on pho-

tographers—maybe due to bad experiences, but after a while, most people seemed friendly enough.

## Nature dives

Just outside Sisimiut, we continued diving at Lighthouse Island, and yes, there was a lighthouse, plus loads of macro life—nudibranchs, anemones, amphipoda, hydroids, kelp, fishes and sea cucumbers dressed in vivid red. Unfortunately, there were no wolffish this time.

We cooked out on the open sea, a challenge for my stomach standing below deck chopping dead pig and onions. But dinner was served without any unexpected additions to the recipe. Later that night (don't forget that midnight sun), we were going to dive Mussel Island where the Isortoq Fjord ends. I really loved this place, steep slopes, life and the jungle of giant kelp sway-

ing towards the light. Thomas, the editor, agreed, euphoric after his dive deep into the kelp forest. There were lumpsucker, scorpionfish, nudibranchs and ghost shrimps.

A bit north of Isortoq Fjord, we sailed into a turquoise cove, anchoring for the night between the carcass of an unlucky freighter and a lonely hunting shack. Dinner was Skipper Bo's special seafood chowder—excellent for the waistline, using just two liters of cream.

## The settlement visit

After a long trawl up the coast finding only icebergs too small or too unstable for diving, our moods were not the best.

Kangatsiaaq might as well have been the end of the world. There were no people, but there were snowmobiles, sleds and the detritus of life scattered through the





Neon lights in the Greenlandic night sky reflected in icy waters

Greenlandic sled dogs (left); Dive boat mooring off shore

in the dingy, I found it. On land, under water, trapped in the grip of ice, the bleached bones of these once majestic leviathans bared pale witness to the local lunch.

Appropriately, this being Fox Island, there was a polar fox running around on the island. Sara went ashore to get acquainted.

We overnighted in Aasiaat harbour, and the following morning, I tried to get Sara back to Fox Island in the dingy. It's a short trip, but the ice was just too solid. There was no way we could make it in the dingy.

A friendly guy in the harbour offered to help. Alas, we didn't have a common language, so after the customary misunderstanding and two hours in an open boat getting colder and colder on a directionless sightseeing detour... well, one can guess.

Meanwhile the TV crew had

gone into town with Bo as a tourist guide to tell the history of this former whaling capital. In the 18th century, Dutch whalers had big business in this area. Bo sure knew what he was talking about having lived his whole life in Greenland, always sailing and working at sea. At 38, he was owner of two boats taking care of everything from sonar mapping, sales and service of boat engines to charter tours and both commercial and recreational diving—a good character for the screen.

We decided to have a proper look at the whale bones, and as we glided through the skeletons, I was tense with melancholy thinking of how beautiful they must have been, these huge intelligent



lords of the sea. I'm sure I caught a faint echo of their glorious songs. But here they were. There was a massive skull of a fin whale jewelled with sea urchins and cucumbers.

you're down there listening to the air escaping the ice and hearing, even feeling, the crackling from this monstrous frozen fortress, you feel small, very small.

Ilulissat is the place for icebergs. Every day between 40 and 100

## Icebergs

And now for something completely different. I had been looking forward to showing the TV crew this, and what a great feeling it was to dive an iceberg. It's not the easiest of dives with so many precautions and safety procedures, but when

million tons of inland ice shears from the glacier to crash into the sea. Well, it used to. Nowadays, the glacier moves so fast, probably due to global warming, and splinters on land, resulting in smaller icebergs in much greater quantities.

While John Travolta is very cool, Disco Bay was frozen. Ice, ice, ice. I had never seen anything like it. I'm glad we were sailing with Bo who was cautious but not adverse to giving it a go through the complicated bits. And Andreas (the topside shooter) was also game. Far away from home and his wife, he twisted our arms with a gin and tonic or two celebrating his wedding anniversary. We toasted him in the midnight sun.

## Ah, well

So, after six hours in the ice and marginal progress towards the tar-

get, we had to give up. Ilulissat—so close and yet so far.

In order to keep on schedule, we had to send the crew and Sara on a plane from Aasiaat to Ilulissat. After two hours max in dreamland, we reached Aasiaat just in time to catch their plane with the 170 kilos of overweight in the tiny Dash 7 aircraft. In a way, it illustrated the theme of the production—the greatness of nature, the unpredictability of it and how small we are in the great wild.

Two days later, I met the crew and Sara in Kangerlussuaq. They had gotten all that they had wanted—more interviews and pictures of the ice fiord. Incidentally, I passed the Danish Crown Prince Frederic in Sisimiut Airport, where many of the citizens were waving flags and shouting welcoming words to him. Well, well... anything can happen in Greenland. ■



# The Russian Arctic

*History & Development*

The Arctic (from the Greek “арктиκός”, which means “northern”) is the northern polar region of our planet, which includes the northern reaches of the Eurasian and North American continents and nearly the whole Arctic Ocean with all its islands (excluding the Norwegian islands) as well as joining parts of the Atlantic and Pacific oceans. The Arctic covers the arctic geographical belt and part of the sub-arctic belt. Its area is about 25 million sq km. Of that amount, 10 million is occupied by land and about 15 million sq km is water surface. The Arctic land areas are comprised of parts of the Russian territory (the northern districts of the Murmansk, Arkhangelsk and Tumen regions, Krasnoyarski krai, Saha Yakutia republic and the Magadan region), and Canada (the Yukon and northwestern territories, Quebec and Newfoundland), as well as possessions of the United States (Alaska), Denmark (Greenland) and Norway (Spitsbergen).

Text prepared by Svetlana Murashkina. Pictures by Vladimir Grishenko

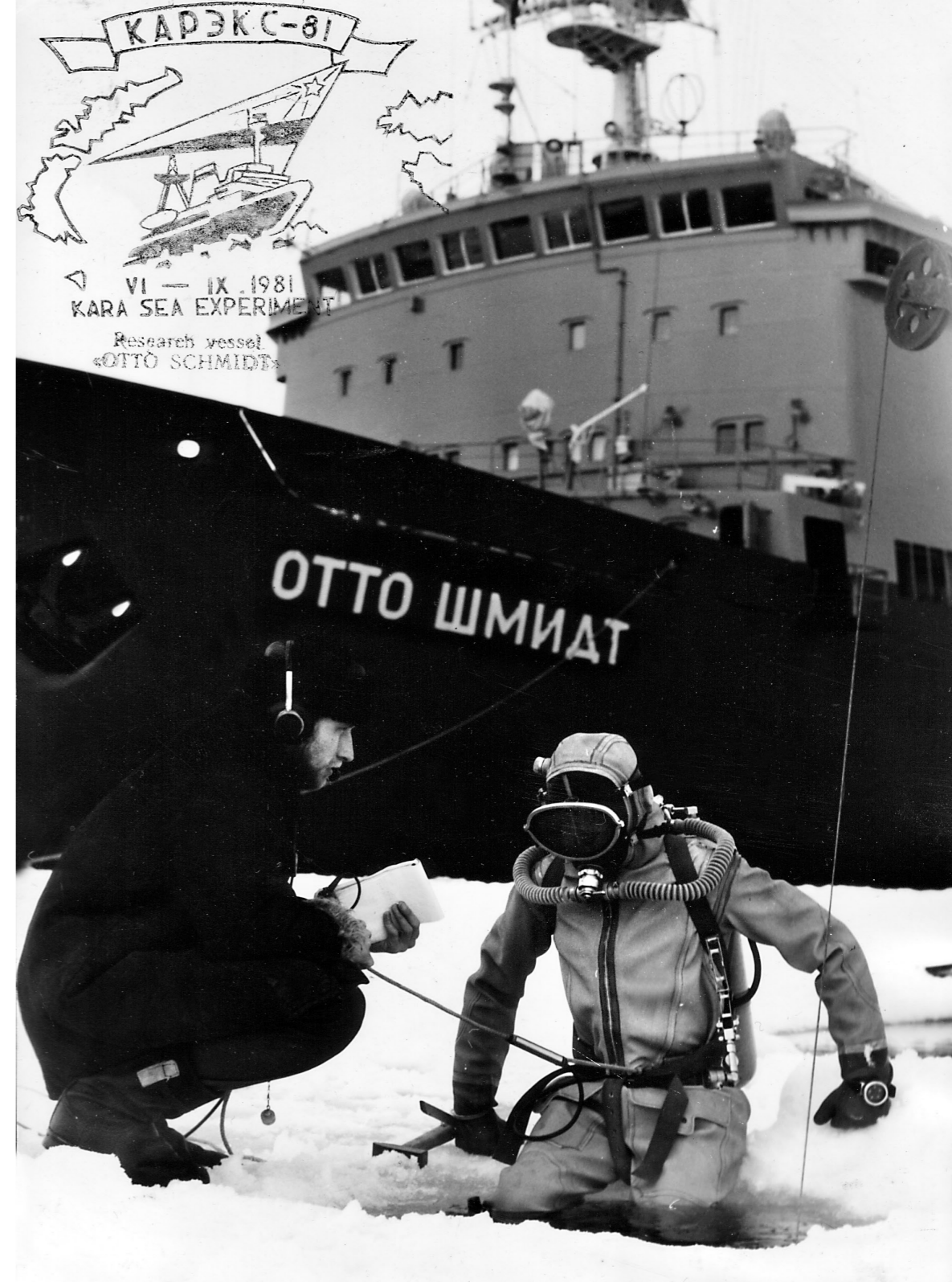
## Fauna

Arctic fauna is not very diverse—northern deer and musk-ox. Then, there are those of smaller size—the arctic foxes, lemmings, hares, ground squirrels and shrews as well as white owls, crows and ivory gulls. Polar seas host marine animals like seal, walrus and white whale. Many of the species are included in the Red Book of protected species. The symbol of the Arctic—the polar bear—is experiencing difficulties nowadays, resulting from global warming and reduction of sea ice. Bears, which usually spend a lot of time on drifting ice, have to cover vast distances, often by swimming, in search of food. The media often reports cases of bears (known to be good swimmers) not able to succeed in covering marathon distances and consequently drowning.

## History of human settlements

According to accepted official sources, the first human settlements originated in the Arctic about ten thousand years before our era—the Proto-eskimo culture in the Far East's northern territories. Some sources declare that around 30–15 thousand years BC, Arctic climate was warm and mild. It was a very place where the motherland of the Russian civilization was situated—Hyperborea (directly beyond the Boreas, which means “northern wind”).

This group and other peoples lived for thousands years on the shores



of the cold northern seas, providing fully for themselves by taking from environment and staying in harmony with it. In modern times, the image of the Arctic is nearly always and everywhere severe ice desert, which one must reach on foot, with sled dogs, or on skies, or in koches (Russian word for a special boat used in the region), via ice-breaker, helicopter, plane, dirigible or

balloon. And then, one must survive like a hero of legend, and return, preferably, a winner.

Not all manage to return. Reports and expedition stories are rich with notes like “perished ... could not reach ... were missing ... did not return”. Remains of many who were lost in the white desert were frozen, and their best lot was to become part of a glacier. The history of Arctic



THIS PAGE: Historic photos of Russian scientists and explorers in action on and under the ice of the Arctic



expeditions is full of tragedies and white spots. Even Robert Piri's discovery of the North Pole in 1909 sometimes was doubted. Geographical names in the Arctic are mostly after explorers and regal persons such as Anzy, Barents, Bering, Vilkitskii, Wrangel, De Long, Laptev, Nordensheld, Cheluskin, Frantz-Joseph, George, Alexandra and Queen Elizabeth.

## The Northern Sea Route

The Northern Sea Route (NSR) played an important role in the development of the Soviet Arctic and the conception of exploration, management and provision for this navigable waterway. It travels along the northern shores of Russia via

the seas of the Arctic Ocean—Barents, Kara, Laptev, Eastern Siberian, Chukchi and Bering seas—that connect European and far eastern Russian ports as well as the mouths of the navigable rivers in Siberia and the united transport system.

The advantages of the NSR are evident: the route is twice as short as the other sea routes from Europe to the Far East. Compare the distances from St. Petersburg to Vladivostok along the NSR, which is 14,289km; from St. Petersburg to Vladivostok via the Suez channel, which is 23,200km; and around the Cape of Good Hope, which is 29,400 km.

The length of the main iceway of the NSR from Novaya

## Russian Arctic

Zemlia straights to the port of Providence is 5610km; the length of navigable river ways flowing into the NSR is 37,000km. But one must consider the difficulties in shipping in high latitudes: long and severe winters, and nearly no summer; and ice that does not melt completely even during the warmest months. Ships can go through these ice bodies only with the assistance



of ice-breakers.

The history of the Northern Sea Route starts with first Pomor voyages in the 11th and 12th centuries, and the idea of using this route—before the beginning of the 20th century, it was called North-Eastern Sea Pass—was expressed by Russian diplomat, Dimitri Gerasimov, in 1525.

Siberian Cossacks and "trade people" developed the sea shore and Arctic navigation. They sailed along the whole Siberian shore with sea sail boats called "koch". In 1648, the sea voyage of Yakut Cossack Semen Dezhnev and partners from the mouth of the Kolyma River to the Anadir River proved that Eurasia and America were separate. It also proved the

existence of a sea way from the Polar ocean to the Pacific. Further contribution to this knowledge were made by two Kamchatka expeditions under the leadership of Vitus Bering; the high-latitude expedition lead by Vasili Chichagov; the north-eastern expedition by Joseph Billings and Gavril Sarichev; the Yst-Yana and Kolyma expeditions led by Peter Anzy and Ferdinand Wrangel; and the expedition to Novaya Zemlia by Fedor Litke, Peter Pakhtusov and August Tsvolko. Results of these research trips predetermined the question of the possibility of navigation along the Northern Sea Route.

Since 1877, episodic expeditions to the Kara Sea were conducted with the aim of exporting Siberian agricultural products and mineral riches via the Kara Sea to the world market. Since 1911, one ship sailed annually from Kolyma to Vladivostok. But these Kolyma voyages did not become

regular because of the fact that the NSR was not properly equipped enough.

Overcoming obstacles has always been a part of Polar research and seamanship—and of the Russian people. In our country, this characteristic especially flourished after the Great October socialist revolution of 1917, and was a key factor in the planning of the development of the Northern Sea Route, which was declared an urgent economic task. Since 1921, Soviet Kara expeditions were successfully carried out, and since 1923, Kolyma voyages prepared the background for the opening of regular navigation along the entire Northern Sea Route.

In 1932, an expedition on the ice-breaker type ship *A. Sibiriakov*, under the leadership of Otto Schmidt, was the first to cover the whole way from Arkhangelsk to the Bering Strait in one navigation trip, without wintering, and proved the real possibility of NSR exploitation. The *Tcheluskin* (1933) and *Litke* (1934) voyages once again



THIS PAGE: Historical photographs of Russian research activities in the Arctic including an aerial photo (above) of a research station on drifting ice



THIS PAGE: Historical photographs of Russian scientists working in the Arctic

confirmed that NSR was prepared for cargo voyages, which began in 1935. In 1932, the agency, Glavsevmorputi—Chief Administration of the Northern Sea Route—was organized. Its task was to finally establish the route from White Sea to the Bering Strait, equip this route, maintain it in operating condition and provide safe shipping navigation along this way.

In the following years, the agency maintained works for the creation of a special ice-breaker and cargo fleet, carried out hydrographic and aviation supply of arctic navigations as well as geologic, hydrologic, meteorological and geographical research. The Arctic ports of Igarka, Dikson, Pevek and Providenia were constructed during the 1930's and 40's.

The state of the Northern Sea Route in modern times is ambiguous. On one

hand, the main northern transport waterway is experiencing a serious crisis because of the lack of funding for the fleet of the main carriers that work above the Polar circle. The *Northern* and *Murmansk Sea* steamship lines have become too aged; there is a lack of ice-breakers; the technical state of the port household is not adequate as well as the hydrographical navigation systems, hydro-meteorological service and navigation routes, etc.

On the other hand are excessive port fees (forced fees for dredging, construction and reconstruction of mooring places passed onto ship owners and businesses). There is also considerable warming (the highest on record taking place during the last four years). There are doubts regarding the necessity of ice-breaker pilotage, at least during most favorable summer time.

### Drifting ice stations

*North Pole (NP-1 to NP-36).*

In Russia, the abbreviation for the North Pole is SP (Severnyi Polius). Development of the Northern Sea Route and forecast of meteorological and ice conditions demanded the network of polar stations. It was evident that the need for Arctic navigation and aviation demanded the study of geophysical phenomena including the planet's magnetic field, ionosphere and polar lights. So far, regular hydro-meteorological observations of the Arctic Ocean have been made by a rare chain of polar stations on shore and on

some Arctic islands. That's why the whole Arctic basin, with an area of 5-6 million square kilometers, has remained an uncharted "white spot".

The Arctic scientific research institution—now the State Scientific

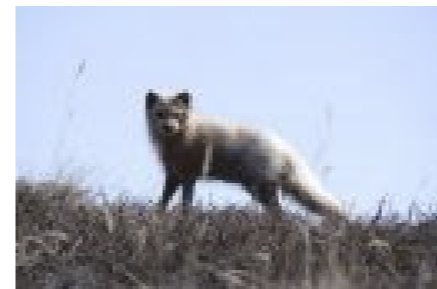
Center of the Russian Federation: Arctic and Antarctic Research Institute (AARI) of the Russian Federal Service for Hydrometeorology and Environmental Monitoring—was organized in 1920. At that time, there was already the intention

## Russian Arctic





THIS PAGE: Historical photographs of polar bear cubs, Arctic fox and aquanauts working under and over the ice in the Russian Arctic



## Russian Arctic

to explore the Arctic with the assistance of drifting stations and aviation. This idea was in great harmony with the time of heroism and the development of aviation. So in 1936, the Soviet government declared a special initiative to create research stations on drifting ice.

In the year after the special expedition of the *Glavsevmorputi* led by Otto Schmidt, was the organization of drifting scientific-research station *North Pole-1* started; it was the first one in the history of polar research. On 21 May 1937, the first heavy plane, *TB-3*, piloted by polar aviator, Mikhael Vodopianov, landed on floating ice in the North Pole district.

The first soviet drifting station worked for nine months and covered about 2,599 kilometers from the North Pole to the southern part of the Greenland Sea, where it finished work on 19

February 1939 and was taken off to the ice-breaker ships.

Ivan Papanin, Peter Shirshov, Eugene Fedorov and Ernst Krenkel became all time heroes. But it was evident that only one station, limited by the route of forced drift, was unable to research, during a short period of time, the vast territory of the Central Arctic.

The idea of operative aviation landings—from several hours to several days—on ice flows, was carried out. In March of the following year's expedition on four-engine plane *USSR N-169* made three landings on the drifting ice in the district of the pole of inaccessibility, and geophysical and oceanographical works were made. Thus, started broad scale scientific research in the Central Arctic.

These works, cut short by of the World War II, were renewed in 1948. Every expedition

included several parties, which in turn, consisted of small groups of people. From 1948 to the 1950's, during high-latitude aviation expeditions conducting vast geophysical and oceanographical research on the immense territory of the Arctic Basin, important geographical discoveries of the 20th century were made including the Lomonosov, Mendeleev and Gakkel Ridges. The main features of the underwater topography of the Arctic Basin were studied.

The disadvantages of these expedition methods were the short observation time and short season (April – May). Regular year-round observations as well as permanent ice patrols along the Northern Sea Route were needed. That's why in April 1950, according to the Soviet government decree, the drifting scientific research station *NP-2* was organized on drifting ice-flows about 600km to



the northeast of Wrangel Island.

After a year, when the station was free of ice, it immediately moved 640km to the north, covering more than 2,500km via a rather sinuous drift trajectory. After

all of this research, the decision to organize year-round working scientific-research stations on drifting ice was made.

In 1954, after a three-year break, works for the exploration

of the Arctic Basin were recommenced. In March-May, complex explorations on the vast area were conducted by the six high-latitude aviation expeditions, "Sever-6". That expedition set

up two drifting stations *NP-3* and *NP-4*. Since that year and up until April 1991, two drifting stations worked permanently on the floating Arctic ice, conducting annual high-latitude expeditions. Meteorological data, upper atmospheric conditions, state of water and ocean ice were transmitted regularly to the mainland.

During the 1980's, technical equipment of the expeditions changed. They became more complex: polar oceanography, meteorology, ice-related investigation, geophysics and environmental protection. Scientific-research drifting stations worked successfully until 15 June 1991, when the current station *NP-31* was shut down.

On the eve of the 65th anniversary of the NP stations, AARI—where coordination and a major part of research preparations were made—prepared statistics from the first research hands. During the period from 21 May 1937 to 25 June 1991, there were 88 shift changes of drifting station teams. The total duration of NP drift was 29,726 days; ice flows covered the distance of 169,654 km; average drift speed was 71 km per 24 hours; and 2,009 persons took part in year-long research cycles.

During the whole period, 211,383 regular meteorological observations were

made; 3,366 deep hydrological stations, which determined temperature and salinity on standard horizons, were set; tens thousands of samples were taken; and various analysis were made. A total of 727 ground samplings were made; 47,070 ocean depth measurements were recorded; and 32,859 aero-sondes were launched.

Aside from the 'standard' program, a large amount of special studies in heat exchange between the ocean and the atmosphere were made. In addition, the fine structure of oceanic waters was observed, and examinations were made of the underwater relief of sea ice.

After a 12-year break, the national flag of Russia was again hoisted in the Central Arctic on 26 April 2003 on the first Russian drifting station, *NP-32*. The aim of the station was to do research and record weather observations. One of the expedition tasks was to study climate changing processes. During the ten months, the station drifted 2,750 km. Now, *NP-36* is in operation.

### International Polar Year (IPY)

The year 2007 marked the 125th anniversary of the First International Polar Year (1882-1883), the 75th anniversary of the Second Polar Year (1932-1933) and the 50th anniversary of the International



Historic photo shows typical dive gear used by Russian researchers in their dives below the ice of the Arctic

Geophysical Year (1957-1958). The IPYs and IGY were major initiatives that resulted in significant new insights into global processes and led to decades of invaluable polar research. But since that time, many changes have taken place—as people say, much water has flowed... and ice has melted. Hence, came the time to focus efforts on the polar regions again. Due to the Russian initiative, the new IPY—the first one in the 21st century—was organized.

The concept of the International Polar Year 2007-2008 involves an international program of coordinated, interdisciplinary scientific research and observations in the Earth's polar regions to explore new scientific frontiers, to deepen our understanding of polar processes and their global linkages, to increase our ability to detect changes, to attract and develop the next generation of polar scientists, engineers and logistics experts, and to capture the interest of school children, the public and decision-makers.

The official period of the IPY was from 1 March 2007 until 1 March 2009. This period allowed observations during every season and the possibility of two summer field sessions in each polar region. The geographic focus extended over latitudes from approximately 60 degrees to the pole, both north and south.

### DAMOCLES

The DAMOCLES project started in 2006 in the Arctic Ocean. DAMOCLES—Developing Arctic Modeling and Observing Capabilities for Long-term Environmental Studies—is a modern European program and the main input of the EC to the International Polar Year.

Within its framework, a great number of experts in Arctic Ocean studies are united, including Russia, of course—including the Arctic and Antarctic Research Institute in St. Petersburg, the Shirshov Institute of Oceanology, the Russian Academy of Science in Moscow and some others. Complex expeditions took place; various research studies were completed; data are being processed today and forecasts are being made. Exciting and useful conclusions are expected.

### To whom belongs the Arctic?

Unlike the Antarctic—which, according to the formal international agreements, is now a designated "natural reserve devoted to peace and science"—the Arctic today looks like to become the arena of initial, and probably, very sharp disputes among the countries whose territories lie adjacent to the Arctic Ocean. In these modern times, the Arctic is divided into five sectors: Russian, American (USA), Canadian, Norwegian

and Danish. The frontiers of these sectors meet at the North Pole, which is considered the internationally accepted neutral point.

These sectors are not regarded as full value national territories (though in the USSR, the maps had dotted lines from the country's borders to the North Pole, thus marking our Arctic zone, according to the Government Decree in 1926).

Recently, Denmark appealed to the international court of the United Nations and other international legislative bodies with documents in which it claims that the North Pole must be included into Denmark's territory. Territorial demarcation in the Arctic will cause problems. The main reason is resources: fisheries—more importantly—oil and gas reserves on the continental shelf, which are not yet explored.

Russia is interested in being present in the Arctic for scientific, economical and strategic reasons. These include meteorological observations from the "weather kitchen"; the shortest transpolar aviation routes, connecting Europe with USA and Japan; ice conditions information for the ships, going along Barents and Kara seas along the Northern sea route. In the Arctic lies about 16 thousand of the state frontiers of the Russian Federation. ■



Image from historical archives of the Russian Arctic

# Diving in the Central Arctic

Text by Svetlana Murashkina with Vladimir Grishenko

Every generation makes its own discoveries. And sometimes people forget that these discoveries were made already by somebody else before them. That's why, when another heroic dive in the Arctic—and especially one at the North Pole—is announced, the word “first” must be treated very carefully.

*“... One must stress, on one hand, that the extremely low temperatures of sea water and air, as well as the constant presence of young ice cover, make rather difficult the very maintenance and expansion of underwater research in Arctic waters. Nevertheless, up to the present moment, for example, underwater research for various programs were made with about 20 expeditions carried out by the USSR, USA and Canada.”*

*—from the Manual for methodics and management for underwater research in the Arctic, compiled by V.D. Grishenko, Leningrad. Gidrometeoizdat, 1984*

THIS PAGE: Russian divers study the surface of the ice under the water

It is May 2006. Summer has come to St. Petersburg, and it is difficult to imagine how any person would volunteer for nearly a whole year to leave the city for the place where the polar night lasts for half a year; where in winter, frost exceeds  $-50^{\circ}\text{C}$  with heavy winds; where there is no single blade of grass or a green leaf... Admiration and amusement overwhelms me from the first words I hear, strengthening and transferring sustained pride in me for the pioneers of the 1970's, living and working on drifting stations, doing research studies under the ice in the Central Arctic.

We are visiting polar researcher, Vladimir Dimitrievich Grishenko, in his common St. Petersburg apartment. There are no polar bear skins on the floor, but lots of pictures—pictures of all white, sparkling snow and ice. We listen to his stories

about diving and shooting photography. Grishenko shows us old documentaries, transferred to modern video, of Antarctica, the Arctic and the North Pole.

