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Austria Freshwater Diving

British Columbia
Pavillion Lake



Profile
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Toribiong

MICRONESIA

Palau

Grey Nurse
Sharks

UWPhoto

Preparation

Portfolio

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COVER PHOTO: *Freshwater diving and fish platter in Grubsee, Austria*, by Wolfgang Pölzer

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Diver in Fernsteinsee, with red filter, Austria. Photo by Wolfgang Pölzer



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Learn from experience Formula One Driving

Editorial

Formula one race driving used to be a very dangerous sport with drivers being frequently killed or seriously injured in dramatic accidents, which were broadcast all over the world. I suppose it is still a risky occupation and spectacular accidents do still happen with bits and pieces flying all over, clearly transmitted across the globe in HD.

But nowadays, more often than not, drivers climb out of their, often otherwise, completely crumpled vehicles, suffering little more injuries than a dented ego. It never ceases to amaze me to see something of blood and flesh crawl out the inside of a smoking piece of crumpled metal and carbon fiber.

But thanks to modern technology and safety measures, such as the carbon reinforced mono-coques, that is exactly what they do. Well... mostly.

But what does that have to do with diving, if anything, you may ask? A lot.

Technical diving represents the same kind of technological forefront and developmental hotbed for new ideas, inventions and techniques, as Formula One (F1) does in the motoring industry. Many of the inventions and safety measures that are now

commonplace on regular cars were first invented in F1, such as ABS brakes and traction control, to name a few, which are now standard and taken for granted.

As recreational divers, most of us are not meant to also go down the road of technical diving—not by a far cry—though, for a minority, it is a natural progression and/or an irresistible challenge. But in the same manner as ordinary drivers, both benefit from what goes on in F1 and maybe also feel inspired. Regular divers also benefit from experience and knowledge gained in technical diving. And therefore, we should look closer at what technical divers do and how they go about doing their thing.

This is also why technical diving is a permanent column in this magazine, even though we are not a magazine for technical divers (though we hope they enjoy the magazine for other reasons, too).

The technical articles are meant as inspiration

and tools for better diving in general and to help those who aim to improve their skills move into these areas with some guidance and inspiration.

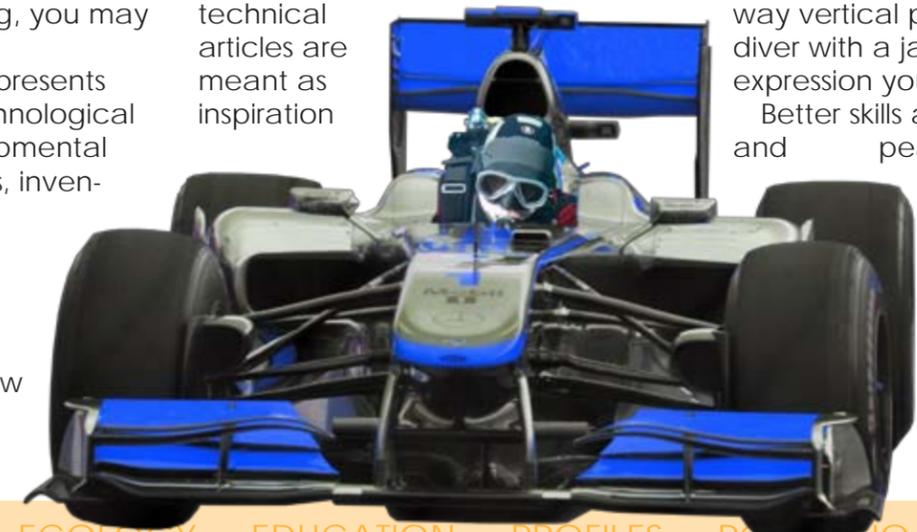
Technical diving as such comes with a very different risk level, and the requirements for skills, diligence and discipline are much higher. So, it is clearly not anything we can advocate in this forum. That is a personal choice.

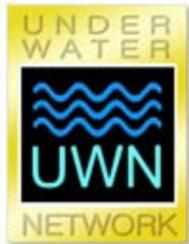
However, we can all become not only better and safer divers by adopting some of the practices and mind set of technical divers, but above all, we can have more enjoyable experiences in the water and more fulfilling encounters with wildlife in our gear while our technique is optimized. Just think of the last almost out-of-breath and half-way vertical pedaling novice diver with a jaw-clenched expression you saw.