## Diving the North Pole

The music in the film is typical for those years, heroic. The diver goes to the depths under the ice. We hear his regular breathing. It is a movie, of course, but a documentary, too. A serious and proud narrator's voice of the film declares: “On the 20th of April 1967, the group of scientists from the Arctic and Antarctic Research Institution made the dive at the point of the North Pole.” In the next scene, on the surface, the group leader and candidate of geographical science, Vladimir Grishenko, says, smiling: “We have beards for increased buoyancy. Our work is part of a vast complex research study that sci-

entists are carrying out on the drifting station, watching complicated processes of atmosphere-ice-ocean interaction.”

Grishenko told us that he did not get any special feeling when he did that North Pole dive. The Arctic is the Arctic, he said. It is difficult to impress Grishenko; he has sailed and dived so many, many places before.

How did it happen? Did the job seek the person, or vice versa? Evidently, the process was mutual. Grishenko first went underwater when he was 19. During regular military service with the Black Sea Fleet, he participated in rescue and commercial diving from the 1950's on. After army service, he entered the School of Hydrometeorology (“Hydromet”) in Leningrad. His profession became oceanography.

The Laboratory of Underwater Research





THIS PAGE: Historic photos of researchers preparing for ice diving in the Central Arctic

## Central Arctic

biology. When the ice flows broke, stations were evacuated and reestablished in a different location.

On average, during the year-long residency of the NP station, 600 to 650 measurements of ocean depth were made; 3,500 to 3,900 meteorological observations were recorded; 600 to 650 launches of radio-sondes were conducted; and 1,200 to 1,300 temperature measurements and samples of sea ice for chemical analysis were taken. In addition, magnetic, ionospheric, ice and other observations were documented. This data was regularly transmitted to research centers.

If a station drifted via the North Pole region to the strait between Spitsbergen and Greenland (two to three years after its drift had begun), it was evacuated, and a new one was estab-

lished in the initial region. If the station got into so-called anti-cyclonic round drift—that's the counter-clockwise circulation of ice in the ocean sector close to the north of Greenland, the Canadian Arctic archipelago and Alaska—it was kept operational until Russian polar aviation could reach it.

Usually, these stations drifted away from Soviet shores for 1,500 to 1,800km and operated for three to four years. After that, they were evacuated.

NP stations were set up with the assistance of airplanes, usually in April-May, and with icebreakers in October-November. Average live-work periods on the station was 26 to 28 months (minimum, nine months, and maximum, 48 months).

NP station crew personnel usually consisted of two to five oceanographers and glaciologists; two to six aerologists, meteorologists and actinometrists; three to five geophysicists and also a doctor; two to



was organized within the department of oceanography. Students went diving in the Kaspian, Black and Baltic Seas. That's why when Grishenko began working in the Arctic and Antarctic Research Institution (AARI), he already possessed reliable underwater experience. That's also why he was directed to complete the most important dives. The backbone of the underwater group on the drifting ice was comprised of four persons, and two of them, including Grishenko, received their underwater education at "Hydromet".

### On the drifting ice

"Chances are always against the explorer in the Arctic," said the American polar explorer, Robert Piri, who spent 36 years preparing his successful expedition to the North Pole. In the USSR, scientists did not agree with that idea—the duty to bend nature to the will of the Soviet man, including that of the Arctic. And, for this reason, the Soviet state established—in demon-

stration to the whole world—long-term research stations on floating ice, where a big percentage of the time and often heroic efforts were spent just surviving.

Projects like these were not carried out by any other country. Americans considered drifting stations a Russian know-how, like matreshka-dolls or drinking tea "vprikysku" (having tea without sugar, and biting a piece of sugar at the same time). Back then, Americans did not understand how (and for what purpose) people could live under such extreme conditions.

The Soviet North Pole, or NP, stations (in Russian, SP, or Severni Polus, stations) were drifting research stations established on drifting ice in the deepest parts of the Arctic Ocean. They carried out a program of complex year-round research studies in oceanography, ice-exploration (the physics and dynamics of ice), meteorology, aerology, geophysics (observation of the ionosphere and magnetic field), hydrochemistry, hydrophysics and marine

# feature

three mechanics; one to two radiomen and a cook. Aside from these people, temporary research personnel of around ten to 20 individuals arrived for short-term observations (of several months) usually in the spring.

NP station camps consisted of portable living quarters and housing, research facilities (in houses and special semispheric tents), a salon, electro and radio stations, meteoradiolocator, basic and rescue lofts. The airstrip was made on a flat surface of solid ice.

## Underwater research on NP stations

Grishenko drifted on an NP station about ten times. According to his approximate calculations, he spent five to six years on the ice. The first and second times were on station NP-18. This station drifted for more than two years: from 9 October 1969 to 24 October 1971, drifting 1,110km.

Grishenko worked three times on the station NP-22. It was the longest running station. The station went to the Anticyclone Circle and rotated more than nine years! It was based on an ice flow 5km long and 2.2km wide, with an ice thickness of more than 30 meters.

Scientists believed that the iceberg was a piece of a glacier, which had broken off from the Canadian Arctic archipelago, or came from Greenland. It lasted until the last Soviet station NP-31 closed in July 1991.

People have always been curious about what's under water, especially under the ice. Even when Russian admiral Makarov went to the north of Spitsbergen on the ship, *Ermak*, the crew captured pieces of broken ice with a winch, turned them upside down and examined the bottoms.

It is known, that in the Central Arctic basin, if we look at the indepth his-

tory, a diver was on the crew of expeditions on the *Yamal* and *Vaigach* ships. If some special works were needed, like changing the propeller, for instance, the diver went underwater from the deck of the ship.

Later, on station NP-6 (1956-1959), young men from "Hydrophysin" (The Hydrophysical Institution of Sebastopol) dived in old primitive gear—green suits with glasses ("They were smart guys... hydrophysicists," said Grishenko)—went into a hydrological hole in the ice and were put



under an apparatus measuring ice gradient currents. They did not swim underwater, but made several dives.

Long, planned underwater dives, according to Grishenko's program in the Central Arctic, were first made by Grishenko's group on station NP-18. On 1 June 1969, Grishenko received a postcard from the expedition leader, Romanov, who wrote: "Happy birthday to you, and congratulations on the first ocean sampling!"

## Underwater photography

Photographs were taken, but not for beautiful shots of ice archways. Very often, photography was the

main instrument used to collect data on the underwater relief of the ice, the shapes of which are so fantastical, they can hardly be described in words. Underwater photography in the central Arctic has been produced since 1957, when one of the employers of AARI made a range of observations of the underwater portion of ice-hummock structures. Images were captured with the assistance of a stereo photo-camera; it was placed under the ice on a special beam and was remotely operated.

On the NP stations, they used various camera makes including models by Leningrad (the Russian Leica), Salute, Zenith, Liubitel (amateur cameras), Konvas, Krasnogorsk, Kiev-163 and Admira in underwater housings such as YKP and the KPF housing for Zenith cameras. They also made housings themselves for a 16mm film camera by Krasnogorsk. Various negative and positive black and white and color photo film were used—typical for that time.

One drift usually resulted in a whole box of film being shot—several hundred rolls, at least.

Shooting images while working was quite common, and was often carried out by a diver. The legs of a common tripod were hammered into the ice, the camera with three axis of rotation was attached, and images were taken using a tripod, with long aperture times.

Shooting cinema was much more complicated and demanded a complex crew and lighting. They used the headlights of the airplanes and zinc batteries.

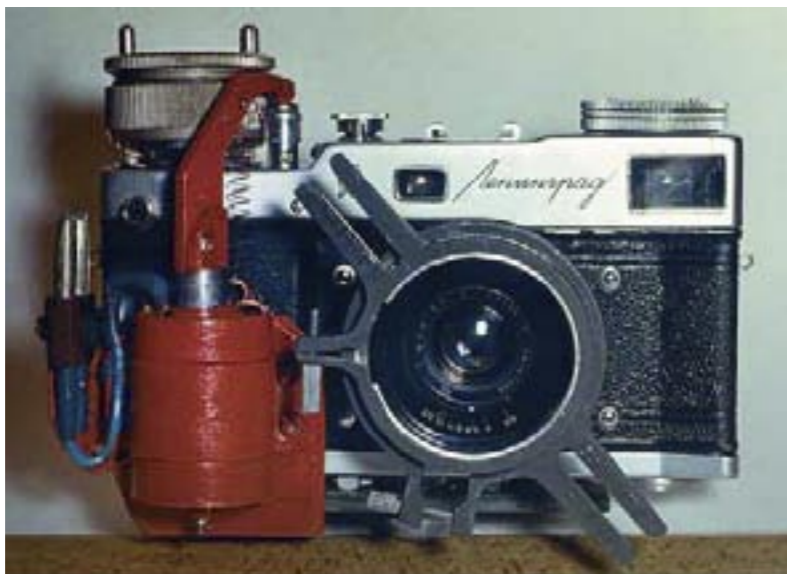
Once on station NP-23, researchers had to participate in the shooting of a popular scientific film in color, *Arctic Above Us* (1978), which was about the nature of the Central

Historic photo of Russian scientists testing equipment and procedures  
BELOW: Russian polar scientist Vladimir Dimitrievich Grishenko at work on the drifting NP station



# feature

THIS PAGE: Some of the diving and underwater photography gear used by the researchers on the drifting NP stations



Arctic, the underwater world and research studies underwater. A cameraman from the Tsentrauchfilm Studio, Vladlen Kruchkin, and his assistant were on floating ice for the first time, so all the divers' technical support was on Grishenko's shift. The group was very coordinated; everything worked well. The only problem was that they had to carry out the underwater research program as well!

## Equipment

*“The diver must use the following thermal underwear as a set: wool pullovers – 2 pieces; wool pantaloons – 2 pieces; wool socks – 1 pair; fur socks – 1 pair; wool stockings – 1 pair; wool double gloves (for three fingers is better) – 1 pair; foam-rubber hood underwear – 1 piece.*

*—from the Manual for methodics and management for underwater research in the Arctic compiled by V.D. Grishenko, Leningrad. Gidrometeoisdat, 1984*

However, Grishenko tells us, “it was not cold.”

Soviet military diving equipment was used, but it was difficult to get, such as the AVM-1 regulators. Common regulators, Ukraine and AVM-5, were not good, said Grishenko; they froze

and remained free-flowing, or stopped working altogether.

## Life on the ice-flow

Life and work on the ice-flow was regulated and casual. After about three months, this very unique life on the ice was regarded as real life, and home was somewhere far away.

Grishenko said that the atmosphere on the team was always great. Rascals usually did not stay long; they were driven out immediately. Once a month, all birthday parties were celebrated—collectively. Celebrities were placed at the head of the table and special cakes were made. When it was time, they had elections with the rest of the Soviet nation; they nominated an election committee, etc., as was required.

One of the important tasks was to make an airstrip. In those days, airplanes required at least 1.5km of runway. People worked with spades and “leveled” the surface with explosives.

Explosives were, by the way, later forbidden for ecological reasons. One must admit that in the USSR, if they ever considered ecology, it was in a very special way: drifting stations were left in the Arctic with all their garbage, fuel and iron refuse.

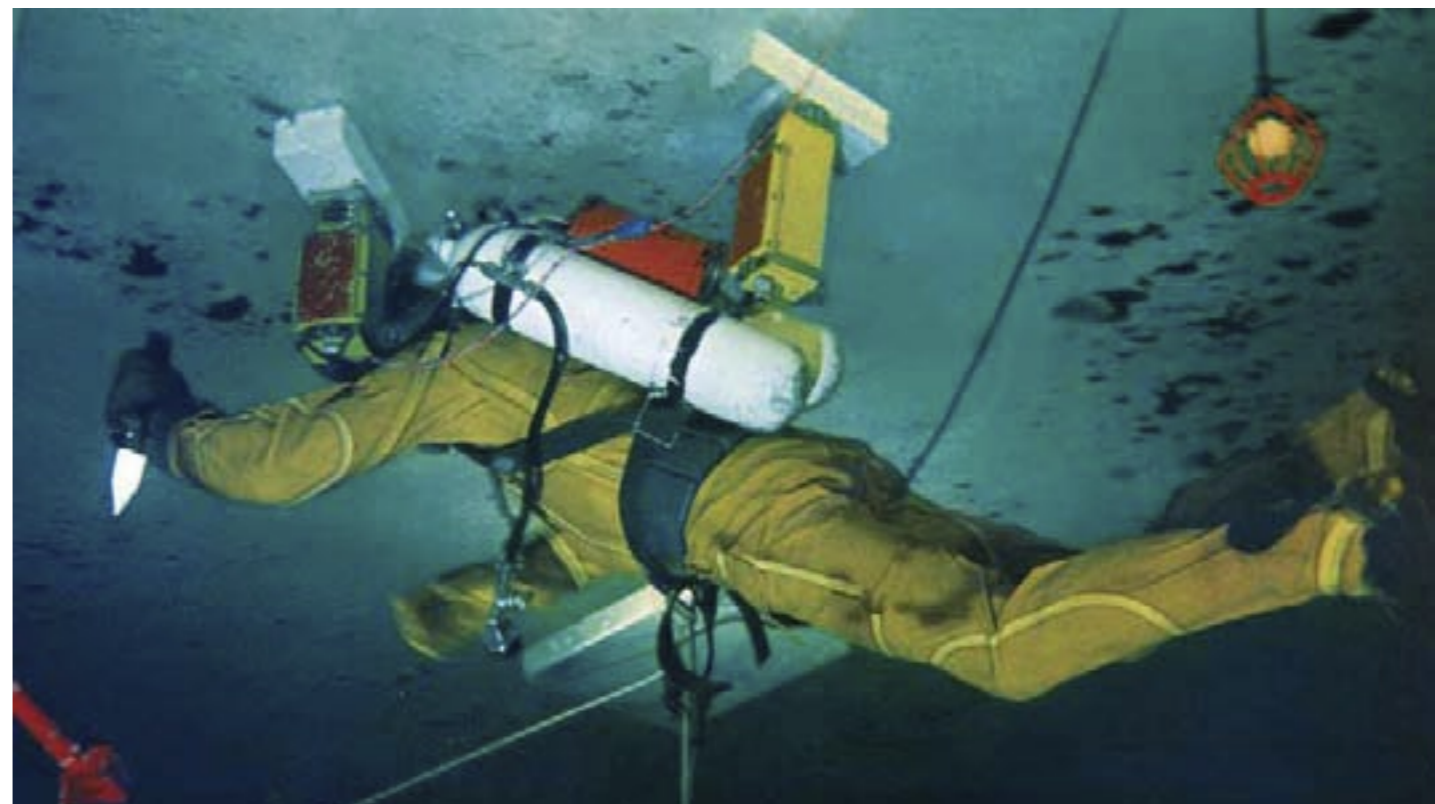
In August, planes made flights around the entire Arctic region; they flew over the station, dropping mail and brooms for the Russian “banya”, or sauna. On New Year's Eve, the staff always took a Christmas tree under



the ice and a small table for taking pictures, and drank champagne in scuba gear, under the ice, of course.

When asked about state awards, Grishenko just says that “there were some”. In fact, he was awarded the coveted Soviet order “Znak pocheta of the USSR”, the Russian order “Znak pocheta”, and prestigious medals and badges such as “Honorable Polar Man” and “Honored Worker of Hydrometeorological Service”.

Researchers and polar scientists know Grishenko through expeditions, his work for AARI—including more than ten years as Deputy Director for Science—and his articles and thesis on the morphology of ice cover. Divers know him through his publications in *Sportsmen-podvodnik* and other Soviet periodicals. ■





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POINT & CLICK  
ON BOLD LINKS

# Equipment *down in the deep*



## Nocturnal Lights M220 LED Dive Light

This great three-watt LED light that operates on three AA batteries produces 220 lumens of bright white light. It is submersible up to 100 meters (328 feet). It is just one part of an extensive line-up of lights for underwater photo/video and technical diving. See their website for a list of retailers and a complete online catalog: [Store.nocturnallights.com](http://Store.nocturnallights.com)



## Seacub P-Synchro

High reliability, safety, sturdiness, durability, and simplicity make P-Synchro the ideal regulator for the intense activities of schools and diving centres. Tests conducted by RINA, the Italian certification board, confirmed excellent performance with an extremely low respiratory exertion.



## Aqualung betters its BCD's

Aqualung packs new improvements into two popular BCD's. Aqualung has updated the Libra (women's) and Balance (men's) BCD's with the latest technology innovations. Sporting a new streamlined design places the air cell behind divers along with new flat designed air dumps to offer better stability and ease of venting. Aqualung has added four patented features to make the new BC's unique to Aqualung: SureLock™ II mechanical weight release system (patented); Low profile flat valves (pat. pend.); Stainless steel triloaders (patented); New shoulder swivel buckles (patented); A completely redesigned pull down pocket.

## Oceanic OC1

In a new limited edition—only 1000 of these will be produced—comes a dive computer that is truly art mixed with science. Offering a dual algorithm (Spencer/Powell data basis, or, Buhlmann ZHL-16C) for tailoring your diving from conservative to aggressive. With a titanium-forged case, advanced digital compass, switching between three transmitters (check buddy gas pressure), deep stops countdown, gauge mode, and user upgradeable firmware. To round off the package each unit comes with the book *Diving Pioneers and Innovators* by Brett Gillam. The book is personally signed by diving pioneer, Jim Hollis, who inspired the design of the OC1.



## Titan Cylinder

Tilos announces its Titan Cylinder Regulator. Definitely in the category "why didn't someone think of this before?" With the first stage built together in to the tank valve, we have an integrated valve and first stage unit. Perfect for deco and stage bottles, the compact unit is all that you need in a bare bones design. A pressure gauge and one low pressure port for your favorite second stage (or how about for a dry suit inflator valve?). The unit comes nitrox ready.





## equipment



### DiveCaddy Travel Bag System

Using a patented tri-fold compression system, the DiveCaddy utilizes your dive gear you put into the bag as its structure. The system features dramatically less weight as a result, and your dive gear is held safe in place in its rigid padding system. With a unique tri-fold design your gear is organized and quickly available. To see a video of the unique "Compress, Protect and Go!" system, visit their website at: [Divecaddy.net](http://Divecaddy.net)

### Tusa IQ-950 Zen

The IQ-950 is Tusa's most advanced and full-featured wrist-mounted dive computer. Built on the design platform of the IQ-900, the Zen Air has additional features hose-less air integration along with the ability to program up to three transmitters and mixes from 21-100 percent O<sub>2</sub>. The computer displays tank pressure, no deco time remaining, safety stops, and deep stops. Enjoy trying to decide from brushed metal finish or limited edition black chrome. See all the details at: [Tusa.com](http://Tusa.com)



### Poseidon Wet Suits

From the cold waters of Scandinavia come a new line of wetsuits to keep divers warm. With three new models offered: The Journey (a shortie), the Traveller, and the Visionary. There are now models to protect divers in a wide array of environments. See the complete line-up of suits and other fine scuba equipment at: [Poseidon.com](http://Poseidon.com)



## Scuba Tank Night Drop

Now Dive store owners will be able to solve one of the most redundant tasks of owning a dive store. The Scuba Tank Night Drop allows divers to leave empty cylinders after or before store hours for fill ups. This will allow dive store owners to be more efficient at the fill station preventing a log jamb at the fill station and the frustration of divers in a hurry for a fill up. [Diversplatform.com](http://Diversplatform.com)

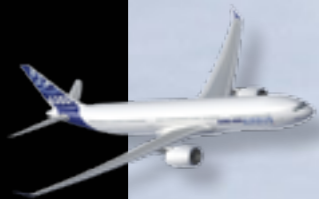


## Viking's new orange is black

by Robert Sterner, [www.sternereditorial.com](http://www.sternereditorial.com)

Divers can get the protection of a Viking drysuit without the Hazmat orange color in the company's new ProVSN suit. Available in front- and back-entry models, the ProVSN has Viking's vulcanized rubber core that is coated on both sides with black Armatex Nylon. While the coatings are intended to improve durability and comfort, they are more difficult to decontaminate than rubber so the company does not recommend this suit as protection from hazardous materials. Viking seals the seams with glue and tape before the suits are vulcanized to ensure that seams are thoroughly sealed. Black rubber reinforcements cover the knees for added durability. Rubber-coated neoprene boots attached to the legs have fin-strap retainers to keep fins from coming off during dives. Internal suspenders help with crotch adjustment. The shoulder inflation valve and chest deflation valve swivel to the best positions for the diver's kit. Beyond front- and back-entry options divers have several ways to customize the suits. A latex or neoprene hood can be permanently affixed to the suit. Either latex or neoprene neck and wrist seals are available. Wrists also can be fitted with permanent or changeable cuff rings for use with dry gloves. Cargo pockets can be added as well. Suits come with an inflator hose, repair kit, suspenders, zipper care tools and a user's manual.

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



# Cruise Ship Diving



Text and photos by Mike Keleher

**Diving from a cruise ship? How do you enter the water? Must be a heck of a drop if you roll in backwards!**

You may have never considered taking a cruise boat vacation as a dive vacation. Taking big white ships the size of aircraft carriers has never gotten much attention as a venue for divers. Yet they are hauling and accommodating divers every week to great dive islands in conjunction with their vacation itineraries.

Luxury travel on fabulous cruise boats has got to be the most overlooked way to travel to exotic dive locations in temperate waters. Travelling on major cruise lines for a dive vacation has got to be the "ultimate" in live aboards! You can book dive trips through the cruise company or make your own arrangements with preferred local operators.

It may not have the intimacy of small sailboat or live-aboard trips... but the luxury accommodations, outstanding service, and 900 employees devoted to guaranteeing your comfort and pleasure can certainly make it a great trip. Almost every time the ship stops for the day to let the other tourists off to collect T-shirts, eat ice cream and get their hair braided by locals, you can go scuba diving instead.

The whole concept of a "dive vacation" on a major cruise lines may not

Try diving on a cruise—the ultimate in live-aboard trips

THIS PAGE: Cruise ships provide very reasonably priced accommodations that allow you to travel in obvious comfort and elegance while you dive a variety of stunning locations in the Caribbean

compute, but they have quietly been putting divers in the water every week for many years. On a seven day vacation cruise, the big ships stop at three to five islands in the Caribbean, Mexico and Hawaii, and most are prime dive sites. The cruise lines offer excursions directly through their company for SCUBA (to include full equipment rental) and many other water-related activities like snorkeling, SNUBA and an underwater scooter with a big bubble helmet called Breathing Observation Bubble (BOB).

### Benefits

For me, the terms "adventure travel" and "diving" usually conjure up thoughts like, "Am I going to get a clean place to sleep," and "I hope I can find some good food along the way". Traveling on a major cruise boat pretty much eliminates those worries! Very reasonably priced accommodations allow you to travel in obvious comfort and

elegance. They deliver you on-time to a different island each day, feed you 24 hours a day, and entertain you at night. With your own cabin stewards, droves of waiters and over one hundred cooks on board, they treat you like royalty a week at a time—what more could you ask for? Ah yes, let's not overlook the obvious here—if we are around that much warm water in a foreign and exotic locale, we naturally are going to want to dive in it.

Major cruise lines like Royal Caribbean, Celebrity, Holland America and Carnival among others, are taking divers to great dive locations every week of the year without much notice or fanfare. They are obviously not advertising as traditional "liveaboards" or "all inclusive resorts" and are not directly competing with such operations for divers. However, they do offer a unique and non-traditional way to get to dive locations in comfort—very cushy comfort at that!



### Features

If you have not been on a cruise ship, you may be surprised to find many of the large ships have actual "dive shops" on board (along with the rock climbing walls, in-line skate tracks, surfing wave pools and ice skating rinks—yes, ice skating). The on-board dive shop has several functions to benefit guests who wish to dive. They arrange excursions for dive

trips at pre-designated islands, may sell a limited amount of gear on-board, and have an in-house Dive Master to shepherd the "cruise divers" to various pick up sites or in-water excursions.

The larger ships that offer diving excursions may also offer unique on-board certification training for guests who want to get certified en route to the dives sites. The book work and pool work is actually

done on the ship while it is at sea. They then arrange check-out dives with a traditional dive shop on one of the various islands they visit. On that day, the guests are picked up, taken to the dive shop, complete the in-water portion in the warm blue Caribbean, or off the coast of Hawaii or Mexico...instead of back home in a rock quarry in the Midwest...or in one of the Great Lakes!

## Dive sites

The list of islands and dive sites where scuba excursions are offered are well known in the dive community. The routine cruise boat itineraries hit islands and locations like George Town in Grand Cayman, Costa Maya and Cozumel in Mexico, Key West and Fort Lauderdale in Florida, the Bahamas, Charlotte Amalie in St. Thomas, Philipsburg in St. Maarten, Montego Bay in Jamaica, San Juan in Puerto Rico, St. Johns in



Antigua, Basseterre in St. Kitts, Castries in St. Lucia, Bridgetown in Barbados, Margarita Island in Venezuela, Willemstad in Curacao, Oranjestad in Aruba and the Hawaiian islands.

Hey, those destinations sound pretty familiar! Cruise lines arrive at those cities each week and contract with reputable dive shops to take their guests for two tank dives. One of the strengths in booking dives via the cruise boat is the fact the cruise companies hold the local dive operators to the same level of mega customer service as provided on board the ship. If customers are not treated well, the cruise lines will quickly find a new partner willing to accept guaranteed money from 20-30 divers delivered to their doorstep several times a week.

Much like the rest of cruise boat vacations, the company takes a lot of the worry out of making dive arrangements. If one of their contracted

dive operators has a problem getting you back to the ship, the cruise line will take responsibility for you and getting you back on board or keeping the ship in port until they recover all passengers. If that happens with an excursion you booked on your own, you may just be standing on the dock watching the big white ship with your entire luggage and all that food sail away while you wonder how to get home or to the next island! (Although cruise lines have staff reps at each destination that can help guests make arrangements to catch up with the boat).

Experienced Cruise Boat Vacationer Note: When the cruise line says be back on board at 5 PM...they mean it! It's quite an impressive sight to be on deck during a departure and watch for late arriving shipmates. Most vacationers really enjoy seeing a couple loaded

down with t-shirts and drunken gringo hats sprinting down the dock only to skid to a stop after the gang plank is up. Be sure to point and wave politely at those people as you steam out of the harbor. They will catch up at the next port, but whoo-boy, will there be some angry inter-couple conversations about "whose fault" it is that they missed the boat.

### Special arrangements

If you have a preferred dive operation at a certain island, you are of course free to make your own reservations in advance. I have found the operators are quite willing to pick you and your gear up pier side and work within your ship's port time parameters for half day or all day trips. My "adventure wife" prefers making these types of reservations via the internet and telephone, and they have worked out well. You can get a lot

of information in advance from the dive operators directly, vice booking through the cruise line with an operator you won't know until you are pier side with your borrowed boat towel and gear in hand.

One of the other benefits of pre-arranged private bookings is that you can insure you will not be subjected to cattle-boat/mass-tourist diving and snorkeling trips. Cruise boat booked excursions may end up being a big boat combining snorkelers and divers that dump 30-40 snorkelers in the same location with the eight or ten divers. Kind of luck of the draw there, and you won't know until you are on the big boat how they run their trips. (Nothing against snorkeling... I hope we as divers all still look kindly upon snorkelers, and may still dabble ourselves... if compressed air is not available). Most of the private dive bookings



LEFT TO RIGHT: In between dives, guests can enjoy a huge water slide and swimming pool on deck; Dives are arranged by the cruise ship; View of the boats docked at St Thomas



The *Carnival Dream*  
View of the harbor at one  
of the cruise ship stops in  
the Caribbean (below)

## Cruise Diving

book ship excursions from home and it turned out the ship's 10 or 12 slots had all been reserved well in advance of the sailing. So live and learn—book early!

We have also learned one other booking trick associated with cruising. If you have not made reservations ahead of time, or the ship trips are already booked, you may still have a last minute chance to dive once the ship arrives at a suitable island. Local tour operators of all descriptions will be waiting on cruise boat piers hoping to get tourist dollars for historical tours, ATV and Jeep rides, jungle excursions, zip-lines, beaches, party boats, snorkeling and even scuba diving. If you have a C card in your pocket, someone will route you to a dive operation. These last minute deals are generally cheaper than pre-arranged trips, and you may have some haggling leeway, but it is balanced against the fact that your ship visit will only last six to eight hours, and any diving has to fit within those parameters. Not my favorite way to book a dive, but is an option if everything else fails.

My adventure wife and I have been diving from cruise boats for a number of years and enjoy the opportunity to see so many different dive islands and dive locations in a week's trip. It is not the same as getting to spend a solid week on one island diving every day, but it is kind of a scuba sampler platter, and helps us look for places we would like to return for a more extended stay, as well as meet some great dive operators we would do business with again.

All of this diving, surrounded by absolute luxury accommodations, top knot service, unbelievable food and nightly entertainment at about US\$100 a day per person on the ship (excursions and drinks are extra)... what's not to like? If you have a non-diving spouse or partner, it is a very enticing way to have a very nice vacation and get you into dive togs with no muss or fuss, and you definitely dominate the formal dining table discussions with answers to the nightly question: "So, what did you do today on the island?" ■

we have made ended up with 2-6 divers and very attentive staff/operators who can lavish me with attention instead of having to deal with first time snorkelers...

Having booked through the cruise lines and private operators, we find the private bookings are usually cheaper by US\$10-20 dollars, and we get very good service with the smaller companies. Caribbean dive prices routinely run US\$100-130 including full rental gear for a half day two-tank dive. Taking your own gear can knock US\$10-20 off the price of the dive.

### To bring or not to bring gear

We usually haul our full gear along on cruise/dive vacations with a wheeled bag to get on and off the piers. It adds about 50 lbs of gear for two people, and

you have the comfort of using your own gear, and post dive, you can clean it in your cabin shower, and then drape it attractively about your cabin and/or balcony where the cabin steward can admire it while making up your room three times a day.

This year, with airlines charging extra baggage prices for checked luggage, and the considerable extra bulk of BCD's, regulators/computers, wet suits, etc, I finally decided to leave everything except mask, fins and snorkel at home for a 7-day cruise.

Conceptually, it was hard for me at first, but paying the extra US\$10-20 to the dive shop for full gear rental turned out quite well. I was very pleased with the quality of the rental gear, and the dive operators even threw in shorty wet suits

for us at each location for free. The rental equipment all worked well. Plus, I got an unexpected benefit of getting to wear a lot of different manufacturers' gear day after day and making my own comparisons. It was also very nice to hand it all back at the end of the dive for them to maintain, while I just walked away with a net bag of fins/mask and snorkel.

### Lessons learned

On this particular trip, the ship stopped at five different islands, and we pre-booked with private operators via the internet and telephone in St Croix, St Kitts and Barbados and unsuccessfully tried to book another island dive via the cruise ship once we were on board—since we could not get an operator on the island to respond to us via email. You can pre-



# Shifting Baseline Syndrome: Are you afflicted?

Text by Christina Ward-Paige, PhD, with Catherine Muir

It's early afternoon. The sun is beating down and mosquitoes are humming. Another decent day's catch is unloaded, men sweating with the effort. If it weren't for the breeze, the stench would be unbearable. Today's tally: more than 100 sharks, some weighing close to 1,000 pounds and reaching nearly 20 feet in length. The catch includes leopard (tiger), dusky, hammerhead, nurse, sand sharks and sawfish—nothing unusual in the shallow (15 feet) waters surrounding Big Pine Key.



Sharks were processed for leather and oil in the Florida Keys in the 1920s and 1930s. The most commonly caught sharks included tiger, sandtiger, nurse, hammerhead, bull, lemon, sharpnose sharks and sawfish, some of which are extremely rare today. Photo circa 1930. Photo: Monroe County Public Library, Key West, Florida, gift of Jack Thompson



Sawfish were regularly caught in shallow nearshore waters off Key West Florida until the 1940s. Today, a diver would be considered extremely lucky to observe a sawfish anywhere in the wild because they are amongst the most vulnerable marine fishes and are listed as Critically Endangered by the IUCN. Photo: Monroe County Public Library, Key West, Florida, courtesy of Loren McClenachan

As a diving enthusiast, you may be thinking, wait a minute, back up here. Over 100 sharks in 15 feet of water, many of which have vulnerable, threatened or endangered status according to the IUCN and are on my dream list of species to see? Where is this Big Pine Key and how do I get there?

For those who are familiar with Big Pine Key and know that it is located in the middle of the Florida Keys in the southeastern United States, you may be thinking that this story is made up. Yes, you have seen some sharks in the Florida Keys, possibly more than you have seen elsewhere, but not 100 in one day. And definitely not the combination of species mentioned.

Unfortunately, you're right. A story like this could not be told today, and with good reason, because it describes a scene from the 1920s, commonly documented in newspapers and other publications of the day.

To seasoned divers and fishers that know the local shark 'hotspots' around the world, it may seem like there are a lot of sharks still living today—to see them, one just needs to know where to look! However, in most places there are dramatically fewer sharks than there were just a few decades ago. In fact, what most of us don't realize is that what we expect to see on even the very best dive may be quite different from what our parents or grandparents would have seen a generation or two ago in the same location.

This change in perspective is referred to as the *shifting baseline syndrome* where an individual's baseline is the perceived natural condition of an environment based on their first visit, photographs or descriptions.

Marine biologist, Jeremy Jackson, probably puts it best when discussing divers' perceptions of coral reefs in his 2007 article in the scientific journal, *Coral Reefs*. "The

problem is that everyone, scientists included, believes that the way things were when they first saw them is natural. However, modern reef ecology only began in the Caribbean, for example, in the late 1950s, when enormous changes in coral reef ecosystems had already occurred. The same problem now extends on an even greater scale to the scuba diving public, with a whole new generation of sport divers who have never seen a 'healthy' reef, even by the standards of the 1960s. Thus there is no public perception of the magnitude of our loss."

## History

This *problem* recognized by Jackson was first identified by fellow marine biologist, Daniel Pauly, in a 1995 article in the journal, *Trends in Ecology and Evolution*. The perception of what we see in the water today (or at any point during one's lifetime) can some-



times be mistaken for what is natural. What is within one's living memory, or the living memory of those around them, is a 'baseline' against which they compare other experiences.

But does it really matter how a specific marine animal population has changed over time? As Pauly and Jackson identify in their writings, the problem comes when these shifting baselines are the norm rather than the exception, and when this shift in perspective begins to affect not only an individual's perception but

the statistics used for policy creation and conservation measures. How can realistic catch limits or recovery targets be made for the management and conservation of marine species, like sharks, if we don't know what the 'natural' or 'pristine' abundance of sharks used to be? Or if the reference points we use today are ten or one-hundred times less than the actual numbers really were?

The current state of North Atlantic baleen whale populations, including humpback, fin and minke whales, dem-

onstrates the importance of reconstructing accurate baselines for marine animal populations. The current baleen whale population is ~214,000-217,000. These populations were thought to be recovered and close to carrying capacity until 2003, when Joe Roman and Stephen Palumbi published a novel study in the journal, *Science*. Using DNA analysis, this study showed that current populations are a small fraction of the past numbers, which are estimated at 865,000 for these three species in the North Atlantic.

## Effects

Unfortunately, the shifting baseline syndrome not only affects our perception of abundance but also the size and variety of species seen. Fishers proudly posing with their 'trophies' following sport fishing events provide valuable insight into this change in perception. Loren McClenachan and colleagues, in a 2008 paper in the journal, *Conservation Biology*, used historical trophy-fish photographs in the Florida Keys dating back to the 1950s. This study showed that the

## Shifting Baselines

average size of trophy fish declined substantially between the '50s and the present day. The average length of sharks caught dropped from 195cm in the 1950-60s to just 91cm in 2007—that's 100cm shorter than just half a century ago!

This same study also revealed changes in the types of sharks caught over the years. Of the 16 individual sharks caught and photographed between 1956 and 1960, there were four hammerheads and three great white sharks. But between



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Although the shifting baseline syndrome does not necessarily signify a loss in number or size, it is unfortunate that most shifts observed the world over are overwhelmingly declines.

### Decline

In 2003, scientists Ransom Myers and Boris Worm published a paper in the journal, *Nature*, showing a 90 percent decline in large predatory fish biomass over the last 50 years in the oceans globally. The same year in *Science*, Julia Baum and colleagues showed that within just 15 years, with the exception of mako sharks, all recorded sharks species declined in abundance by at least 50 percent and that several large pelagic and coastal shark species declined by more than 75 percent in the Northwest Atlantic.

The Mediterranean Sea provides another example. Francesco Ferretti and colleagues published a paper in *Conservation Biology* in 2008 showing that hammerhead, blue, shortfin mako, porbeagle and thresher sharks have all declined between 96 and 99.99 percent relative to their abundance before human impact; therefore, these sharks now only occur at less than five percent of their original abundance. Sadly, the loss of marine predators, of which sharks form a large percentage, has been a global phenomenon.

In addition to chronicling the declines of sharks, scientists are increasingly demonstrating their importance in the functioning of marine ecosystems. The loss of sharks has been shown to cause cascading effects that change marine life across several trophic levels and has resulted in the destruction of economically important fisheries. Plus, the problem of declining shark populations is exacerbated by the fact that sharks are slow to recover, due to their low reproductive rates (they produce relatively few young), meaning that their ability to compensate for low population size dramatically slows their recovery time.

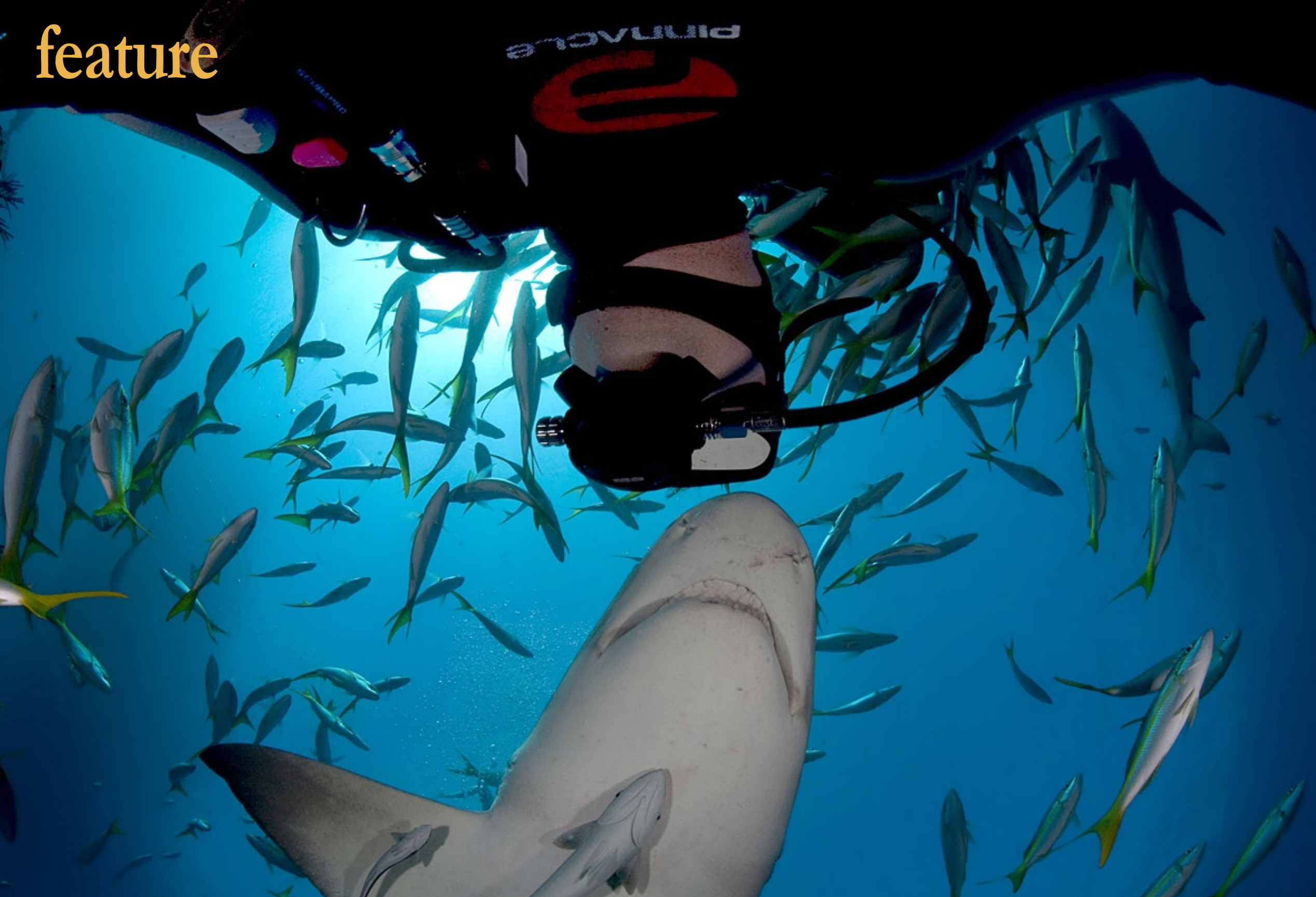
Divers line up to get up-close and personal with a bull shark in Fiji. Once considered among the most common fishes, the main way of observing sharks today is through shark feeds where they still occur, a practice which draws tourists from around the world. Photo: Bob McNearney, 2009

1965 and 1979, there was only one hammerhead and one great white shark caught, though the same total number of sharks was photographed. In 2007, no large sharks were caught, and there was a shift to small, immature sharpnose, reef and bonnethead sharks.

Ironically, those proudly displaying their almost two-meter-long catches including hammerheads and great whites as trophies in the 1950s were likely also victims of the shifting baseline syndrome, since heavy exploitation undoubtedly had an impact on the ecosystem much earlier.

For example, as described in the opening paragraph, in the 1920s, a shark processing facility on Big Pine Key operated for several decades, with 50 or more sharks caught and killed every day for products such as leather, fertilizer and shark oil. Other commercial fishing operations for

reef sharks also operated in the area in the 1930s-40s. And for centuries before that, the fishing communities of the Florida Keys were subjected to commercial, recreational and subsistence fishing by Native Americans and Europeans.



## WHAT CAN DIVERS DO TO HELP?

Scientists are actively assessing shark populations, but they can only do so much, due to the vast size of the world's oceans and limited scientific expertise dedicated to such tasks. But the tools for aiding in this assessment are not as difficult to obtain as one might think. In fact, anyone with a snorkel or a regulator can help.

It's simple—the Diver Survey takes only 1-2 minutes per area, or decade of diving, to complete. Just submit your observation to the Diver Survey portion of the Global Shark Assessment. The project is ongoing, and the data will be used to determine the response of shark populations to fishing and protection, and to identify which areas need immediate protection.

The Current Sighting Survey is essentially an online log book, where you report your shark or ray observations—even if you have never seen one. Anyone who has ever dived or snorkeled in the ocean can participate in this survey, and those who have done more than 20 dives in an area can contribute to the Historical Sighting Survey.

The survey range is global—so ocean-going divers everywhere can participate! [www.globalshark.ca](http://www.globalshark.ca)

A diver comes face to face with a shark. As a diver you can help assess and monitor the state of shark populations. See Sidebar for details. Photo by Bob McNearney, 2010

their populations. Obtaining good estimates of populations today, even where they no longer occur, is integral for having good reference points for future monitoring and for investigating how well our conservation efforts are protecting sharks. ■

## Sharks are important

In addition to their ecosystem importance, sharks provide a valuable source of food protein and income from tourism for millions of people around the world—the majority of whom are impoverished. Plus, as divers, we too benefit

from healthy shark populations—we love to see sharks and other large fish in their natural environments and will pay top dollar for the opportunity to do so. For all these reasons, promoting healthy shark populations by preventing overexploita-

tion and prohibiting illegal poaching is essential.

Considering the broad importance of sharks along with our continually shifting baseline of what is 'natural', researchers are increasingly emphasizing the importance of understanding past and

present populations. As we improve our descriptions of baseline shark populations we become better equipped to recognize their role in marine ecosystems. Moreover, with shark populations in a state of flux, it is essential that we gather as much detail as possible to monitor

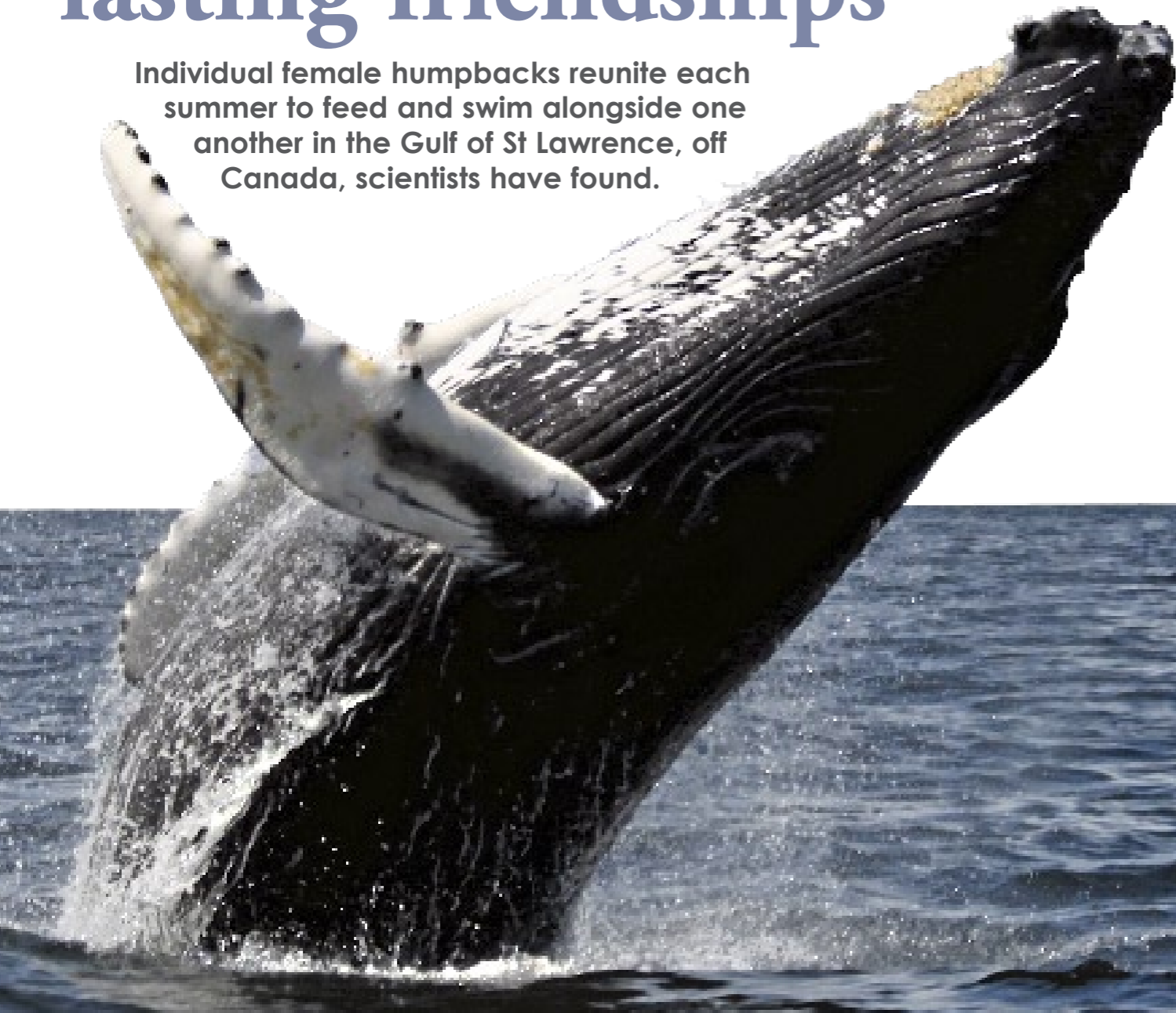
*Dr Christine Ward-Paige is a researcher with the Global Shark Assessment, a scientific group launched in 2003 at Dalhousie University in Canada to assess how global shark populations have been affected by industrial fishing since it began as well as global climate change.*



Edited by Peter Symes

# Humpback whales form lasting friendships

Individual female humpbacks reunite each summer to feed and swim alongside one another in the Gulf of St Lawrence, off Canada, scientists have found.



Toothed whales, such as sperm whales, associate with one another, but larger baleen whales, which filter their food, have been thought less social. The finding raises the possibility that commercial whaling may have broken apart social groups of whales.

Having spent the rest of the year apart migrating and breeding, individual humpbacks somehow find each other again in the open ocean each summer, spending the season feeding together. The longest recorded friendships lasted six years, and always occurred between similar-aged females, and never between females and males.

Dr Christian Ramp and colleagues of the Mingan Island Cetacean Study group based in St Lambert, Canada have been studying whales in the Gulf of St Lawrence since 1997. Using photographic identifica-

tion techniques, the researchers can spot which individual whales appear from one year to the next. During this study, they have found that the same humpback whales reunite each year.

Forming such friendships clearly benefited the female humpbacks, as those that had the most stable and long-lasting associations gave birth to the most calves.

Ramp and his colleagues suspect that the whales form bonds to improve their feeding efficiency each year.

"Staying together for a prolonged period of time requires a constant effort. That means that they feed together, but likely also rest together. So an individual is adapting its behaviour to another one."

How the whales find each other each summer is also an enigma. ■

*"I was very surprised by the prolonged duration. I was expecting stable associations within one season, not beyond. I was particularly surprised by the fact that only females form these bonds, especially females of similar age."*



*"Krill smells like boiled cabbage."*

Unlike most whales, bowheads have separate nostrils, which suggest they may be able to sense the direction a particular smell is coming from

## Whales have a sense of smell

The finding could change our understanding of how baleen whales locate prey, as scientists suspect the bowhead whales sniff out krill swarms.

Bowhead whales have a relatively large, developed olfactory bulb that appears similar in structure to that in other animals with a developed sense of smell. Previously, whales and dolphins were thought to lack the ability.

The whales' sense of smell was revealed when scientists dissected their bodies and found olfactory hardware linking the brain and nose, and functional protein receptors required to smell.

The researchers also found that bowheads have mostly functional olfactory receptor proteins, which toothed whales do not. These provide the biochemical infrastructure for the marine mammal to sample odours.

"It is remarkable that this animal, which appears to have very little use for olfaction, retained that sense," said Professor Hans Thewissen, a cetacean expert with the Northeastern Ohio Universities College of Medicine. "We speculate that they are actually able to smell krill and may use this to locate their prey. Krill smells like boiled cabbage." ■



# Lone Right Whales Yell Over the Ocean Din

North American right whales increase the volume of their calls as environmental noise increases. And just like humans, at a certain point, it may become too costly to continue to shout, warn marine and acoustic scientists.



Whales produce upcalls, sometimes called contact calls, when they are alone or in the process of joining with other whales. An upcall begins low and rises in pitch. It is the most frequent call produced by right whales.

American research associate Susan Parks of Pennsylvania State University and her colleagues, Mark Johnson and Peter L. Tyack of Woods Hole Oceanographic Institution and Douglas Nowacek of Duke University, looked at short-term modifications of calling behavior of individual North Atlantic right whales in varying envi-

situations. They report their results in *Biology Letters*.

It appears that right whales increase the amplitude, or the energy in their calls, directly as background noise levels increase without changing the frequency. This suggests that right whales can maintain the signal to noise ratio of their calls in moderate levels of ocean noise.

"To our knowledge, this is the first evidence for noise-dependent ampli-

tude modification of calls produced by a baleen whale," said Parks.

## Increased risks

Changing calling patterns can, however, incur costs including increased energy expenditure, alteration of the signal and the information it contains, and increased predatory risks. With increased noise the effective communication range for feeding or mating will shrink and stress levels on individual animals may rise.

"Whether they can maintain their communication range in noisier environments still needs to be tested," said Parks. "Ocean sound levels will probably continue to increase due to human activities and there is a physical limit to the maximum source level that an animal can produce."

# Whale poop is good for the climate

Southern Ocean sperm whales have emerged as an unexpected ally in the fight against global warming, removing the equivalent carbon emissions from 40,000 cars each year thanks to their faeces, a study has found.

Australian biologists estimated that the estimated 12,000 sperm whales in the Southern Ocean each defecate around 50 tonnes of iron into the sea every year

after digesting the fish and squid they hunt. The Southern Ocean is rich in nitrogen but poor in iron, which is essential for phytoplankton. The iron is then eaten by phytoplankton, which suck up CO<sub>2</sub> from the atmosphere through photosynthesis.

As a result of the fertilisation, the whales remove 400,000 tonnes of

carbon each year, twice as much as the 200,000 tonnes of CO<sub>2</sub> that they contribute through respiration. The whales' faeces are so effective because they

are emitted in liquid form and close to the surface, before the mammals dive, according to the paper, published in the British journal *Proceedings of the Royal Society B*. ■



ARCHIBALD THORBURN

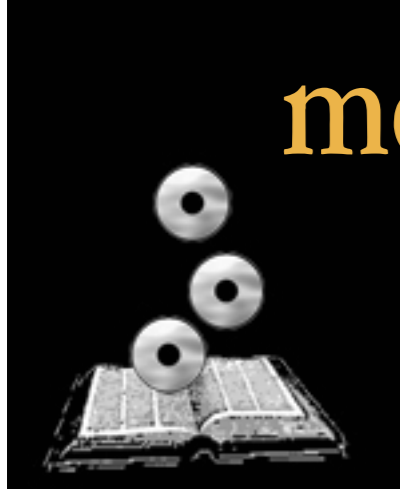
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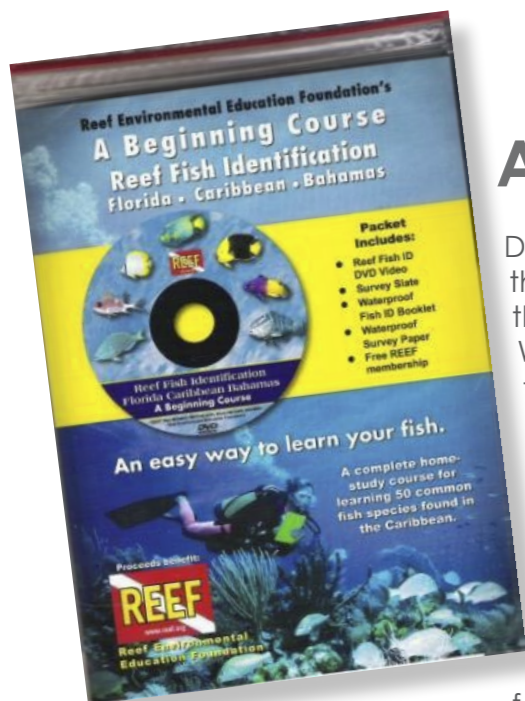
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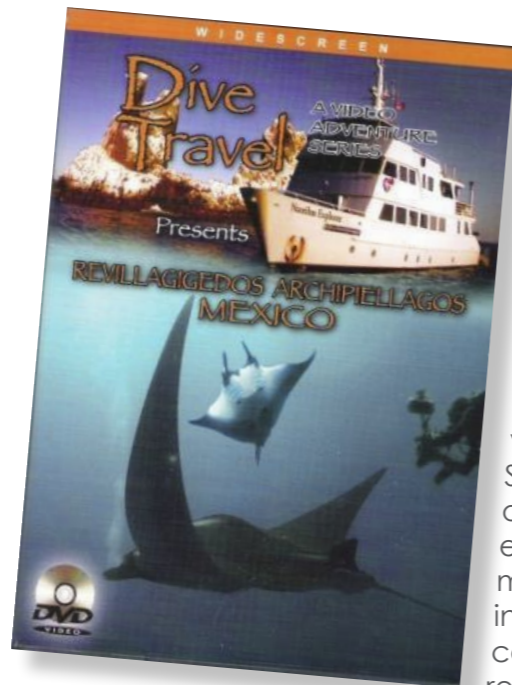


## A fish, of course

Dive trips are more fun if you know the destination's locals, the critters that is, not the resort staffers. New World Publications in conjunction with the Reef Environmental Education Foundation has a series of DVD-based curricula to get travelers up to speed before they head to Florida, Caribbean or Indo-Pacific destinations. Authors Paul Humann and Ned Deloach developed the educational material that can be used as

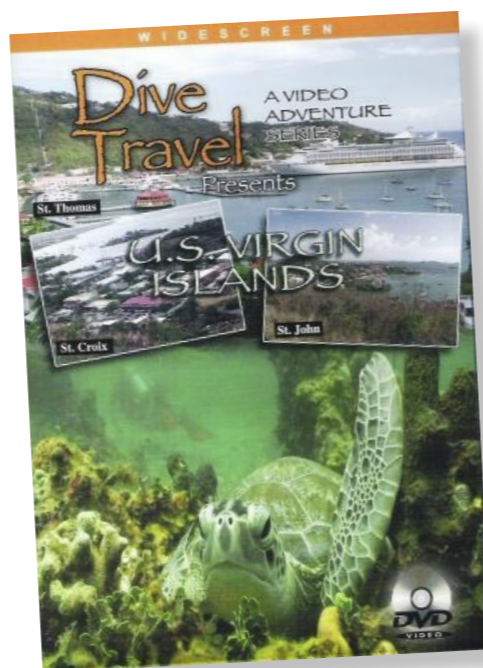
for home-study or to supplement a classroom underwater naturalist certification course. Fish are sorted into "chapters" in the DVD, with each presenting in-depth descriptions of the species' identifying markings, behavior and other traits. The information is accompanied with footage of each creature in situ. Also included with the package is a waterproof ID book that can slip into a buoyancy vest pocket, a slate to log sightings underwater and a survey log to track discoveries. The survey can be sent to REEF for compilation in the non-profit organization's fish count data base. The DVD was incompatible with a couple computers in the office, but was entertaining and educational once a proper program was found to decode it.

[www.REEF.org](http://www.REEF.org)



## Dive the big picture

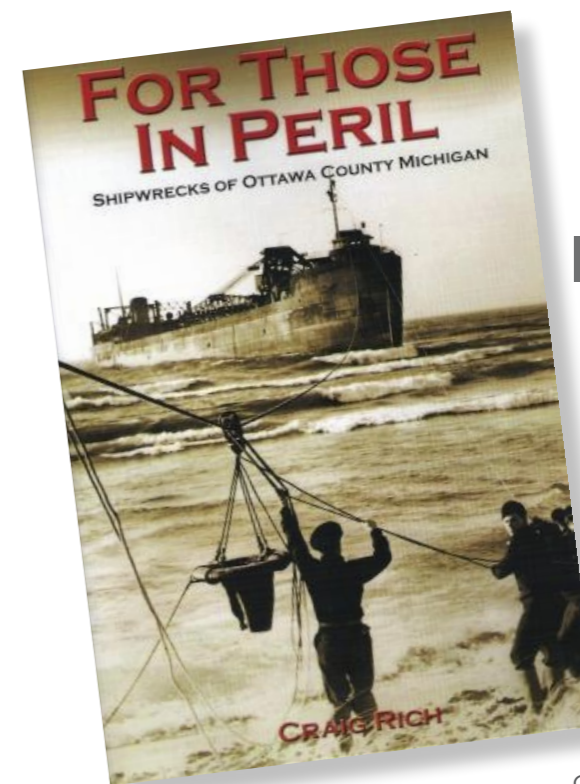
Divers searching for a chance to see big pelagics might want to virtually test dive the Revillagigedos Archipiellagos of Mexico by viewing Gary Knapp's Dive Travel video on the destination. The uninhabited volcanic dots in Pacific are 250 miles off the tip of Cabo San Lucas, and visited by liveaboard dive boats such as the *Nautilus Explorer*, which took Knapp on an eight-day trip there. Besides the islands of Socorro, San Benedicto and Roca Partida, the divers visited pinnacles that rise to within ten feet of the surface. Surrounding these lands is water that plunges to thousands of feet of depth that is a crossroad for international travelers of the oceans. Manta rays with wingspans of 20 feet or more and weighing some 5,000 pounds approach divers for interspecies interactions. Whales cavort here, among other cetaceans and whale sharks. White tip, hammerhead and reef sharks call the place home. In between gaping at Mr. Big, Knapp trained his video on morays, spiny lobster and swarms of colorful tropical fish. As with other videos, he called attention to top-side activities at Cabo San Lucas from which the boat departs for dive adventures. There would be plenty to amuse non-divers left ashore while the dive party heads to sea. [www.DiveTravelDVDs.com](http://www.DiveTravelDVDs.com)



## Peek at Virgin Island diving

Divers considering a trip to the U.S. Virgin Islands might want to pick up a copy of Dive Travel's DVD on the destination. The 36-minute video offers quick overviews of St. Thomas, St. Croix and St. John, the three main islands of the 50 or so dots of land that comprise the islands that the United States purchased from Denmark in 1917. Since it's a U.S. territory, the islands can be visited by U.S. citizens without a passport, unless they want to also see the British Virgin Islands nearby. Gary Knapp interviews operators and shows topside attractions to take in on non-diving days, like the Cruzan rum distillery and the Whim Plantation, once one of the many operations that relied on slave labor to produce cane sugar. However, most of the focus is on what's beneath the waves off each island. Pinnacles, ledges, valleys and shallow reefs of St. John were packed with everything from spider

crabs to parrot fish, but he caught none of the big pelagic creatures that sometimes visit the destination. St. Croix included shots of the Fredrickstad Pier, where divers encounter herds of seahorses, octopi and the usual crabs, as well as the *North Star* and shallow shipwrecks. St. Thomas was represented with ledges, wall reef and the *Cartanzer Senior*, the ship that united local divers in one of the world's first artificial reef projects. A rare algae bloom carried north by the Gulf Stream from Venezuela's Orinoco River gave the water a greenish tinge that would make Northeast divers feel right at home, especially on the wrecks. [www.DiveTravelDVDs.com](http://www.DiveTravelDVDs.com)

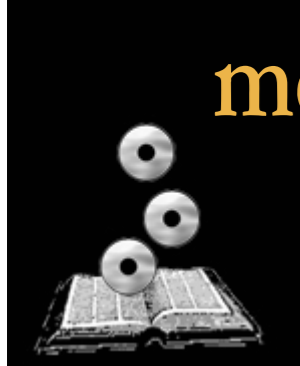


## In-depth look at Huron wrecks

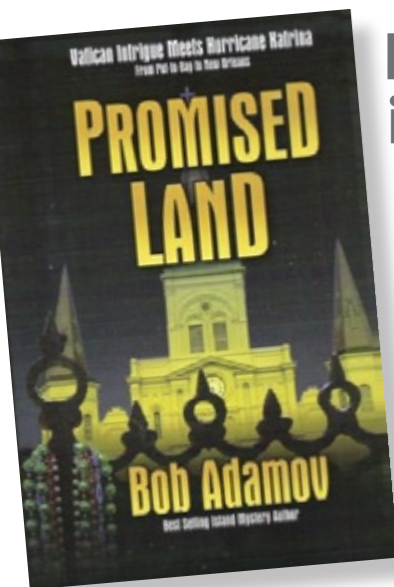
Wreck divers and maritime historians will have a hard time putting down *For Those In Peril* by Craig Rich.

The 136-page soft cover is produced

by In-Depth Editions, the publishing partner of Michigan Shipwreck Associates. It chronicles the dangers of sailing the North American Great Lakes, describing more than 100 ships that became imperiled off Ottawa County, Michigan, or while en route to or from its busy ports of Holland, Port Shelton and Grand Haven. Rich, an avid diver, is just describing his back yard. Besides being a co-founder of the shipwreck associates, he's served as a Holland City Councilman. He's divided the book into ten chapters that document wrecks from the 1850s through recent times, more or less by decade, which allows readers to trace changes in shipping as evolved from wooden boats in the age of sail to modern 1,000-foot-long ships. The book closes with a bibliography and a list of Web sites that point readers to additional information about Great Lakes maritime history. It also has a comprehensive index to ease finding information about the hundreds of vessels explored in this book. Historic photos of the vessels and crew plus site maps drawn by local divers help to bring the stories of the ships and their crews' harrowing experiences to life as does the layout by Valerie van Heest. ISBN: 978-0-9801750-2-8. [www.in-deptheditions.com](http://www.in-deptheditions.com)



Books



Dive into a New Orleans mystery

With the oil disaster putting New Orleans back in the news again, it's a good time

to pick up Bob Adamov's novel *Promised Land*, a 268-page hardcover from Packard Island Publishing. A cross and hidden message of a Vatican envoy murdered in 1805 resurface after Hurricane Katrina, drawing Adamov's intrepid protagonist Washington Post reporter Emerson Moore into an investigation of serial murders in the French Quarter and on Lake Erie's Put-in-Bay Island. A parade of unsavory characters from defrocked rogue priests to a sexy Creole detective perk up the plot as Moore digs for facts in New Orleans' Garden District, Pearl River and in documents stolen from the Vatican's secret archives. Along the way he is up to his neck in corrupt cops and swamps full of poisonous snakes and alligators until he finds a document that could destroy the legitimacy of the United States. Although it's not as much of a diving-related book as some of Adamov's other novels, *Promised Land* keeps close to the water, and the plot is as rich and spicy as filé gumbo. ISBN: 978-0-9786184-0-7. [www.packardislandpublishing.com](http://www.packardislandpublishing.com)



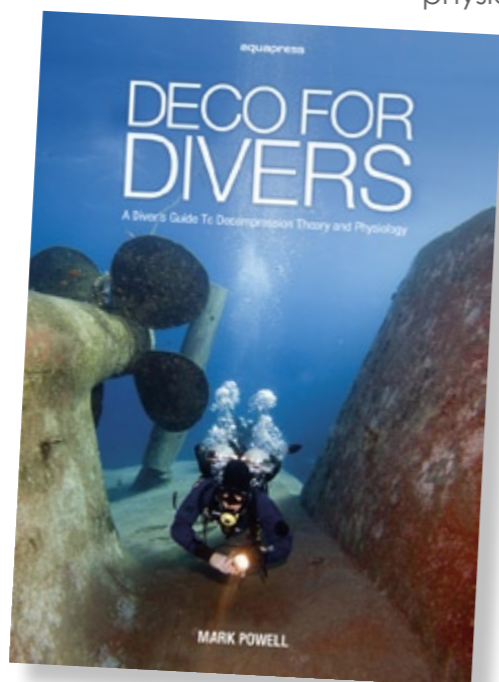
Online Tutorial

Now you can learn underwater photography and image editing on your own time and at your own pace in the convenience of your own home, 24/7. Photo pros, Jack and Sue Drafahl, have created a new website, [Underwaterphototutorials.com](http://Underwaterphototutorials.com)—a unique subscription service offering easy and convenient online underwater

photography instruction as well as tutorials in the use of Adobe Photoshop, Lightroom and Elements. With more than 35 years of photographic experience and image editing, the Digital Duo Jack and Sue make it fun and easy to learn digital underwater photography. Whether one uses a simple point-and-shoot camera or a more versatile digital single lens reflex camera, subscribers will benefit from tutorials covering composition, shooting macro photos, using RAW files, presenting images professionally, and much more. Just to wet your pallet, you can try a sample tutorial for free. Cost for the subscription service is US\$199 per year and includes tutorials on Photoshop (CS2 and newer versions such as CS5), all versions of Lightroom, and Elements versions 5 through 8. Advanced access to Adobe tutorials covering new content is available to subscribers whenever Adobe releases software. Plus you get tips and tricks from well-known industry photographers such as Ernie Brooks, Stan Waterman, Carl Roessler and Geri Murphy. So, get on the web and get shooting. Visit: [www.underwaterphototutorials.com](http://www.underwaterphototutorials.com)

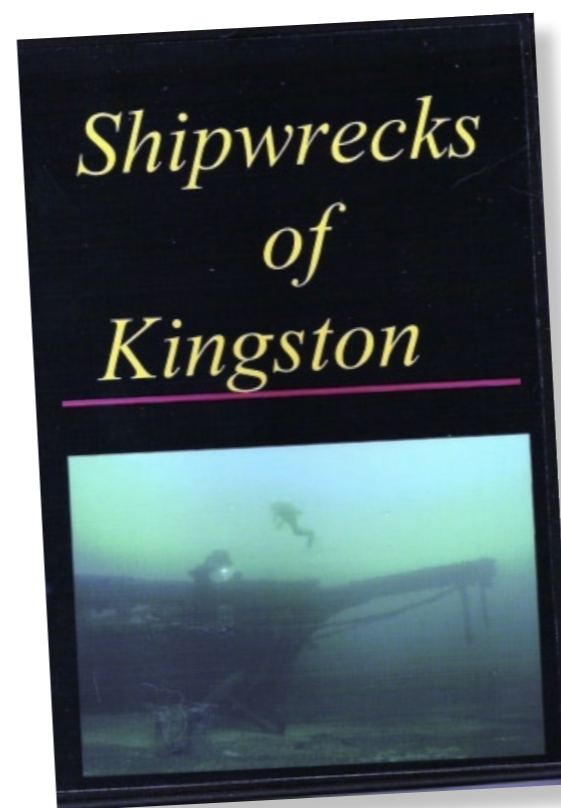
Deco for Divers

This thorough book provides a comprehensive overview of the principles underlying decompression theory and physiology. Tech expert, Mark



Powell, has written a technical guide book that, for the first time, allows the average diver to fully understand the principles behind this engaging and critical aspect of diving. In addition to examining air decompression, the author also discusses decompression using nitrox and mixed gases. Benefit from up-to-date information on the latest developments including deep stops and advanced bubble models. Suitable for new as well as highly experienced divers, *Deco for Divers* bridges the gap between introductory texts and specialist scientific journals. "It explains decompression in a way that normal divers can understand." — Mark Powell [www.dive-tech.co.uk](http://www.dive-tech.co.uk)

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A video fit for a Kingston

Wreck divers especially will enjoy *Shipwrecks of Kingston*, a 30-minute video from Peter Venoutsos' P.V. Images Productions. It opens with an overview of the North American Great Lakes, the inland seas that enabled the maritime commerce, which built the heartland of the Americas. Kingston, Ontario, in the northeastern corner of Lake Ontario, was and still is a major hub of this commerce. Hundreds of shipwrecks lie on the bottom near this harbor, most within range of scuba divers although some require technical training. Venoutsos chose four within recreational depths to highlight—the *Wolfe Islander II*, *Munson*, *Comet* and *Marsh*—giving viewers a sample of wrecks that span

from the mid-1800s to 1985. Although there are a few topside images that are tied to the wrecks, the video is mainly still and video footage of the wrecks as they are today. Divers glide through green waters over these zebra-mussel covered time capsules while Venoutsos narrates their stories in a rich baritone voice accompanied with soothing guitar sounds that contrasts the story lines. Except for the *Wolfe Islander II*, which was sunk as an artificial reef for divers, all of these wrecks sank in harrowing conditions and, except for the *Comet*, with the loss of all or most onboard. [www.AmericanScubaAdventures.com](http://www.AmericanScubaAdventures.com)



*Summer of the Sharks* is a behind-the-scenes look at the crew of Shark Diver Magazine and their life on the road, doing what they love best... chasing sharks and having fun. The movie takes the viewer into their world on an amazing ride with the guys, highlighting the beauty and dangers of the underwater world that these champions of the sharks crave. [www.sharkdivermag.com](http://www.sharkdivermag.com)



Recently released:  
**Diving With Legends**  
*Behind the pages with author Dr Pete Millar*

Text by Bonnie McKenna  
 Photos courtesy of Dr Pete Millar



— Millar gathers stories of diving legends

**Dr Pete Millar is a red-headed Irishman with a crazy-fun sense of humor. He is a man of juxtaposed interests and endeavors. He was born in Scotland, but holds an Irish passport and loves Korean food, especially bibimbap. Millar has a string of university degrees—his father once remarked that Peter had more degrees than a thermometer—including a doctorate in engineering that takes him to the noisy, dangerous ‘hard-hat’ offshore oil world, which he finds irresistibly exciting. On the other side of his life, there is the calm clean world of being a doctor of chiropractic medicine. But his dream job would be movie correspondent for the New York Times. He has a home in Chicago, but lives on the other side of the world in Baku, Azerbaijan, working as the in-country manager for a huge BP contract in the Caspian region.**

Millar says he likes to write. He claims he is not a writer, but he is a published author of several books.

“I wrote *The Eve of Armageddon*, a spectacularly unsuccessful science fiction novel. I did a book for my children called *Goldensocks and the Three Hares*, which, years later, my daughter illustrated. When my father died, I did a book, just for my family, on his life with images and stories about life growing up in Northern Ireland and our travels in the Middle East and China,” Millar said.

Millar claims he couldn’t even be described as a “legend in his own lunchtime”. He says he is famous for very little other than writing *DOXA SUB—Forty Years 1967-2007*, a history of the DOXA dive watch.

Any fan of Dirk Pitt will immediately recognize the name DOXA as the orange-faced dive watch that is mentioned in all of Clive Cussler’s books featuring the irrepressible exploits of Pitt.

“When I finished the DOXA book, I was pretty much at a loss. I looked at the information I still had and thought about

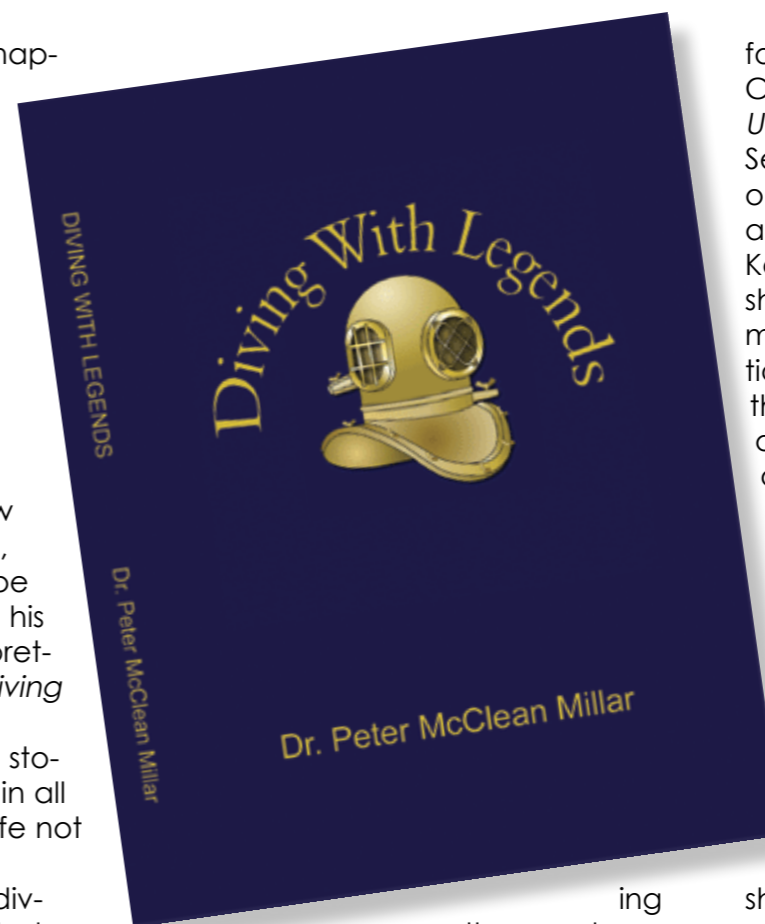
a later update, especially on the chapter of SUBs currently in use. I also thought about the information I had from Stan Waterman about the days when he wore the vintage DOXA. I wanted to expand on his adventures underwater. I guess I had one of those eureka moments when I thought, what if

I asked Stan to tell me about his best dive or greatest adventure, or what he wanted to be remembered for. I knew I could write about him, but how cool would it be if he told me his story in his own words? That was pretty much the driver for *Diving With Legends*,” Millar said.

Millar wanted his new book to tell stories about courage and innovation in all aspects of diving and underwater life not just SCUBA diving.

This is not a book about actually diving with legends, but about divers that have made an impact on diving and have become legends. All of the divers featured in this book have contributed to the dive industry by increasing our knowledge of the underworld and/or by push-

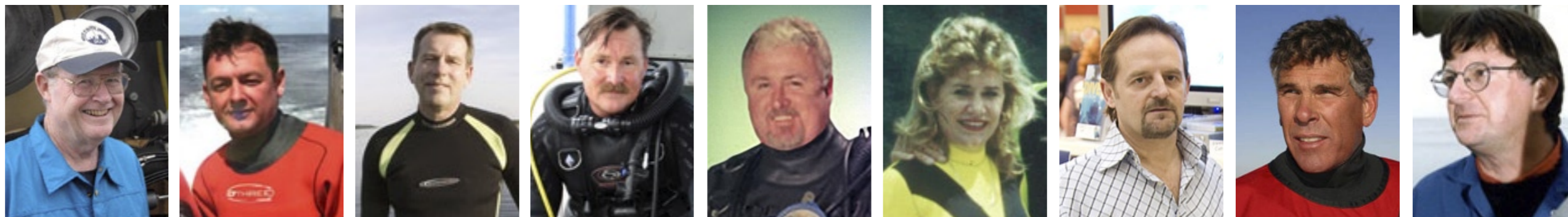
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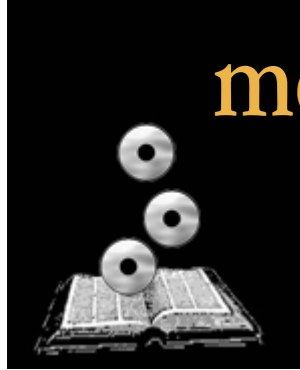
for film and documentary work; John Chatterton and Richie Kohler, not only for *U689*, but also their television series *Deep Sea Detectives*. Dan Crowell’s shows on the Military Channel were awesome and he had a tie-in with Chatterton and Kohler. Leigh Bishop, first to explore a shipwreck deeper than 100 meters using mixed gas. Carl Spencer, whose expeditions to *HMHS Britannic* are considered the benchmark in research explorations of historical shipwrecks. Jarrod Jablonski, one of the world’s most capable and talented exploration divers who holds the record for the world’s longest and deepest cave diving penetrations. Burt Webber’s search for the Spanish galleon *Nuestra Senora de la Concepcion* that sank in 1641 made a great treasure seeking tale.

“Some stories sort of landed in my lap. Henry Joyce sent me his father’s diaries about the *USS Sealion*—the only allied submarine to sink a battleship in World War II. From big submarines, submersibles brought me to Graham Hawkes, an ocean engineer/inventor responsible for the design of manned underwater vehicles. He holds the world’s record for the deepest solo dive of 304 meters, piloting his *Deep Rover* submers-

ing the envelope while performing fetes of skill on the very edge of life itself. “I wanted people who were famous in their own realm. Stan Waterman and Howard Hall were obvious choices



LEFT TO RIGHT: George Bass; Leigh Bishop; Jon Chatterton; Dan Crowell; James Delgado; Martha Watkins Gilkes; Tony Groom; Howard Hall; Graham Hawkes



LEFT TO RIGHT: Jarrod Jablonski; Henry Joyce; Richie Kohler; Joe MacInnis; Mike O'Leary; Paul Oberle; Zale Parry



Limited edition DOXA Sub 1200T Professional dive watch

ible. David Trotter, who has been exploring and discovering shipwrecks in the Great Lakes for 25 years. His discoveries have been featured in various television programs, newspapers and leading dive magazines.

"Obviously, when it comes to underwater records, Jacques Piccard and his seven mile descent into the Marianas Trench is about as big as it gets. Sadly, Jacques passed away before the book was finished.

"Tony Groom, who

ing the *British Museum Encyclopedia of Underwater and Marine Archeology*, and his most recent book, *Adventures of a Sea Hunter*.

"Ralph Wilbanks is another well know underwater archeologist. His most famous find is the *CSS H.L. Hunley*, the first combat submarine to sink a ship. Wilbanks worked with Clive Cussler's National Underwater and Marine Agency (NUMA) searching tirelessly for the submarine until she was located in 1995 four miles outside Charleston, S.C.

"Dr Joe MacInnis, a physician-scientist was the medical director of the American Man-In-Sea program and worked on the U.S. Navy's Sea Lab project. Karl Shreeves is the technical development executive for PADI and DSAT. He is also a contractor supporting NASAs NEEMO program in which astronauts live underwater for up to two weeks to study human factors and dynamics in space exploration.

"Paul Oberle was suggested by a dive buddy; when I heard he founded Scuba Rangers, I knew I had to have him tell the story. Paul describes the mission of Scuba Rangers as simply as this: to involve children in scuba diving and pass along the excitement of water exploration.

"The book was turning into the chronicles of a bunch of male divers. I needed to get some women. Martha Watkins Gilkes and Zale Parry were my choices. Martha has been recognized by the Women Diver Hall

of Fame and the Who's Who of Women in the Environment by the United Nations. She has worked tirelessly throughout the Caribbean promoting conservation of the marine environment. Zale Parry started diving in the 1940s. She is best known for her role alongside Lloyd Bridges in the popular series *Sea Hunt*," Millar concluded.

While Millar was working on the DOXA history book, Romeo Jenny, president and CEO of DOXA watches S.A., and Rick Marei, DOXA marketing manager, became interested in wanting to give something back to the diving world, which realistically had been the original reason for the DOXA ([www.doxa300t.com](http://www.doxa300t.com)) watches.

"That idea was to tie in the book with a special Diving With Legends DOXA watch as an honor to each of the contributors. It was the perfect solution," Millar said with a smile.

In February this year, at the Our World-Underwater dive show, in Chicago, Millar gathered together almost all the divers he had honored in his book. With the assistance of DOXA representatives each diver in attendance was honored with a copy of a Millar's book, autographed by each diver, and a beautiful special edition Diving With Legends orange-faced

DOXA dive watch.

Despite Millar's love of the dive world, he only received his SCUBA certification in the late 1980's. He was running ultrasonic inspections on pipelines in the Middle East when he decided that he should get certified. Eventually, he got both NAUI and PADI certifications. His diving was mainly in the Great Lakes and some dark and muddy quarries until he discovered the Cayman Islands.

Today, due to serious eye problems that he would "not wish on anyone", he doubts that he will ever dive again. The Cayman Islands is still his favorite place to go.

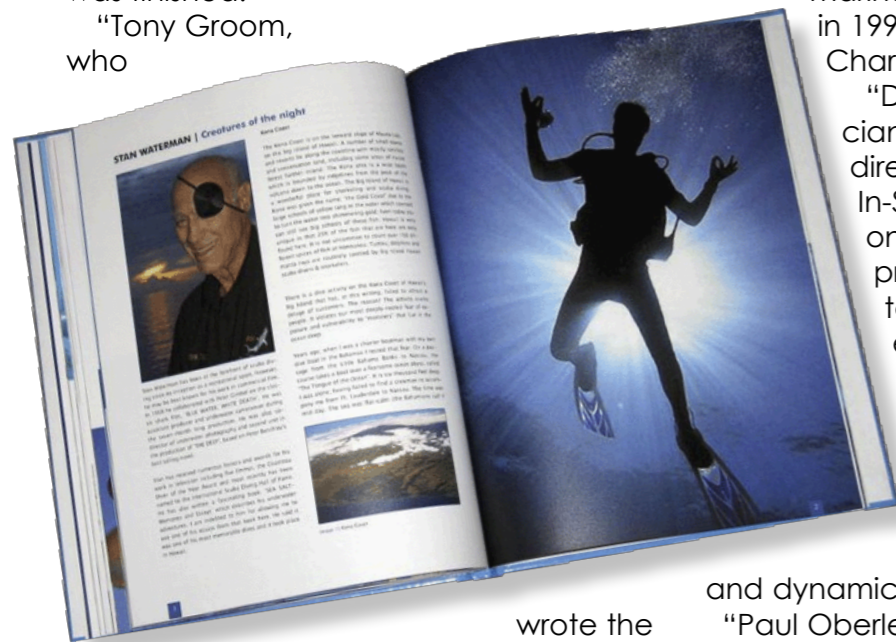
"A bunch of people from the DOXA watch forum meet up there every year, and that is what diving is about for me," he said with a laugh.

Millar said he never expected to make any money from the book, and he is okay with it. He said he could have asked many other people to contribute to the book, but he knew it was going to be more than 300 pages—becoming too big and too expensive.

"As it happened, I could not find a publisher and had to publish it myself. I doubt many people will buy it, so the wonderful stories in it will, by and large,

unread. Despite that, I'm always considering *Diving With Legends* volume two because there are many more incredible divers out there with fantastic stories to tell," Millar said. "For me the whole ethos of the project was to tell a story about each of these really cool people that would honor them and be something that people would read and feel a sense of awe or adventure or excitement and live vicariously through them."

For anyone interested in purchasing this fascinating book go to [www.divingwithlegends.com](http://www.divingwithlegends.com). ■



wrote the book *Diver*, was a bomb disposal diver in the Royal Navy; he put me in touch with Mike O'Leary. Few people have experienced what Tony and Mike have as bomb disposal and commercial saturation divers in the North Sea.

"I had to have underwater archeology in the book; Drs George Bass and James Delgado we my top choice. Bass is considered the father of underwater archeology and founder of the Institute for Nautical Archeology. Delgado is the author of more than 30 books includ-



LEFT TO RIGHT: Jacques Piccard; Karl Shreeves; Carl Spencer; David Trotter; Stan Waterman; Ralph Wilbanks; Burt Webber







Diver greets  
reclining  
leopard seal

# Göran Ehlomé

Text by Peter Symes  
Photos by Göran Ehlomé

*PS: When did your interest in photography start?*

GE: TV-shows and programmes when I was a kid in the 1970's played a big part, in particular, Cousteau and other shows. Also Jan Lindblad (a Swedish naturalist, writer, photographer and film maker who won acclaim for his wildlife films —ed.)

*PS: Who taught you photography?*

GE: It came gradually

*PS: You are both the co-founder of Waterproof and a renowned prize-winning photographer. What is the relationship between these activities? Did you start in business to finance an interest or are they separate?*

GE: It is quite simple, really. I was a photographer first. Then, I learned to dive. It all began when I was 11 in 1976. I started with my dive training when I was 14 years old since I could get certified at age 15. I was in eighth grade then, and at that stage, I had to do a 'praktik' (a short one or two week field trip with some practical work experience aimed at giving young students an impression and introduction to working life and various trades and crafts. —ed). I went to Aqua Sport (a local dive shop

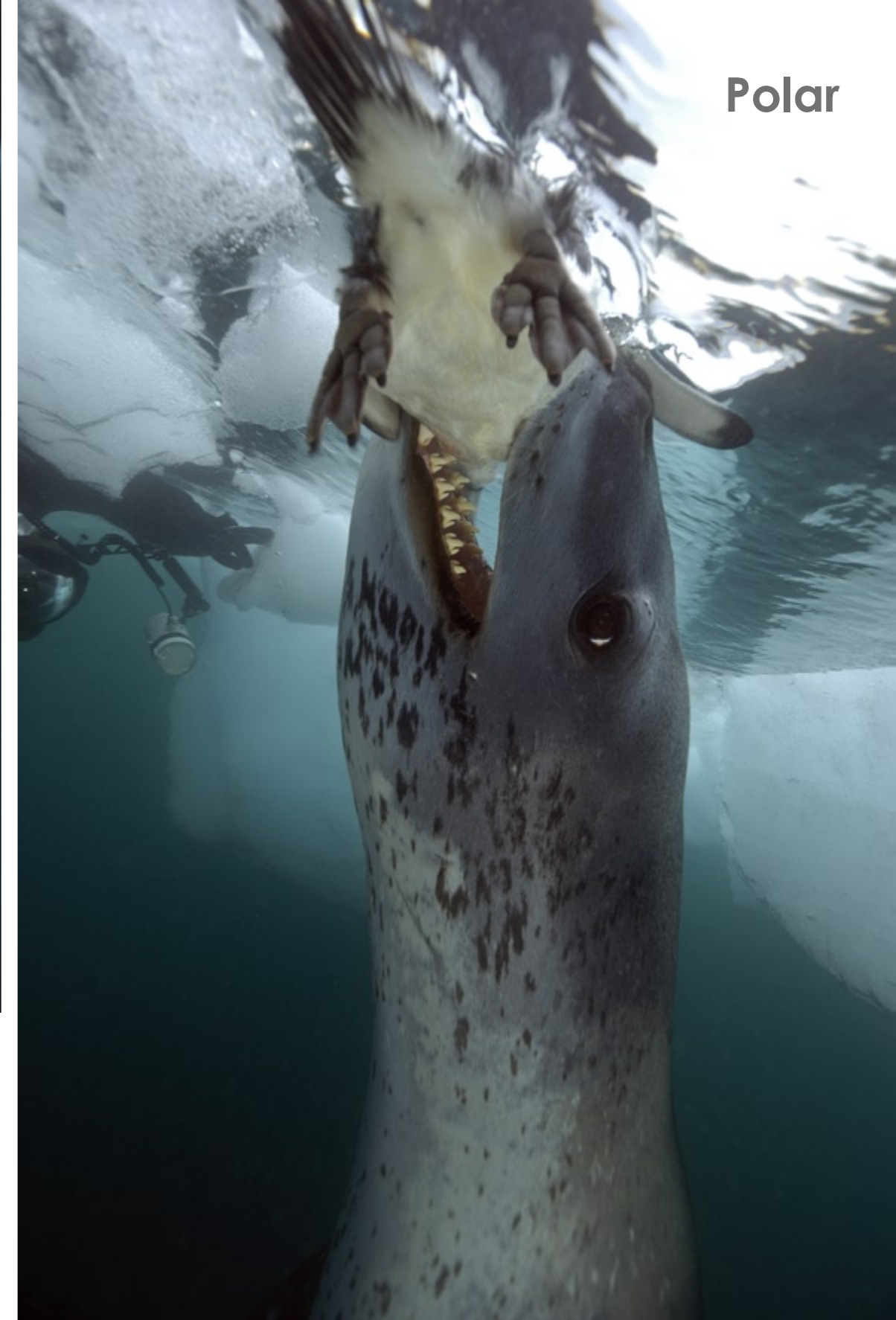
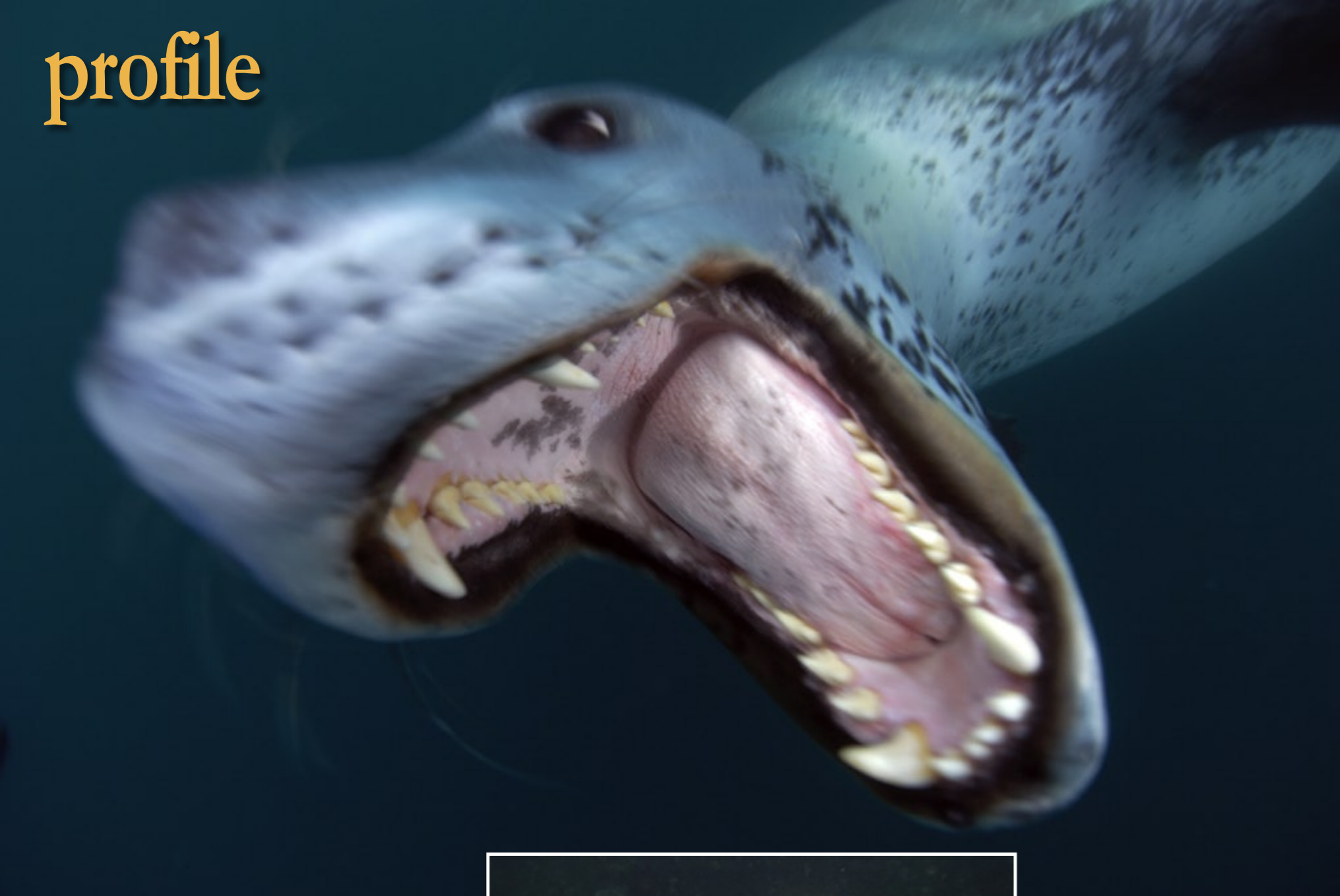
and asked if I could spend my praktik there, but I actually ended up in SubAqua instead, which was a vacuum cleaner company. Somebody got the paperwork mixed up, but it was okay because they also made wetsuits.

It was owned by two guys who used to work for Poseidon, and there, I learned to use a blind stitch machine. This was tricky. Either you could or you couldn't! But I figured it out, and soon I had an extra job. The lady who usually did this job suddenly died, and suddenly I was the only one who could blind stitch. So, I went there after school. Neoprene, as we have come to know it later, was invented there. It became quite big, but due to bad management, it went under later on.

The workshop became Vulkan. Wetsuits were forgotten, as they didn't want to do it. Windsurfing became big in the 1980's, but nobody knew how to fix and repair the suits. I then talked to my brother, Bjorn, about helping, but setting it all up was a bit of a challenge. We didn't have 380 volts in the kitchen at home, but we managed, nonetheless, to get the business off the ground. Soon, these activities came into conflict with Vulkan, who asked us to stop competing: "Either leave or co-



Göran Ehlomé



THIS PAGE: *My, what big teeth you have...*

operate". So, we started Waterproof in 1984 while I was working as a carpenter at the same time.

But constructing wetsuits felt right as the ocean was dear to me. As [land] photography was dear to me, too, taking the photography down under the surface was only the next logical step

I bought an underwater camera (from AquaSport, incidentally). It was a Nikonos IVa. The first images—30 rolls shot in the Red Sea—were a complete disaster. They were all over-exposed, so I put underwater pho-



Leopard seal in action

tography on the shelf for a while. But in 1987-88, I was going up to Lofoten and I got off to a new start.

Waterproof and I are the same thing. I can always justify diving and taking pictures doing it because it brings pictures to our catalogues. The force that pushes me forward is having a good time, and in the beginning, it was purely for fun. It was only later it became professional. There was never money in stills even in the

1980's. That is why I went into video.

Now, we have more owners. That is because I do not want to be in conflict with what I do.

We can sit in the office and design beautiful items, but you can really only work on the visual appearance. You have to be in the field. Most of the time outside, you wait

THIS PAGE: Attack of the killer Leopard seal. Penguins are no match for the jaws of a leopard seal. Here the seal plays with its food like a frisbee in the pool



for wildlife. Ninety percent of the time, you wait. Sometimes you wait for eight hours in your drysuit, so you will notice if something is not working. You don't necessarily do that after one hour.

*PS: Waterproof was one of the first, if not the first, to use cold water destinations in the marketing. I am referring to some of your early work and Waterproof promotions that was shot on Iceland in the 1980's. Where did that idea come from?*

I like the tropical seas, but it is not my world. It doesn't touch my heart, as I do not get to see stuff that I understand. In cold waters, I find animals I know from home. I grew up in Scandinavia. I like to see animals that I can somehow relate to, that touches me. But



Göran Ehlme and friend (left)  
Penguins leap out of the sea onto ice flows  
(below)

## Background

Göran Ehlme of Sweden has planned and led many field trips to the polar areas and was the first to lead diving expeditions to the Arctic and Antarctica. He has more than 24 years diving experience, is a certified PADI Instructor and has been diving the polar areas since 1993. He dives both open water and under the ice during summer and is particularly experienced with walrus, emperor penguins and leopard seals.

With Waterproof Expeditions, he likes to share his experiences of the polar regions with divers around the world. As an underwater cameraman, Ehlme has been on assignment filming many documentaries for Animal Planet, BBC, Canal Plus and National Geographic. He recently won the BBC's Shell Wildlife Photographer of the Year 2006 award with his winning image of a feeding walrus underwater in North East Greenland. (see next page)

Ehlme has filmed beluga, narwhal, seals, walrus and other mammals in the Canadian Arctic, Greenland and Svalbard. In Antarctica, he filmed humpback and minke whales and all the members of the seal family including the leopard seal. He has also captured most penguin species, including emperor penguins, as well as many invertebrates on film. In the Azores (Faial and San Miguel) he spent four seasons diving with sperm whales, and since 1985, he has been diving with orcas in Norway and became familiar with the whales themselves and the logistics and techniques involved in getting close to them.

Ehlme's footage has been used in numerous series and films over the past ten years.

- Archives of Emperor Penguins under water in the Hollywood Production, March

of the penguins, 2006

- Lord of the ice: Leopard seals (Discovery/Saint Thomas Productions, 2003)
- What do the walrus know? (SVT,DR, 2003)
- Wildlife special: Killer whales (BBC/Discovery, 2003)
- Hunt for the red whale: Killer whales (Survival, 2003)
- Blue planet: Frozen seas (BBC/Discovery, 2002, narwhal, walrus and emperor penguins)
- Toothed titans (National Geographic, 1999, feeding walrus sequence)
- White whales and narwhals chattering of ghosts (Canal+, 1999)
- Lea the Leopard Seal (Saint Thomas/Canal+, 1998)
- Avaq: The Arctic toothwalker; walrus (Scandinature)
- Svalbard: Where the polar bears reign; walrus (Scandinature)

For his company, Waterproof International in Sweden, Ehlme is the head designer of neoprene drysuits, wetsuits and accessories. He has been testing the suits during his camera work in the polar regions and has designed them with his experiences in mind. The quality and design of the suits have won many awards for the best suits all over the world. ■



destinations like, for example, New Zealand also work for me.

*regions have to offer divers that tropical destinations don't?*

I dislike that the world is turning into a Disney World where you are told what to do. Everything is prefabricated down to the tracks of the rainforest. I hate it when there is no adventure.

GE: Diving in cold water means that you can explore locations where nobody else has been, just like Ernst Shackleton or Roald Amundsen, and there are no people around. You are back to being an explorer, that is what I love. In the tropics, you can't explore anymore.

When I went to Iceland, it was actually prohibited to dive in Thingvellir, though some years earlier, some black and white images were taken for Poseidon up there.

To me cold water also means tranquility and an untouchable frontier.

*PS: You seem to have a preference for the colder regions of the planet? Where did that interest come from? What do the polar*

*PS: What is the most important lessons you have learned about wildlife by having interacted with them?*

GE: In regards to marine mammals, it is important to realise how very similar we are to them. It is really surprising, actually. A lot of animals like to interact with humans. They care for their young, and they are gentle towards humans—they mean no harm.

You don't expect animals to kick you just for the fun of it. You don't let your fear interfere with your interaction with the animals. In the old days, you would not make the distinction between curiosity and an attack, and scare stories sold more newspapers.

The more time you spend with



THIS PAGE: Feeding walrus; Diver and manatee (bottom right)

the animals, the more logical it all seems, and it begins to make sense. We are not all that dissimilar.

*PS: Are there any other creatures you would like to document in the future?*

GE: I would still work with the polar regions. So far, I have only done "the easy parts". I would definitely like to do the emperor penguins.

They are always out to open sea and quite tricky to follow. Also, the Giant octopus and feeding Sperm whales are high on my list of priorities.

*PS: What do you look for in an image? What makes a picture great in your opinion?*

GE: Tricky question. It can be so many things.

*PS: Video or still photography? When is one media better than the other?*

GE: In the recent years, I have been working mostly with stills because it is easier and the equipment is lighter and less complicated, which makes it more fun. I have gone back to video lately though, but it requires more people. For me, it is 50-50 which

one I prefer.

*PS: Where do you see the biggest (technological) advances taking place?*

GE: What I learned when I dealt in white shirts was that they were all made in Bangladesh, so it was meaningless to discuss quality. It is a matter of design. The same principle applies to photography; you

# profile

can pretty much decide on the quality you want.

The big question at the moment is will Nikon and Canon take over the video market, or will Sony and Panasonic take over the still photography market? Evidently, the technologies are about to fuse. Still photography as we know it today will go extinct, wiped out by what BBC and National Geographic are capable of. They can just take frames out of their High Definition videos. Nobody can compete with that.

*PS: Which features would you like to see invented?*

GE: Sidescan sonar video. The side scan sonar images are nice, so just imagine if you could do the same with video. You could use sound to see really deep and record what i.e. the Sperm whales are doing. Imagine what you could see.

*PS: Who inspires you? Do you have any role models?*

GE: I have no clue really. Do what

you like, be happy and have a good time.

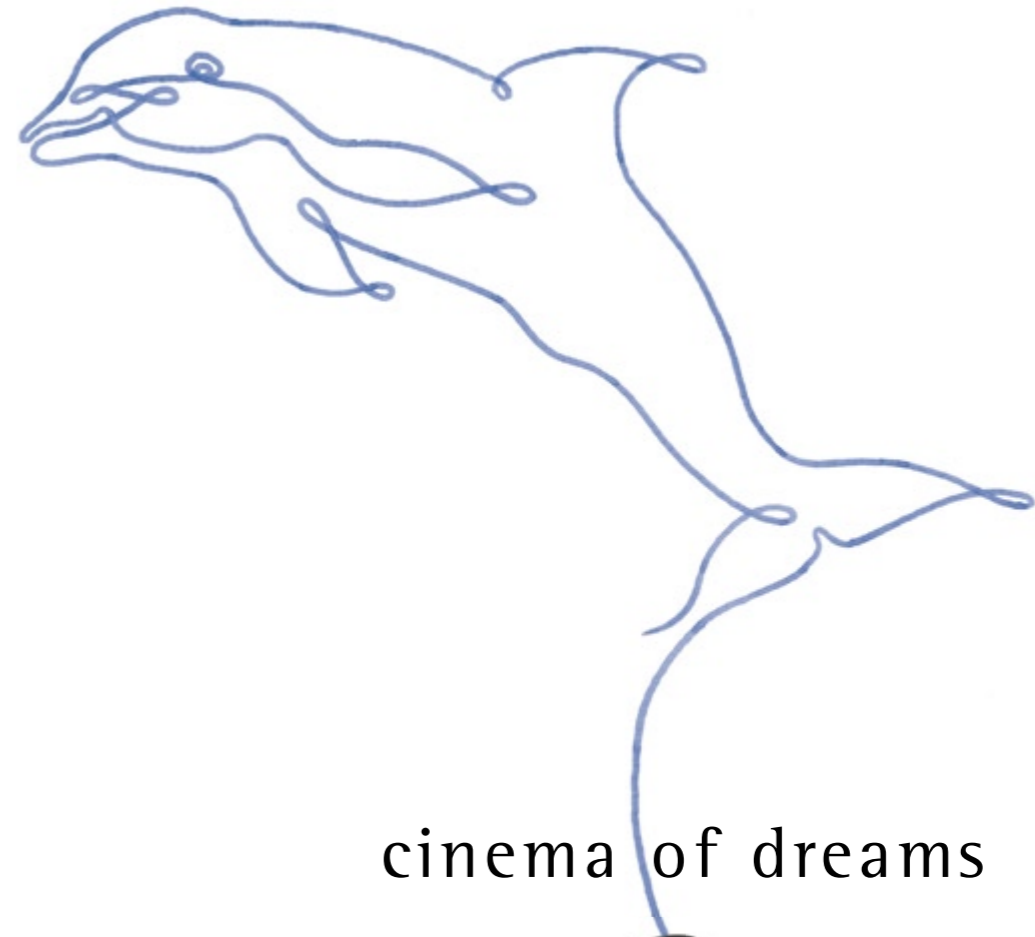
*PS: What other dreams would you like to live out before you retire?*

GE: Hmmmm..... just to see some other places. I already travel a lot. Perhaps seeing British Columbia. But I am already living my dream. I never had to work for the sake of making money. I always enjoyed what I do and have been lucky making money doing so. ■

Giant barnacle-encrusted tail fin of a humpback whale



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Edited by  
Andy Murch

THIS PAGE:  
Life under an oil rig

*“Ironically, the oil rigs that pepper the continental shelf and are now the cause of so much devastation, are also oases of life that harbor complex and vibrant ecosystems.”*



## Refugees of the Gulf Oil Spill

Text and photos by Andy Murch

**As I write this, the eyes of the world are focused on the mesmerizing river of crude oil that has incredulously been pumping thousands of barrels a day into the northern reaches of the Gulf of Mexico, enveloping and poisoning everything it touches.**

The headlines are filled with graphic images of oil clad sea birds, drowned turtles, beaches covered in sticky black globules and marshlands clogged in a reddish brown blanket of death. It is both a sad and angering picture.

Recriminations fueled by a collective feeling of helplessness, reverberate from coffee shops to courtrooms, but to me the finger pointing is irrelevant.

At every level, people and organizations have mobilized to contain the

slick and rescue as many air breathing animals as possible. The size and scope of the terrestrial effort is comforting but below the surface there is little that anyone can do.

The northern gulf is a critical deepsea habitat. Ironically, the oil rigs that pepper the continental shelf and are now the cause of so much devastation, are also oases of life that harbor complex and vibrant ecosystems. Colonies of immobile invertebrates cling to every wire and strut, feeding an army of crustaceans,

mollusks and reef fishes. Enormous clouds of tiny bait fish morph from one shadow to the next and are preyed upon by schools of snappers and other teleost species, which in turn support large aggregations of silky and dusky sharks.

Perched between the apex predators and lesser life forms, small endemic shark species such as the Gulf of Mexico Smoothhound Shark (*Mustelus sinusmexicanus*) jockey for position in the food web.

The first and only time I encountered a Gulf of Mexico Smoothhound, I initially thought that it was a smooth dogfish (*M.canis*) which is a closely related, wide ranging resident of the eastern seaboard. When I later learned that it was a virtually unknown species confined to a tiny patch of seafloor in the northern gulf, I felt equally surprised and



privileged to have had the chance to encounter it.

I was aboard a research vessel at the time and the tiny shark was pulled from the depths for study amidst a large assortment of other interesting abyssal

fishes. After the lab coats had taken fin clips for DNA analysis and generally had their evil way with the hapless shark, I slipped into the water and swam it over to the oilrig that we were tied off to. When I released it into the shadowy



Edited by Peter Symes



depths, it swam tentatively at first as if not trusting its liberty. Then, after eying me cautiously, it headed for a barnacle-encrusted crossbeam and began weaving its way down to the sea floor 600 feet below.

The images that I took of that little smoothhound shark have been haunting me ever since I heard about the spill. I am optimistic that most pelagic sharks had the wherewithal to swim south at the first bitter taste of oil. But, what has become of vulnerable endemic species like the gulf smoothhound? Did they all flee into open water like land animals running from a forest fire, or did they cling to the habitat they know, inadvertently exposing their delicate

gill structures and other organs to the viscous residue floating around them in the water column like a giant toxic lava lamp?

After the Exxon Valdez disaster in Prince William Sound, the composition of marine life within range of the spill was changed forever. Some species quickly bounced back while other once plentiful creatures

remained severely depleted. Pink salmon populations displayed stunted growth and sea otters and ducks showed higher than normal mortality rates in subsequent years (partially because they ingested prey from contaminated soil). There were no studies done on shark mortality in those isolated Alaskan waters because dead sharks invariably sink. However, there must have been casualties up and down the food chain.

Sharks are famous for their capacity to overcome almost all environmental threats (other than overfishing). Female sharks held in isolation in aquariums have even procreated without the aid of a mate. But for a small endemic species like the gulf smoothhound whose entire habitat is under siege, a dislocation of this magnitude could presage its demise.

There are no refugee camps or rehabilitation centers in the ocean but sharks are resilient creatures. They are resistant to toxins and blessed with keen spatial senses that will help them find their way back to ground zero once the deluge is finally under control. But for those that fled and survived the initial spill, the question remains, what kind of brave new world will they be returning to? ■



THIS PAGE: Smoothhound shark (*Mustelus sinuatus*)

## Virgin birth may be sharks' secret survival strategy

**Parthenogenesis—a form of asexual reproduction found in females where growth and development of embryos occurs without fertilization by a male—may be part of an extreme survival strategy for sharks, say researchers.**

In parthenogenesis, females' eggs start dividing without being fertilised and produce daughters that are genetically similar to the mother. Parthenogenesis in sharks was first observed in a captive hammerhead shark in 2001, but this was an isolated incident, and the shark pup died after three days, making it difficult to say much about its evolutionary significance.

Kevin Feldheim at the Field Museum in Chicago, and an inter-

national team of colleagues, have now shown that the incident was not exceptional and sharks born from a virgin mother can survive for many years.

The team were inspired by the 2001 birth to keep eggs produced by a captive white-spotted bamboo shark at the Belle Isle Aquarium of the Detroit Zoological Institute. The female had never encountered a male during her adult life, and biologists had assumed the eggs were infertile. To their surprise,

seven incubated eggs produced two pups, which survived for over five years. Genetic analysis confirmed that they were parthenogens.

These findings demonstrate that some female sharks are capable of producing multiple, viable offspring through parthenogenesis. "The demonstration of parthenogenesis in a third lineage of sharks raises the prospect that this reproductive capability may not be uncommon in these ancient fishes," the authors conclude. ■

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**Andy Murch**



# Sharks sniff out their prey in stereo

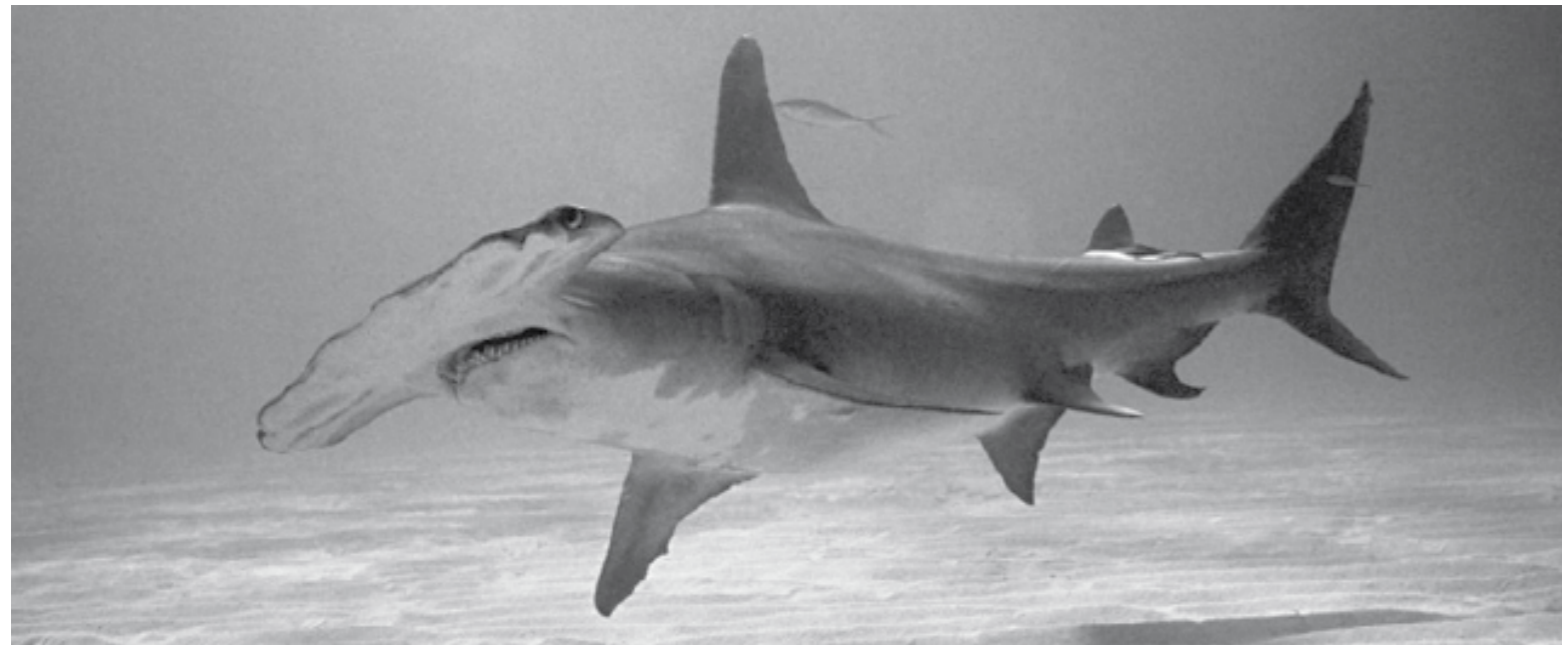
A new discovery helps explain why sharks are so good at catching their prey. They smell in stereo to help them home in on dinner.

It turns out that sharks can detect small delays, no more than half a second long, in the time that odours reach one nostril versus the other. When the animals experience such a lag, they will turn

toward whichever side picked up the scent first. To follow the scent trail left by their prey across the ocean, sharks swim in the direction of the nostril that sniffed the odour first, scientists have found. The

findings, just published in *Current Biology*<sup>1</sup>, suggests that when a shark moves into a patch of odour, the smell hits one nostril before the other—and that tells the shark to turn either left or right.

By moving from side to side from one patch to another, the animal maintains contact with the odour plume as it tracks its prey, said Jayne Gardiner at the University of South Florida in Tampa. ■



WOLFGANG LEANDER

How does a hungry shark decide where to look for a tasty meal when there's no tempting morsel in plain sight?

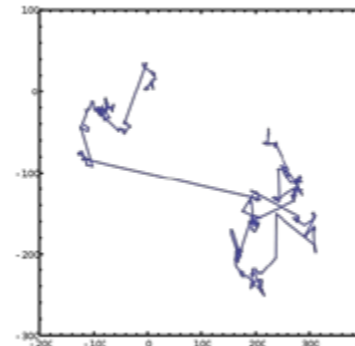
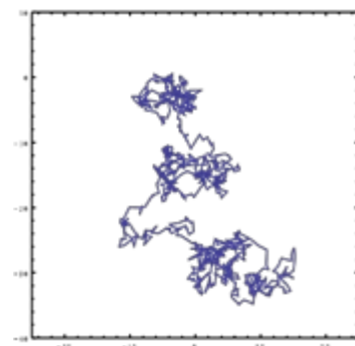
# Sharks also apply math while hunting

Sharks and other predatory sea animals may actually use math when they hunt, according to new study, which appeared *Nature*.

On a graph, the Lévy walk, which consists of rare, long forays in one direction, has a squiggly pattern, and its shape stays the same no matter what the viewing scale is.

When sharks and other ocean predators can't find food, they abandon Brownian motion, the random motion seen in swirling gas molecules, for a Lévy Walk—a mix of long trajectories and short, random movements found in turbulent fluids.

Researchers analyzed over 12 million movements recorded over 5,700 days in 55 radio-tagged animals from 14 ocean predator species in the Atlantic and Pacific Oceans, including silky sharks, yel-



Sharks hunt for food by alternating between Brownian motion (left) and Lévy flights (right), depending on the scarcity of prey

lowfin tuna, blue marlin and swordfish. The data showed that Lévy flights interspersed with

Brownian motion can describe the animals' hunting patterns. ■

# Help Give Sharks A Fighting Chance

## Join divers worldwide demanding sharks get the protection they deserve

**Sign the Petition**  
[www.projectaware.org/givesharksachance](http://www.projectaware.org/givesharksachance)

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# How to be good on air



**What accounts for huge differences in air consumption? Even divers with fairly similar size and experience have different consumption rates, which couldn't be attributed only to differences in fatigue or stress levels.**

Text by Asser Salama  
(TDI/SDI/CMAS Instructor)

Since different people have different lung volumes, different metabolisms and different genes, the point here is that there is no ideal air consumption rate. In other words, you shouldn't be ashamed of using more air than your buddy.

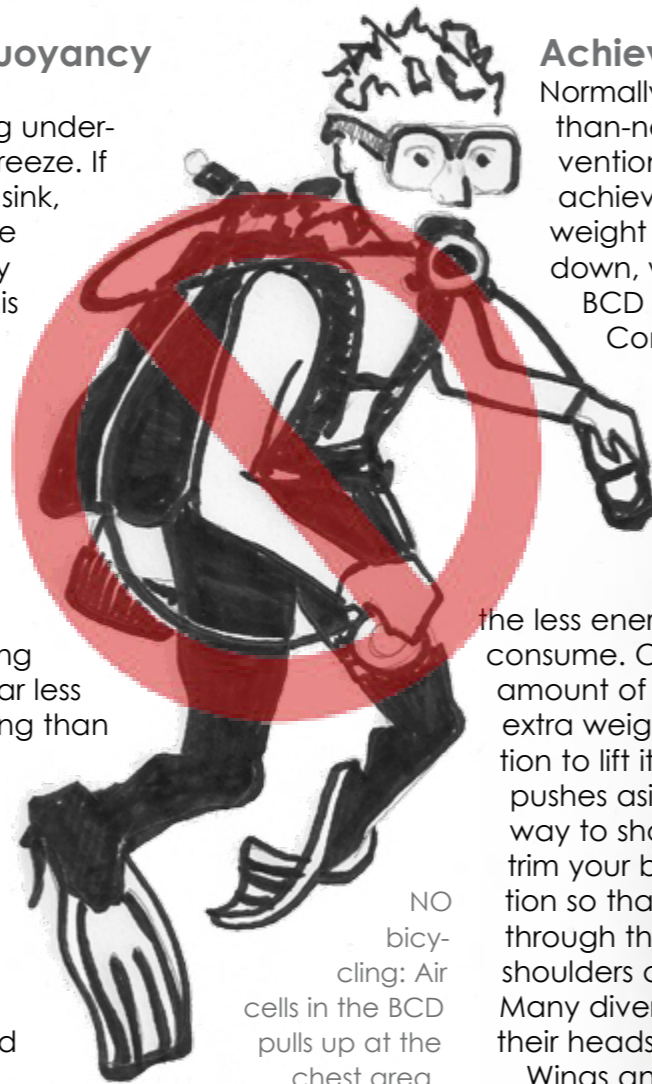
So, let's forget all about gauge competitions. Large air reserves are useful only when they translate into longer, safer or more enjoyable dives. But if all you're after is bragging rights to having more air left over at the end of the dive, maybe you're missing the point behind diving in the first place.

Having a lot of air by the end of the dive is not the ultimate proof of diving excellence that we sometimes make it. However, improving your air consumption often leads to longer (and may be deeper) dives. Here are some tips to help lower your consumption rate:

## Master buoyancy control

Stop moving underwater; just freeze. If you start to sink, then you are not neutrally buoyant. This is because your BCD is not adequately inflated. Believe it or not, adjusting your buoyancy by using the BCD is far less air-consuming than adjusting your depth level in the water column by finning

and/or hand movements.



NO bicycling: Air cells in the BCD pulls up at the chest area. Compensation for poor trim takes effort, which translates into more air consumption

## Achieve horizontal trim

Normally, a diver using a bit more-than-needed weight in a conventional BCD won't be able to achieve a horizontal trim. The weight around the waist pulls down, while the air cells in the BCD pulls up at the chest area. Compensation for poor trim takes effort, which translates into more air consumption.

Minimize the "hole in the water" made by your body. The less water you have to shove aside, the less energy and air you have to consume. One way is to reduce the amount of weight you carry because extra weight needs extra BCD inflation to lift it. A more inflated BCD pushes aside more water. Another way to shove aside less water is to trim your body in a horizontal position so that your legs are following through the hole made by your shoulders and not enlarging it. Many divers do, in fact, swim with their heads up and fins down.

Wings and integrated weight pockets help achieve a good trim, but you can still get the right trim and weight while using a conventional BCD.

## Get fitter

The fitter you are, your heart returns to the normal rate the quicker after exercise. If you have to swim a long distance to reach a dive site, or carry your kit a long way, you will start the dive at elevated breathing and heart rates. Actually, some virgin dive sites like Ras Abu Galoum north of Dahab, Red Sea,

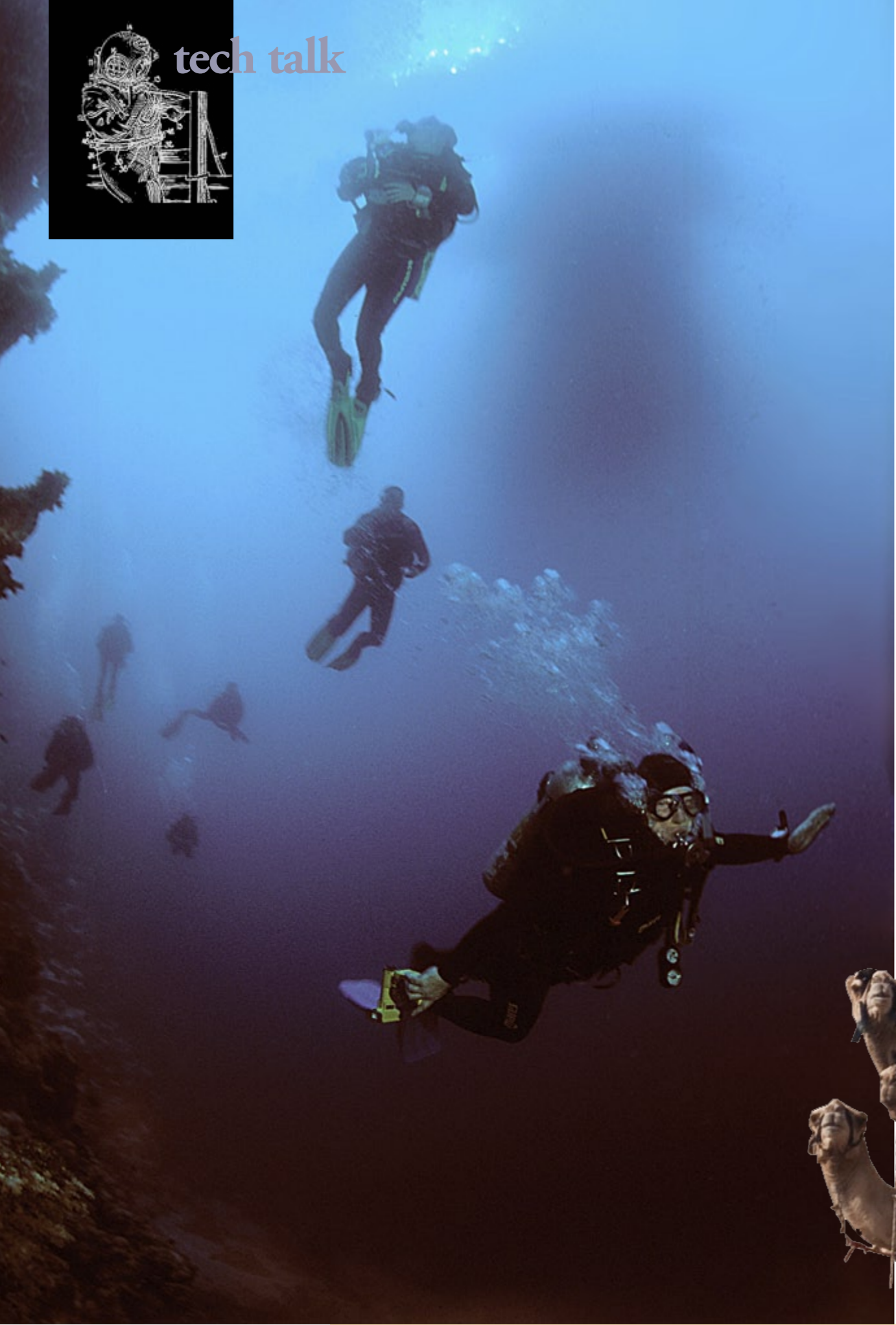
the quicker returns to the normal breathing pattern faster than a less fit one.

Egypt, require a 90-minute camel ride! After a period of exercise, a fitter person returns to the normal breathing pattern faster than a less fit one.

## Practice finning

Do lots of slow lengths instead of few rapid ones. This will help the right muscles develop. Try and do as many lengths underwater as you can, and take into consideration that underwater finning is not the same as surface finning. There are plenty of underwater kicks to choose from. However, the majority of divers use either the frog kick or the flutter kick. An excellent piece of advice is to use the "modified" flutter and/or frog kicks. The modified version





## Good on Air

involves bending the knees 90 degrees and doing smaller, slower lengths.

### Breathe deeply

It's somewhat against basic logic. Why does breathing deeply make a limited air supply last longer?

Some divers think that breathing from the top half of their lungs is a means of saving air. They take short, shallow breaths, but unfortunately they end up wasting air instead of saving it. Actually, what they're doing is influencing more carbon dioxide build-up. And believe it or not, it's the need to blow out excess carbon dioxide not the lack of oxygen that urges you take the next breath.

Short, shallow breaths leave your lungs filled with excess carbon dioxide. As this carbon dioxide urgently needs to get out, you're obliged to take another breath although you don't need the oxygen yet.

### Do not skip a breath

On the other hand, don't exaggerate the slow, deep breaths to the point of

hyperventilation, which can lead to fainting due to suppressing the urge to breathe. The best breathing pattern is to take slow, deep inhales followed by slow, complete exhales. Do not play with your breathing pattern. Breathe normally and don't hold your breath. It is worth noting that in some circumstances when perfectly-neutral buoyancy is ultimately important, for instance when you're hovering over some fragile corals for a photo, this best breathing pattern may disturb your buoyancy. You'll have to change it for a short while and take shorter, quicker breaths.

### Check your gear

Check your equipment for air leaks. Often, you can't see the leaks yourself. A little bubbling from your tank's O-ring or your BCD inflator can sum up to several bars/PSIs over an hour's dive. A free-flowing octopus occasionally dumps air a lot faster. Detune it if you can, and mount it with the mouth-piece facing down. Don't detune your primary regulator though. Detuning

your primary regulator leads to increasing your breathing work. This increase leads to an elevated carbon dioxide production rate, which leads to accelerating your breathing rate and eventually translates into wasting more air.

*Asser Salama is a mechanical power engineer, an MBA degree holder, and a TDI/SDI/CMAS instructor. He teaches both recreational and technical diving courses and organizes trips all over the Egyptian Red Sea. Salama is the current president of Red Sea Shadow, the largest online SCUBA diving community in Egypt. He enjoys writing and software development. Email Asser at [asser@red-sea-shadow.com](mailto:asser@red-sea-shadow.com). ■*

Some virgin dive sites like Ras Abu Galoum north of Dahab, Red Sea, Egypt, require a 90-minute camel ride! After a period of exercise, a fitter person returns to the normal breathing pattern faster than a less fit one





Edited by  
Bonnie McKenna



SCOTT BENSON / NOAA

## Proposed leatherback critical habitat

In response to Turtle Island Restoration Network's 2007 petition and 2009 lawsuit, NOAA has just announced its proposal to designate 70,600 square miles (182,853 square kilometers) offshore of California, Oregon and Washington as critical habitat for the leatherback sea turtle. The new protected area sets aside important jellyfish feeding areas and migratory routes as a safe haven from permanent ocean structures that inhibit migration and impact the jellyfish populations that leatherbacks feed on. ■

## Thousands of turtle eggs relocated

News from the Gulf of Mexico off the southern coast of the United States continues to threaten wild-life that depends on the Gulf for food and nesting areas.

Years of work to protect the nests of Loggerhead sea turtles along the Alabama coast are threatened. Now, officials are digging up the approximately 700 nests on the Alabama and Florida beaches, packing the eggs in Styrofoam boxes and flying them to a facility in eastern Florida where they can mature. Once the eggs have hatched, the young turtles will be released in darkness on Florida's Atlantic coast. Translocation of nests on this scale has never been attempted before.

Sea turtles that hatch in the northern Gulf of Mexico typically spend a few months near the coast and then eventually enter the Loop Current to make their way into the Atlantic. According to the U.S. Fish and Wildlife Services, the National Oceanic and Atmospheric Administrations National Marine Fisheries Service, and the Florida Fish and Wildlife Conservation Commission, approximately 50,000 hatchlings could be lost to the oil.

Officials plan to dig up the eggs at about day 50 of their incubation, after their sex has been determined. Workers will be trained in special egg han-



U.S. NATIONAL PARK SERVICE

dling techniques. Workers have to be careful not to turn the eggs over or roll them so as not to disturb the membranes that connect the embryo to the shell and cause them to die.

Some of the concerns regarding egg relocation include a change in the genetic makeup of the east coast Loggerheads, which are not identical to those found in the Gulf of Mexico, and the breeding populations of Loggerheads will be depleted in the Gulf.

Smaller scale relocations of Kemp's ridley turtles have been successful. This will be a wait and see operation. Thane Wibbels, a herpetologist at the University of Alabama said, "You are either reactive or proactive, and if you're reactive, it's too late." ■

## How can accidental captures of loggerhead turtles be reduced?

Spanish scientists have studied the interactions between loggerhead turtles (*Caretta caretta*) and fishing gear such as longline hooks used at the water's surface.

Populations of loggerheads are in decline all over the world, and particularly in the Mediterranean Sea where more than 20,000 turtles are accidentally caught each year. Finding responsible and sustainable fisheries solutions were one of the prime objectives of the research study.

The scientists used real commercial fisheries data taken by scientists on board fishing vessels. They found that using fish as bait reduced the incidental catch of the loggerheads, but impacted the swordfish yields. Stopping the use of small mollusks such as squid could not ensure the incidental catches of loggerheads would be prevented.

The methods proposed by the researchers did not involve modifying equipment, and could reduce the number of turtles caught while maintaining the fishermen's profits.

Most accidental catches happen during the day, more than 35 nautical miles from shore, and in the summer. The proposal, although untested, made by the scientists is to limit longline fishing during these times to drastically reduce the capture of turtles.



UKANDA / CREATIVE COMMONS

## Burning turtles alive

It has been reported that turtles caught in drag booms as boats circle large amounts of oil have been set afire.

The Sea Turtle Restoration Project has been successful in obtaining a moratorium on burning the oil until the turtles have been removed. ■

## Gulf oil leak threatens turtle hatchlings' food

Scientists warn that turtle hatchlings could choke on tiny tar balls as they feed off the Sargassum seaweed along the Gulf Stream. Or, the oil could poison and kill the food source before the hatchling could reach it. If the tar and oil foul the algae, the turtles could mistake the toxic bits for their favorite food.

"All of these effects are speculative," said Blair Witherington of the Florida Fish and Wildlife Commission, adding that scientists have not had much experience studying large oil spills. ■



Edited by  
Bonnie McKenna

## Natural gas threatens Australia's flatback turtles

Western Australia's flatback sea turtles are being threatened throughout their life cycle by natural gas projects. Satellite tracking shows that after nesting on Barrow Island off the coast near Onslow, flatbacks swim north along the coast into the Kimberley area to feed.

The sea turtles will lose their nesting area on Barrow Island due to the massive Chevron Gorgon natural gas plant. They will also face a major disruption of their feeding grounds near James Prices Point north of Broome if a proposed natural gas plant is sited there.

At the proposed natural gas plant at James Price Point, marine turtles have been sporadically studied but the research has never been published. Satellite tracking is the first concrete evidence of flatback activity. Broome's residents have photographed sea turtles and nesting tracks in the area. However, representatives from the petroleum company deny that any sea turtles nest near or on James Price Point.

The Turtle Island Restoration Network (TIRN) is calling on Chevron, the joint venture partners and the Australian government to halt natural gas development in the Northwest until research can fully study the environmental harm to marine turtles, whales, flora and fauna and human communities. TIRN is also encouraging the Western Australian government to release its draft Marine Turtle Recovery Plan, make public the marine turtle database, and to engage Australian and international sea turtle biologists to implement a long-term sea turtle protection and recovery plan to ensure the survival and prevent the extinction of Australia's flatback sea turtle.



U.S. NATIONAL PARK SERVICE

## Kemp's ridley sea turtles in the Gulf of Mexico

The recovery of Kemp's ridley sea turtles face a dramatic set-back as the massive oil spill from the Deepwater Horizon disaster effects coastal nesting beaches.

"I have great concerns for the environmental impact the spill will have on our fragile coast," said Dr Andre Landry of Texas A&M University's Sea Turtle and Fisheries Ecology Research Laboratory. "We

are entering the prime time of the ridley nesting season in which adult females will be in nearshore waters nesting three to four times every 14 to 21 days."

There are five species of endangered and threatened sea turtles in the Gulf, but the area of the spill encompasses one of the only Kemp's ridley foraging and migration routes to their last remain-

ing nesting beaches in Texas and Mexico. At least 33 dead or dying Kemp's ridley turtles have already washed up on shore, but scientists think these casualties are linked to shrimp trawl activities.

As the oil moves east toward Florida's beaches, the oil could impact the nesting areas for loggerheads and green sea turtles.

"This spill could not have come at a worst time for migrating and nesting Kemp's ridleys. I am outraged that shrimp trawling has increased in Louisiana in anticipation of an oil closure, their careless actions kill hundreds of endangered turtles each year," said Carole Allen, Gulf director of the Sea Turtle Restoration Project and founder of HEART (Help endangered Animals Ridley Turtles). ■



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## Turtles in Peril

A recent paper coauthored by Brian Wallace, science advisor at Conservation International, and colleagues from Duke University and San Diego University, suggests that fisheries bycatch may pose the biggest threat to marine turtle populations world-wide.

The study estimates that in the last 20 years, about 85,000 sea turtles have been reported as bycatch. However, due to massive under-reporting, by large and small fisheries, the actual bycatch is estimated to number in the millions.

Sea turtles are threatened by numerous factors, but fisheries bycatch is the most acute threat to sea turtle populations today.

The global decline of sea turtles threatens more than the turtles themselves; additionally, the bycatch also threatens poor fishing communities due to the loss of time and money repairing fishing gear and nets damaged by sea turtles and other bycatch species.

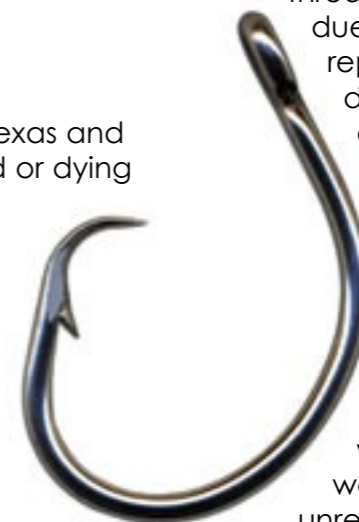
The authors of the study identified several regions that should be the highest priority for efforts to reduce sea turtle bycatch: the eastern Pacific, Mediterranean Sea and western Atlantic.

Ninety-nine percent of the world's fisheries, around the world, operate in these areas unreported, unmonitored and uncensored.

The study's authors recommend the adoption of turtle-friendly practices outlined by the UN's Food and Agriculture Organization including:

- Use of turtle exclusion devices (TEDs) on trawl nets
- Replacing J hooks with circle hooks
- Substituting squid bait with fish bait

The authors also suggest that consumers support seafood from responsible sources, which will encourage more sustainable practices. ■



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# turtle tales



## How sea turtle hatchlings use their flippers to move quickly on sand

After climbing out of their underground nest, baby turtles must move quickly and traverse a variety of terrains for several hundred feet to reach the ocean.

While the turtle's flippers are adapted for life in the water, their flippers enable excellent mobility over numerous obstacles and sand of varying moisture content and compaction.

According to Daniel Goldman, assistant professor of physics at Georgia Tech, "On hard-packed sand at the water's edge, the turtles push forward by digging a claw on their flipper into the ground so that they don't slip, and on loose sand they advance by pushing off against a solid region of sand that forms behind their flippers." ■



OPEN GAGE / CREATIVE COMMONS

## Loggerheads march to beat of own drum

*Increasingly threatened loggerheads follow their own paths in travel and eating.*

With loggerhead sea turtles in serious decline, researchers would like to know more about where the turtles go, and what they eat so they can better protect their habitats. A team from the Archie Carr Center for Sea Turtle Research, at the University of Florida, is reporting some surprising findings in the turtle's shells.

An analysis of the chemical elements found in the shells suggests that the turtles are remarkably individualistic in their range, diet or both. The findings are unexpected because loggerheads are known to swim thousands of miles and eat up to 80 types of prey.

The findings also shed light on the turtle's habits over a span of 12 years, at least three times as long as the longest study using satellite-tagged turtles.

Although the analysis revealed that the turtles were surprisingly different in their individual diets and travel, it did not reveal specific discrete food items or locations.

The findings need to be refined, but the research could help scientists and public policy makers find and protect specific areas of the open ocean or coastal waters where loggerheads congregate. Such protected area may be more urgent; on March 10, U.S. federal agencies proposed upgrading the turtle's status from "threatened" to "endangered" among the seven Atlantic and Pacific populations. ■




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Hatchlings race to the sea


..AND THE SECOND

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# photo & video

Edited by  
Peter Symes  
& Scott Bennett

*Commensal shrimp, Lembeh* — Being able to 'work' a subject is much more viable with digital photography. Once we have found the subject we can now spend much more time exploring the best angle to take the photograph; adjusting the lighting and tell the story of the subject much better. SPECS: F11; 100ASA, 60mm lens; twin Sea & Sea YS100 flash

Text and photos  
by Lawson Wood  
[www.lawsonwood.com](http://www.lawsonwood.com)

## Why Digital?

- There is no film to buy.
- No film to process.
- No storage issues with slides or scratching of the image through constant use.
- No copies of slides to be made or the same problems as above.
- Digital photography is instant.
- You can view your photographs whilst underwater and, depending on your skill with the equipment and subject matter, you can quickly improve your own photographic results and skill by correcting mistakes instantly, whilst still underwater.
- Very wide exposure range with great reproduction detail of shadows and highlights.
- All digital cameras respond well to low light conditions.
- Most cameras are compact and lightweight. (Although that can lead to camera shake—unless your camera or lenses are already fitted with an anti-camera shake device—for just a few dollars more!)
- Most cameras offer different resolution to allow you the option to take and store photographs in almost any format you want, this versatility also allows you to greatly increase the number of photographs that you can store on the camera's memory card.
- Some cameras offer 'live-view' screening and others also include sound and even digital video capabilities.



# Why Digital?

- All digital photographs can be shared much easier with friends and family via the Web.
- Digital slide show presentations are now within everyone's grasp as most computers include this technology in its hardware. We no longer have to lug huge projectors or reels of slides.
- The latest technological breakthroughs and upgrades are available to all types of digital cameras

including the 'point and shoot' models

- We use original photographs in ALL of our work. All of the time. All of your friend and clients also see the true photograph without the need to make duplicates.
- All duplicates are equal to the original photograph.
- Third party utilities and add-ons such as Photoshop work with all different manufacture of cameras.

But before we get into the picture-taking business, let us look at some of the jargon and explain what everyone else gets so excited about. Yep! Which format should I use to take my underwater photograph? Is it a RAW deal? do you get TIFFed off at the variety of options, or JPEGed out, as this is the only format your camera has?





The following are actually your only three options in saving your photographs. These choices are RAW, TIFF and JPEG (some cameras also include the option of saving in RAW and JPEG simultaneously).

**RAW** Virtually all types of cameras have this capability, and whilst many advocate its use, others do not. RAW isn't a single file format, as many believe. Rather, each camera manufacturer has its own preparatory RAW version, which is not compatible with other varieties of cameras. RAW is fairly self explanatory in that raw photographic data is recorded by the digital sensors with no processing having been applied by the camera. RAW is not the storage of "unprocessed" image files. Once you decide to shoot in RAW, there is very little that you can do to reverse the settings pre-ordained by your camera manufacturer. However, the beauty of RAW is that you are able to do a whole ton of post production such as altering the white balance, sharpness, colour saturation and, to some extent, even the exposure of the photograph.

**TIFF** This format originated in 1987 by a company called Aldus. Aldus pioneered computer graphics software, so

much so in fact, that they were bought by Adobe in 1994, which incorporated their systems into Photoshop (now regarded as the industry standard for photograph work). Tagged Image File Format (TIFF) has the great advantage of including electronic tags on the saved photograph, which allow for accessing any descriptive aspect of the photograph saved in this format including layers, objects, text or in fact any saved application or selection made to the photograph. These tags will also tell any other photographic application how to retrieve any recorded data on a TIFF saved photograph.

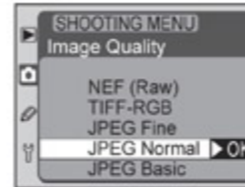
**JPEG** This photographic file term was the result of the first collaboration by the Joint Photographic Experts Group (JPEG) in the early 1990's to create an industry standard to allow the storage and compression of files without discarding too much information from the photograph. These files are able to be much smaller than could be achieved by TIFF, for example. This compression is designed to make photographic files more readable in a larger number of applications in a standard way, particularly for use on the World Wide Web. Basically the camera's computer selectively removes



## Why Digital?

### File Type and Compression: Image Quality

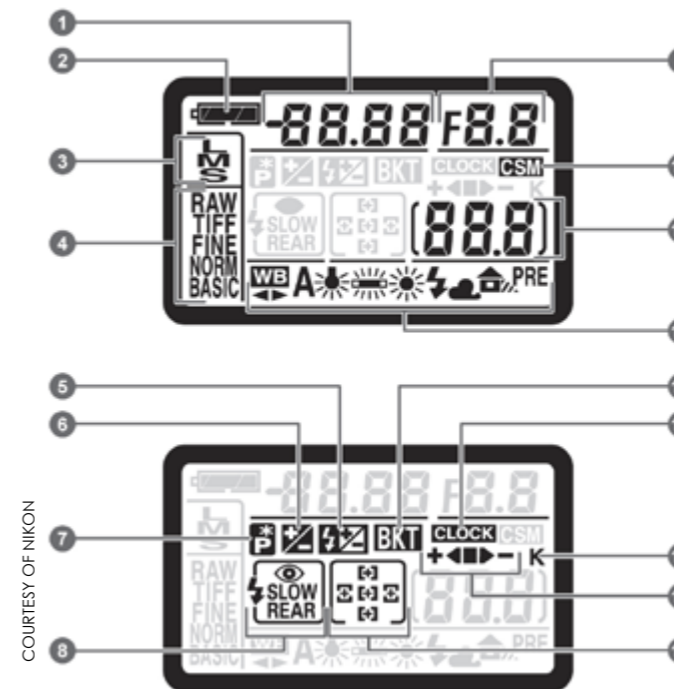
The **Image Quality** menu controls the file type and compression ratio used as photographs are saved to the memory card. The following options are available:



Option	Description
<b>NEF (Raw)</b>	Raw 12-bit data from the CCD are saved directly to the memory card in Nikon Electronic Image Format (NEF). NEF files can only be viewed in Nikon View 5 or Nikon Capture 3 (169). Two NEF modes are available: <ul style="list-style-type: none"> <li>• <b>NEF (Raw)</b> In this mode, NEF images are not compressed, reducing the time needed to process images before they are saved to the memory card but increasing file size.</li> <li>• <b>Comp. NEF (Raw)</b> In this mode, NEF images are compressed using a virtually "loss-less" algorithm that reduces file size by approximately fifty to sixty percent without affecting image quality. More time is required to process images before they are saved to the memory card (43).</li> </ul>
<b>TIFF-RGB</b>	Images are saved in uncompressed TIFF RGB at a color depth of eight bits per channel (24-bit color).
<b>JPEG Fine</b>	Images are saved in JPEG format at a compression ratio of roughly 1:4.
<b>JPEG Normal</b>	Images are saved in JPEG format at a compression ratio of roughly 1:8.
<b>JPEG Basic</b>	Images are saved in JPEG format at a compression ratio of roughly 1:16.

Your camera's manual should list the types of files and image qualities available through the use of your camera as well as a diagram (left) which helps to decipher the details on your camera's display screen

This coral goby, photographed at Marsa Alam in the Red Sea, is usually quite skittish; using a 105mm macro lens, I was able to get much closer without unduly stressing the subject. Once it was used to me, I was able to take a series of photographs on my digital camera which allowed me to get the best of the subject and still have plenty more memory to use on the rest of my dive. SPECS: F16; 100ASA, 105mm lens; twin Sea & Sea YS100 flash



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## photo & video

Mandarin fish photographed off Gangga Island only perform at dusk and divers are unable to use strong lights to illuminate the scene as the fish will just not perform. This is where digital photography really takes over as the camera's sensors are able to pick up just enough movement in the very low light to lock on and get the photograph in focus

parts of the image to squeeze into the compression algorithm. Personally, I would rather be in charge of that responsibility!

### What picture capture format should I use?

This choice is really up to you, depending on how you want to share the photographs or how you want to store your photographs. This will also impact the memory either in your camera or in your computer. Remember that big picture files require high processing speed and big storage

capabilities. The camera I use is able to record the photograph in both RAW and JPEG, so I use this setting as my default, as it allows me to archive my RAW files, select any photograph that needs work and then save that as a TIFF. I use the JPEG file for emails and as reference in my picture storage files.

A typical digital single lens reflex camera's manual will show you all of the readings that you will find in the camera's top display, including all of the options for taking your photograph.



Working in fresh water in the Scottish Highlands near a waterfall at the mouth of Loch Lomond, there was little or no light in the deep pool and with the water movement, it was very difficult to capture on film; however in the digital format it was much easier to capture



## Why Digital?

file, as these RAW files are in essence your 'Digital Negatives' and need to be protected.

**TIFF** Most cameras nowadays do not offer the TIFF option for taking photographs, but if you do have that option then there are a few considerations that make this format more than worthwhile. TIFF offers the highest quality image recording in a fairly standard format. The image, image use and subsequent re-use of any saved TIFF file is lossless. This means that you never lose

On the Shooting Menu located on the rear screen of my Nikon Camera the following formats are available under the heading of Image Quality. You will see just how many photographs each setting can take on an Extreme III 8GB San Disk Compact Flash memory card.

The file (right) is taken from a DSLR operating manual and shows the amount of compression in the various shooting

NEF (RAW)+JPEG Fine	313 frames
NEF (RAW)+JPEG Normal	378 frames
NEF (RAW)+JPEG Basic	422 frames
NEF (RAW)	480 frames
JPEG Fine	899 frames
JPEG Normal	1,700 frames
JPEG Basic	3,400 frames

modes, which equates to, basically, how much information you will lose between the difference of shooting in RAW and shooting in JPEG Basic.

**RAW** Firstly, if your camera has a RAW picture taking mode, then use it, forget the rest of the options until you want to store the photograph, re-use it, email it, improve it, or manipulate it. This setting stores so much raw digital information, it is your archive, it is the essence

of your photography, and if looked after properly, it will stand you in good stead for years to come. RAW format hardly needs explaining, it saves the raw electronic data in the simplest file format and allows you to do virtually anything you want with the photograph without losing any of

the original quality. In fact, it stores photographic information that you were not even aware of when taking the photograph! No matter how adept you are now at manipulating images, you will always improve, and then you will be able to go back to your original Digital Negative file and open and use photographs, which perhaps were once thought to be of no use or were beyond your learning curve.

The most obvious advantage is that RAW gives you the greatest flexibility to obtain a finished high quality photograph. The good news is that third-party utilities such as Photoshop include their own Adobe Camera RAW programme, which is compatible with your own specific camera's RAW format. Most professional photographers use RAW as their picture archive

any quality or information on your photograph when ever you re-use the file or manipulate it further. If you are happy with the TIFF format and happy with your camera and flash settings, then by leaving the camera set on TIFF will allow you to shoot and store high resolution photographs with a minimum of post production. Whenever I open up a RAW file and start to work on any photograph, I always save it as a TIFF, that way I can always come back to the original (if required), but I also have all of the changes that I made to the photograph saved on the TIFF file with no loss of any information whatsoever. On the other side of things, TIFF files are always larger than either a RAW file or JPEG and subsequently need more time to write to the memory card and soon use up all of the



memory available. Most serious photographers NEVER use this format for picture capture.

**JPEG** This photographic programme is undoubtedly the most popular format and for many users, this is THE only format worth using as it allows your photographs to be 'read' in any other third party utility and is ideal (through image compression) for use on the internet. JPEGs write to the memory card faster. The top of the range (or least compressed) JPEG file is certainly on a par with any TIFF file. But here is the problem: whenever you open a JPEG file, make any changes and then save it again as a JPEG, you will lose information as the file saving system is designed to compress and store the photographs with a minimum of fuss. The more times you open that file and make changes, then the more information you will lose from the photograph. If you are determined to work in JPEG format, then you must save any final change to your photograph as a TIFF. On the plus side, due to the compressed nature of the photograph, you can store many, many more photographs on your memory card than any other type of picture saving format.

### USB cable

You can connect your DSLR camera directly to your computer hard drive with the use of a USB cable.

Once you have taken the desired photographs, you will then want to transfer them and certainly look at your efforts on a large computer screen. Whenever you do any work on a photograph, this is called your WORKFLOW. My initial workflow would go through the following steps:

- Transfer picture file either direct from



the camera or via a memory card reader to the computer.

- Archive at least two copies of the file to redundant exterior hard drives.
- Copy each full photographic file also onto a DVD and store securely.
- Open photographs in Adobe Bridge (Use this as your digital lightbox).
- Make initial changes to your RAW files

in Bridge.

- Include all of your metadata onto each photograph.
- Once this is done, open any particular photograph that you want to work further on, in Photoshop (at the time of writing I use

Shipwrecks are the other perfect subject for digital camera work, this 'blockship' in Scapa Flow in the Orkney Islands is only able to be photographed at slack tide and the water is usually green in colour. However by taking the photograph with monochrome in mind, the RAW setting on the digital camera was able to collect all of the information necessary to allow me to manipulate the subject further

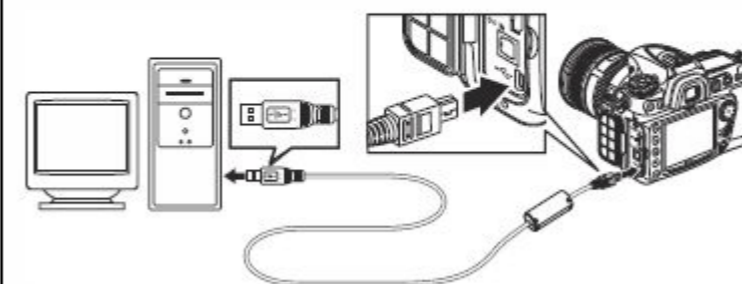
Photoshop CS3)

- Further enhance, change, sharpen, manipulate, add text or whatever to picture file.
- Include further metadata into the File Info folder for each photograph.
- Save one copy as a Photoshop PSD File.
- Save second copy as a TIFF.
- Save the JPEG version of the same photograph for your catalogue and sharing in other formats, particularly on the WEB.

*Lawson was raised in the Scottish east coast fishing town of Eyemouth and spent his youth exploring the rock pools and shallow seas before learning to Scuba Dive at the tender age of 11. Now over 44 years later, Lawson has been fortunate to make his passion his career and has authored and co-authored over 45 books, mainly on our underwater world. Lawson is a founding member of the Marine Conservation Society; founder of the first Marine Reserve at St. Abbs in Scotland and made photographic history by becoming the first person to be a Fellow of the Royal Photographic Society and Fellow of the British Institute of Professional Photographers solely for underwater photography. ■*

### Connect the USB cable.

Connect the USB cable as shown. Do not use force or attempt to insert the connectors at an angle.



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## New Sea & Sea housing for Canon 500/550D

Sea & Sea has announced the new RDX-550D housing for Canon's popular Rebel T1i/500D and Rebel T2i/550D cameras. The polycarbonate housing accepts ports from Sea & Sea RDX, NX and CX systems, and allows for fiber optic slave and wired TTL lighting functions. Most camera functions are accessible and operable underwater. For dedicated TTL, one YS converter connector is a standard feature with the housing. The Sea & Sea Port lock system prevents an attached port from loosening while in use, while dual locking latches to prevent accidental release of housing back. An early July release date is planned. [Seaandsea.com](http://Seaandsea.com)



## NA-R200 for Nikon SB-R200 flash

The NA-R200 housing is for Nikon wireless speedlight SB-R200. Machined from high-grade aluminum alloy and treated with corrosion resistant coating, the housing is compatible with the Nikon Creative Lighting System. Despite its compact size, the speedlight utilizes Nikon i-TTL technology, allowing exposure compensation of individual speedlight output. In i-TTL mode, each speedlight emits its own monitor pre-flash, with actual flash output level adjusted by the camera. Measuring the flash illumination reflected back from the subject, the result is a lighting system far more accurate and flexible than conventional solutions. The build-in pop-up flash of the Nikon CLS-compatible camera can be used as a commander to send out i-TTL commands to two speedlight via the two optical bulkheads on Nauticam housings. [www.nauticam.com](http://www.nauticam.com)



## Nauticam White Balance Port

Nauticam's white balance port is the first of its kind, providing easy calibration of white balance settings underwater. Featuring a built in translucent white board, the setting process is comparable to using a grey/white reference card on land. Close the iris under the white balance setting function of the camera, point to the incident light and take a reference shot. Once the camera color temperature is locked in, open up the iris and take the photo. The 8.5 inches dimension can accommodate large diameter wide angle and fish eye lens to prevent cropped corners from happening.

## Epoque EHD-900Ai Housing

UK company Cameras Underwater announces the Epoque EHD-900Ai, the newest in its line of high quality, affordable camera and underwater housing sets. With a silver finish, the Epoque EHD-900Ai is a 9-mega pixel compact camera that uses CMOS technology for great quality photos with low power consumption. Rated to depths of up to 45 metres (150 feet), it features a 3x (35-105mm equivalent), f/3 – f/5.6, optical zoom lens, 2.4 inch LCD screen, macro mode and a focal range of 30cm to infinity. For added versatility, a 55mm (M55) port thread is included for additional wet lenses and filters. Available now at a retail price of GB£199.99 complete with a 2GB SD card. [Camerasunderwater.co.uk](http://Camerasunderwater.co.uk)



## Underwater housing for Leica M8

Leica has announced the specs of its underwater housing for its M8 camera. Featuring the company's legendary high standards of quality, the durable aluminium construction weighs in at a mere 100g with camera underwater. Most camera functions can be accessed through the housing, including full menu controls. The lighting window is an Acrylic window prism providing approximately 60 percent coverage. External flash synchronization utilizes the standard Nikonos 5-pin type. Also included are spare o-ring, fluid to remove silicone grease ring and silicon gel. While small in size, the price is hefty at approximately 6,000 Euros.



## Sola 600

Sola is smaller, lighter and longer-running than anything in its class, writes Light & Motion. It is literally half the weight and size of its nearest competitor with better run time, beam pattern and power. It is completely sealed and factory depth tested before shipment and has no penetrations through the body. The magnetic tap switch has three white light output levels, or tap back for 200 lumens of red light, which is great for focusing without scaring critters up close.

Light & Motion



## Gobi for Sony or Panasonic

BS Kinetics has developed the new universal underwater casing called, "Gobi". With camcorders continuously shrinking in size, the rapid model changes and the stringent air traffic rules are causes for new approaches for underwater casings. These approaches relating to size, weight, universal use, special adaptations to the cameras and customer requests are implemented with this underwater casing. [www.bskinetics.com](http://www.bskinetics.com)

## Adobe Camera Raw 6.1 'Release Candidate' Available for Download

Adobe has released a downloadable Camera Raw 6.1 'release candidate' for those wishing to test the new pre-release version. The software features new lens correction functionality that can apply profile-based corrections to accommodate geometric distortions, chromatic aberration and lens vignette effects. Manual corrections for geometric distortion as well as vertical and horizontal perspective transforms are also available. A handful of lens profiles are included for automatic correction and more can be created with the Adobe Lens Profile Creator. ■

# 37<sup>e</sup> FESTIVAL MONDIAL

# DE L'IMAGE SOUS-MARINE



Tania LIUBAVITSEVA, 12 ans, Saramak, Russie

## PALAIS DU PHARO MARSEILLE

27-31 octobre 2010



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*Unique Dive Site*

Text and photos by  
Joseph C. Dovala  
[www.jcdovala.com](http://www.jcdovala.com)

The sun was still high in the California sky as the Grumman Goose Flying Boat revved up for take-off. Onboard were four men, three passengers and the pilot, heading back to the mainland from Avalon, Catalina Island, on 17 September 1979. Conditions were calm, but as the old workhorse reached take-off speed, something gave way and they lost all power. The plane quickly turned upside down and plunged heavily back into the cold Pacific. The Goose nearly broke in two, yet amazingly, no one died initially from the impact.

# The Sunken Goose

It doesn't seem possible anyone could have survived the violence of the crash of the Goose





Diver Joe Tezak checking out the port engine and intact propeller

## Sunken Goose

no exception, GPS numbers can be “worth their weight in gold.” Some folks had a general idea where it was, but the depth made casual searching impractical.

Members of the SoCal TecDiver's Club chartered the dive boat Seabass out of San Pedro. They use this tech-friendly boat quite often. The skipper had a general idea where the plane might lie but not specifics. With the more or less known depth, search teams used a simple depth contour search and within 20 minutes discovered the Goose's resting place.

With the GPS numbers now

in hand it was an easy jaunt at will to the site. For a deeper dive off California you couldn't ask for a better location. It's very close to shore and just east of Avalon Harbor, next to the heliport. In fact, you can count on a Bell jet turbine helicopter making a loud low pass right over you during their landing.

### Diving the Goose

The water conditions are almost always outstanding. Good visibility at depth; maybe dark because of plankton in the surface layers but clear water on the bottom. Currents can be a problem,

as well as a fair amount of boat traffic, so getting blown off and having to do a free wheeling deco isn't the best idea in these parts. Nevertheless, I've always had very good diving here.

When the Goose materializes out of the blue-green murk, my first thought is, no way could anyone have survived this crash. The passenger compartment is completely folded over back on itself. It looks like an angry child grabbed his model fore and aft and then broke it in two.

Even with helium it takes awhile before you mentally can straighten out the tortured

In a matter of seconds, Larry Gilman, a 27-year-old construction worker, pulled his 52-year-old father, O. T. Gilman, from the tangled wreckage. Larry then went back in to yank out the unconscious pilot, Vern McGee, 54, from what was left of the cockpit. Larry then went in a third time to locate the last man in the snarled passenger compartment but was unsuccessful. Both he and his father O. T. then began administering first aid to the badly injured McGee on the amphibian's wing.

It was plain to see the mangled

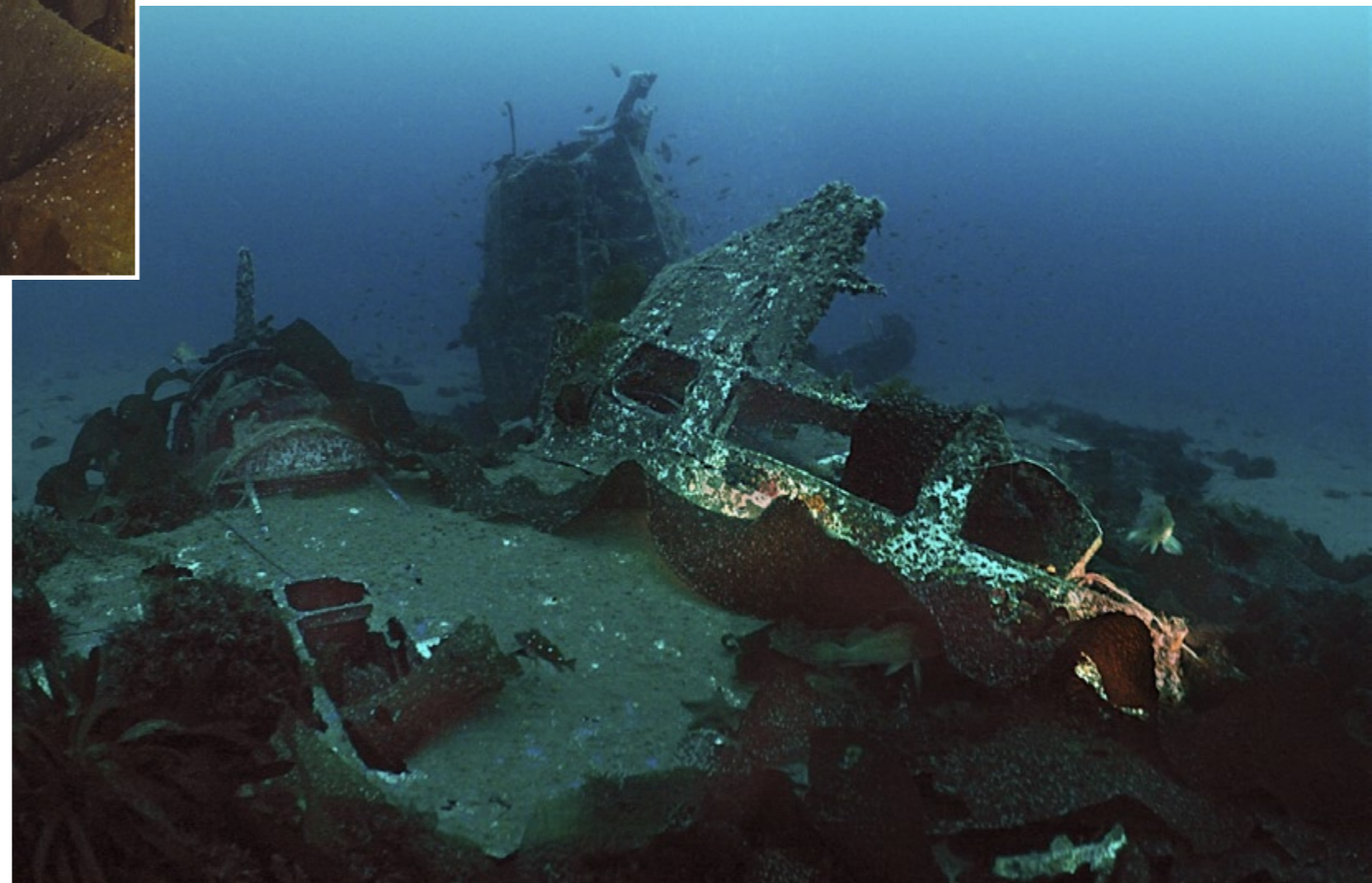
former Flying Boat was going down to the bottom quite soon. A private motor yacht sped up to the scene, and the three shook up men transferred over just as the plane was swallowed up by the sea. The pilot was airlifted to the mainland, and the father and son, who refused medical check ups, retired to a bar in Avalon. A Sheriff's deputy finally found them hours later and “convinced” them to go to the Avalon hospital for a check up.

Only a couple of hours after the crash, divers made the 225 foot plunge to the Goose's remains but did not find the

other 33 year old passenger. He was never found. Soon after this tragedy, which was the second fatal crash in less than a year, Catalina Airlines folded up shop, and the Grumman Goose Flying Boat era to Catalina Island came to an end. Few people knew about the wreckage, and fewer still, knew exactly where it was.

### Finding the Goose

My connections with the old Goose started with a charter group who wanted to find the plane's whereabouts. As in many places, California is



Part of the passenger compartment laying on a wing

# wreck rap

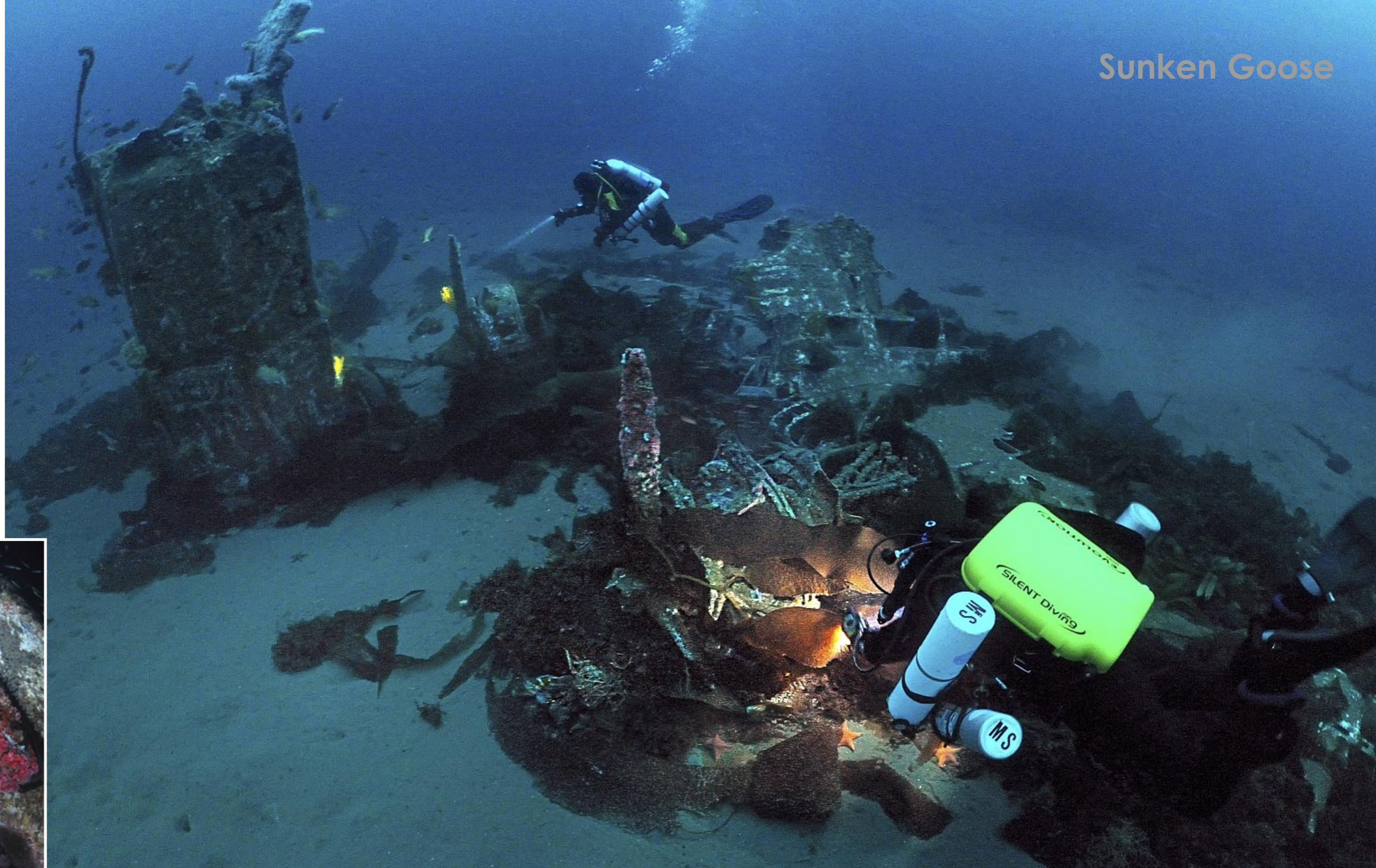


Divers Mike Stevens and Joe Tezak explore both Pratt & Whitney radial engines

BELOW: Inside the twisted remains

aircraft. Though separated from the fuselage, the wing is somewhat intact with the propellers unbent—proving they weren't spinning. Many of the surfaces still have red and blue paint on them. The tires are still recognizable, as are some of the stabilizer control surfaces. Airplane parts are scattered to and fro, and there's a small section of fuselage off the main wreckage that could've been part of the cockpit.

It generally takes two dives to fully explore the crash site. While on a sandy bottom, the few rocks and plane components now provide substrate for kelps, especially Laminaria. These large



## Sunken Goose

bladed algae can partially obscure the radial engines depending on bottom currents. Other detritus builds up periodically against other sections as well.

Photographically, she's a tough one. Other than the propellers, there isn't much that looks "aircrafty". The fuselage is so badly twisted that only a very small angle looks like she once belonged in the air. Even though the

water is usually clear, the darkness makes for considerable difficulty to get anything other than strobe-lighted-black-background "night" pics. Long exposures and the new high ISO cameras rule on this one.

As underwater photographers we have little time to set up shots; on these extra deep immersions the clock is ticking even faster. Any work with a model

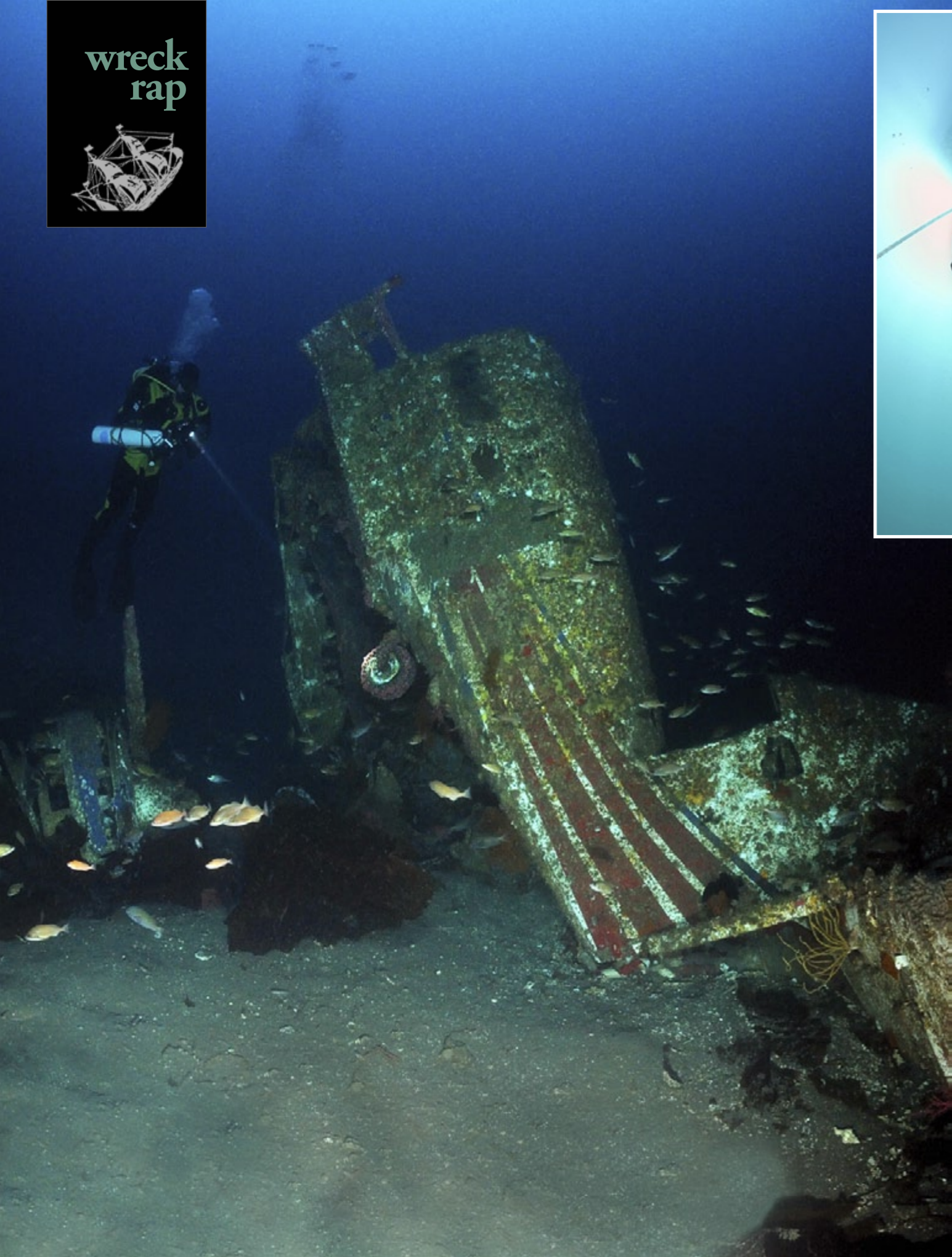
has to be talked out in detail before the dive. You also don't get much of a chance to mess around with camera settings. I try to anticipate f-stops and shutter speed on the surface. Admittedly, this takes experience but with digital the learning curve is less steep.

It took three dives on this flying boat to get several shots I liked. Much of the

effort was trying to get clear images without the night background look. The other issue was primarily dialing in the right amount of ISO. While the high ISO cameras do extremely well in air, water physics throws a lot of curves at you; so it isn't just a matter of cranking up the sensitivity.

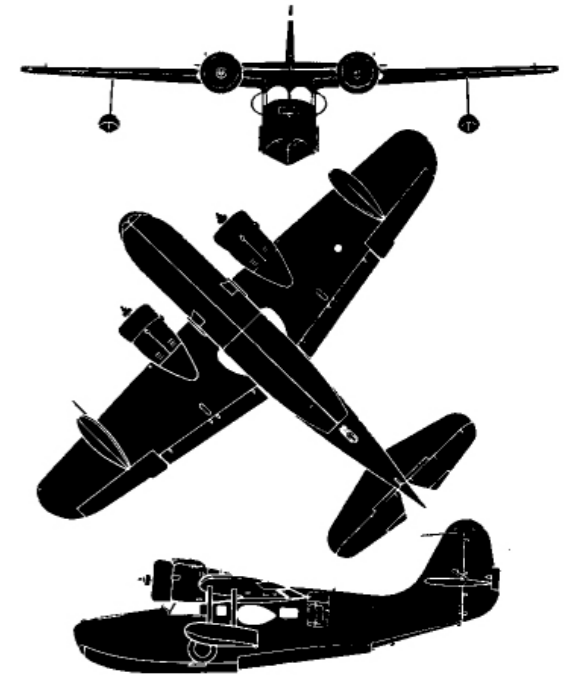
Image noise is a function of many variables underwater besides available





Topside support swimmer, Kevin Lane, checks on divers, Joe Tezak, Mike Stevens

## Sunken Goose



Silhouettes of the plane intact

light. Type of suspended particles, temperature, and "color" of the water all seem to play a role.

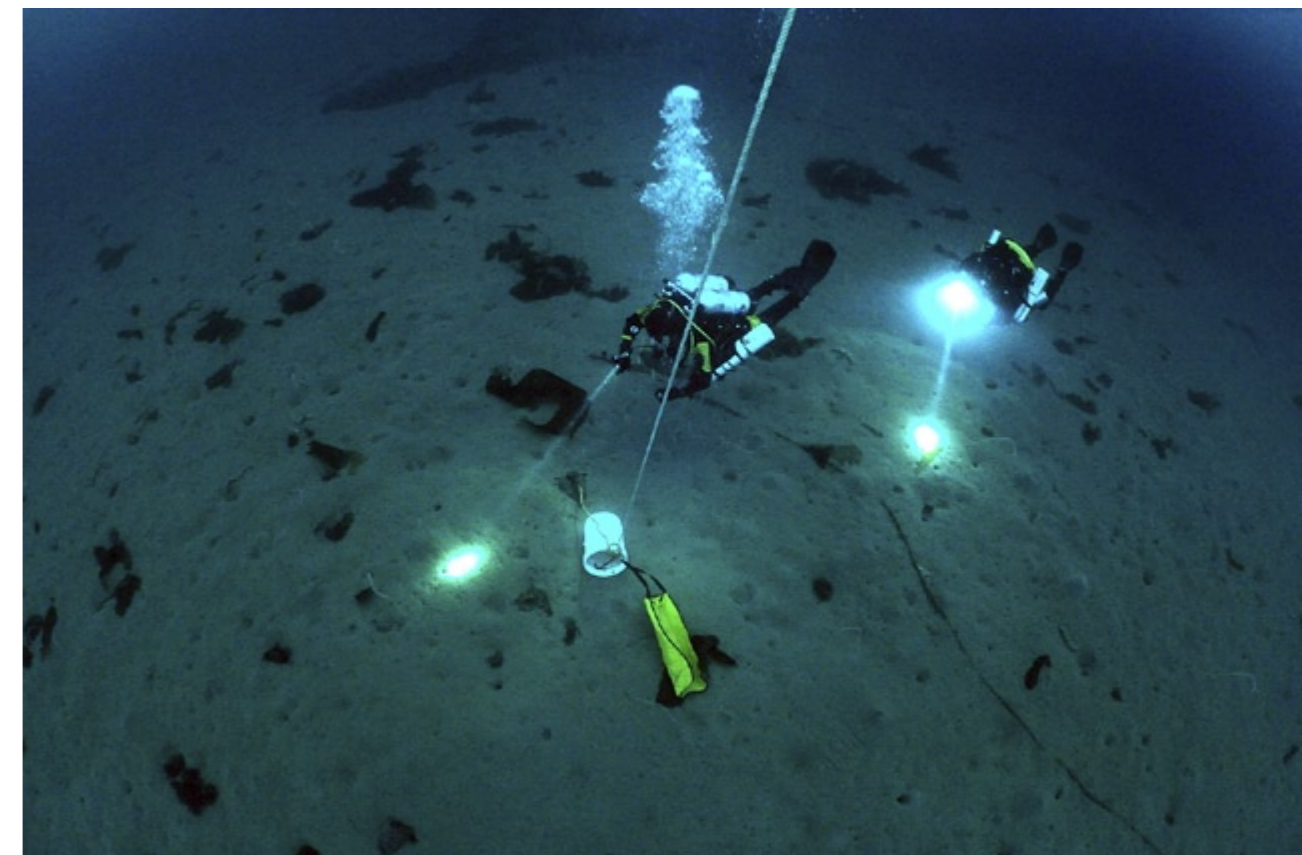
Whenever I dive on "artificial reefs", even small ones like this, it always amazes me how many marine critters are cruising around. The wreckage is now home to blacksmith, rockfish and lingcod. None of the fish are that big, so hopefully the clowns with the spear guns will stay away. Due to the depth, this old air jalopy enjoys a fair amount of anonymity. It's quite fragile though, and can be heavily damaged by careless or greedy individuals. There's no need to dig around as nothing remains to salvage. One also has to be careful when anchoring or dropping a down line. The old Goose does make a fine

extended range dive. The relatively easy diving conditions along with a bit of colorful history make it well worth the gas.

*Joseph Dovala is an internation-*

*ally published dive writer and photographer with a background in the U.S. Coast Guard, ocean technology and molecular bio-logy. Visit:*

**[www.jcdovala.com](http://www.jcdovala.com)** ■



Divers Mike Stevens and Joe Tezak return to the temporary mooring line

Diver Joe Tezak descends on folded main fuselage



# Maximo Laura Tapestry



P O R T F O L I O



*Presencia de la Diosa del Agua,*  
by Maximo Laura. Tapestry  
weaving, 120 x 100 cm



*GS: Tell us about yourself, your background and how you became an artist and chose the medium in which you work.*

ML: I am a passionate weaver that always accomplishes my works of art with love. I was born in the Andes Mountains of Peru where, as a child, I discovered a liking for drawing, paint-

ing, colors and textures. I learned how to weave from my father who was also a weaver. During my years in the university, through exploration of my artistic creativity and innovation, I found my calling as a weaver.

It has been 25 years since my first art exhibition, and today I have had more than 130 exhibitions in 26 countries around the globe. I am honored

PREVIOUS PAGE:  
*Sunset en Galápagos*  
by Maximo Laura  
Tapestry weaving  
100 x 210 cm  
LEFT: *Adoracion  
a la Medusa*  
by Maximo Laura  
Tapestry weaving  
160 x 120 cm

Edited by Gunild Symes  
All Images by Maximo  
Laura

**My work is nourished by symbols, stories, traditions, rituals, experiences, and by permanently returning to admire the iconography of ancestral world cultures, especially Peruvian culture – which are extraordinary and fascinating. These experiences inspire me to discover, explore and absorb contemporary visual arts, which exist lavishly, choosing the one that moves me and fits the direction of my visions of totem images, of symbolic characters and landscapes, and of my experience; developing ancestral patterns that are essentially Andean.**



*Cangrejo Rojo en un Día Soleado*  
by Maximo Laura. Tapestry  
weaving, 140 x 100 cm



to have been recognized and to have received awards for my works.

I like tapestries because they allow me to fulfill my dreams, my visions and to find my inner beauty. The creation of a tapestry is a journey for both tapestry and artist. The journey, from conception of the idea to the realization of the work, allows for an intimate

relationship between me and the tapestry. It is a pleasure to see an idea transform into a beautiful weaving.

*GS: Tell us about how the sea and the underwater world inspire you and your art.*

*ML: The sea is a powerful, immense, mysterious and beauti-*

*El Gran Tiburon Azul* by Maximo  
Laura Tapestry weaving  
145 x 120 cm

ful thing. Under the sea we can find a world that is unique and diverse from anything that can be found on land. The colors, shapes, textures and life forms of the sea are both impressive and fascinating. To attempt to capture the beauty of the sea presents an incredible opportunity and challenge for an artist, leaving one in silence with themselves, with marine life, and their imagination. Using the sea as inspiration for tapestry allows me to portray many incredible visions of life, harmony, balance and light in my art.

*GS: Are you a scuba diver, how did you become one and what are your favorite locations?*

*ML: I would love to scuba dive one day, but I have not had the opportunity yet. I imagine scuba diving fills a person with emotion after seeing many diverse and amazing things. I think that marine life is beautiful and spectacular. There are many places to dive in this world, and all have a different beauty to behold. Living now in Lima, the sea is one of my favorite places, and I enjoy swimming very much.*

*GS: Tell us about your artistic process and the methods you use to create your artwork.*

*ML: I consider my tapestries works of art, and as I stated earlier, it is a journey that includes a variety of steps from the initial stages to completion. The process begins with an idea, which transforms itself into an image. The image must be sketched and processed into various drawings that will*



RIGHT: *Dos Peces Payasos* by Maximo Laura  
Tapestry weaving, 180 x 120 cm

BELOW: *El Gran Pez Manta Rojo con Sol de Verano*  
by Maximo Laura. Tapestry weaving, 100 x 120 cm



make up the series. Next, I paint each of the drawings, and if I decide to make one of the paintings into a tapestry, I need to re-draw them to actual scale. Once I have the full-sized drawing, I must prepare the technical characteristics, which include color, detail and texture. After carefully comparing the colors to those of the original painting, I can start on the loom. The

process of weaving can take from two weeks to many months depending on the size and complexity of the work. When the weaving is done, I hang the final product up for viewing. It is a long and slow process that requires infinite patience, and for me, an obsessive attention to color and detail.

GS: *Does your art have cultural, artistic,*

*political or ecological influences and how so?*

ML: My first series of tapestries, completed some 25 years ago, were strongly influenced by Peruvian culture. Many series, both past and present, have been influenced by the rich heritage of my ancestors. In the process of innovation and a search for original-

Maximo Laura

OUR NEXT ISSUE

SEPTEMBER 2010

*Have a Super Scuba Summer!*



*Tiburón Madre*, by Maximo Laura. Tapestry weaving, 150 x 120 cm  
The artist, Maximo Laura (top right)

ity and my own personal style, I draw inspiration from both the surrealist and impressionist movements. The artists from those movements, mainly those that focus on the use of color, symbols, light and the abstract, are those that inspire me most. In regards to the ecological influence on my art, that is a personal encounter. The exuberance, the majesty, the mysteriousness and richness of nature provokes gratitude from within as well as a celebration of life. That being said, I created a series dedicated to the Galapagos Islands, many examples of which have been included here.

*GS: Aside from the obvious inspiration of the beauty and mystery of the Galapagos, what were your personal inspirations or insights behind the Galapagos series?*

ML: This collection was made especially considering the Centenary of Galapagos Island. These islands are a very important reserve to life and humanity. Likewise, it allowed me to freely recreate the sea life with forms and colors. What I like so much.

*GS: Why art? Tell us why you think art is important to our world today.*

ML: Art in humanity has synthesized its rhythms, myths, visions, dreams and ambitions and has explored a world of beauty across all time. In the past and today, art serves as a way to



find both inner and outer beauty. It is so important that art can influence all aspects of daily life, including politics, culture, history, beliefs, myths, religion and more. My artwork in this context serves as a small effort to affect change in the viewer and in the world.

*GS: Anything else you would like to tell our readers?*

ML: The world and our lives hold an immense richness. Each of us has an inner beauty, and all that is missing is the discovery of our artistic side. Whether it is through creation or observation of art, we grow closer to our human essence, which is peace, silence and balance. I invite you to join me in sharing this passion that comes from my heart.

*GS: How can readers contact you and order artwork directly from you?*

ML: Please visit my website at [www.maximolaura.com](http://www.maximolaura.com). People can also find me on Twitter at: [www.facebook.com/maximolaura](http://www.facebook.com/maximolaura). ■



ANDY MURCH



GÖRAN EHLMÉ



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