Better skills also bring ease and peace of mind, even on simple shallow dives.

Maximise the fun, minimize the risk

— Peter Symes, Editor-in-Chief





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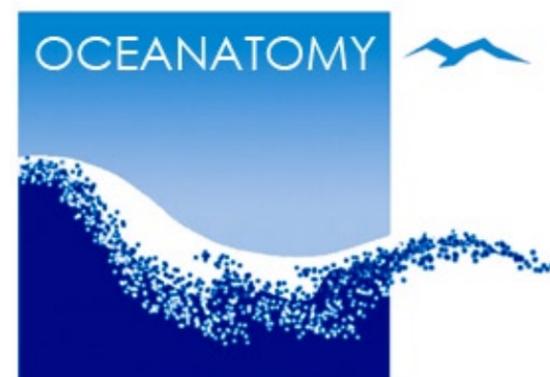
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X-ray mag

News edited
by Peter Symes
& Scott Bennett

Fresh off the cart NEWS

"I know there have been fish kills reported in state waters, but I think they have determined they weren't a result of the oil spill."



Scientists in dispute over oil spill effects

Over six months after the start of the BP oil spill in the Gulf of Mexico, views and data of its aftermath seem to vary tremendously depending on the source. There is new evidence that massive amounts of crude oil are sitting at the bottom of the Gulf of Mexico, a finding that could further undermine the U.S. government's insistence that most of the oil spill has been cleaned up or evaporated.

"The oil is not gone. It's in places where nobody has looked for it."

Resources added, "As far as wildlife, we have not observed or pinpointed any mortality in Alabama state waters of any fin fish that could be attributed directly to oil. We had observed a fish kill throughout the event when there was oil in the area or offshore. But we attributed those mostly to natural phenomenon."

The number of fish may be higher than ever according to Darrell Carpenter, president of the Louisiana Charter Boat Association and owner of Reels Screammers Guide Service in Jefferson Parish. Still, there could be long-term effects. "The fish are off the charts. There are no fewer fish. There are more fish, because they've been un-harassed all summer. There are more and bigger fish," Carpenter said. "The only uncertainty is all the biological science. The wildcard is fish internal organs, did their eggs

dence the spill killed any fish and captured commercial fish passed testing by multiple government agencies. "In federal waters, I can tell you, there haven't been any fish kills reported that are linked to the oil spill," stated Christine Patrick, spokeswoman for the National Oceanic and Atmospheric Administration (NOAA). "I know there have been fish kills reported in state waters, but I think they have determined they weren't a result of the oil spill." Fish have died for seasonal related reasons, said Bo Boehringer, spokesman for the Louisiana Department of Wildlife and Fisheries. "We've investigated fish kills, but none have yet been tied to oil impacts."

Kevin Anson, chief biologist for Marine Resources Division of the Alabama Department of Conservation and Natural

Dr Samantha Joye of the Department of Marine Sciences at the University of Georgia described a centimetres-thick "layer of flocculent, sedimented oil" about 25 km from the ruptured BP wellhead. "The oil is not gone. It's in places where nobody has looked for it," she said.

In August, scientists from the Woods Hole Oceanographic Institution (WHOI) scientists mapped and confirmed the origin of a large, underwater hydrocarbon plume in the Gulf comprised of mixed oil and water measuring 1.2 miles wide, 22 miles long, 650 feet high and 650 feet high. The river of hydrocarbons is currently headed southwest, towards Mexico's coastline.

Persistent

According to scientists, the plume's concentrations of toxic chemicals are dispersing as they travel and a combination of

cold water and high pressure are preventing the mix from coming to the surface. However the full impact of these deep-water plumes is not yet understood. The plume has revealed that the oil "is persisting for longer periods than we would have expected," said Richard Camilli, chief scientist on the two-week expedition.

Not degraded

Richard Camilli of WHOI's Applied Ocean Physics and Engineering Department, chief scientist of the cruise and lead author of the paper. "Many people speculated that subsurface oil droplets were being easily biodegraded" stated Camilli. "Well, we didn't find that. We found it was still there."

No fish kills reported

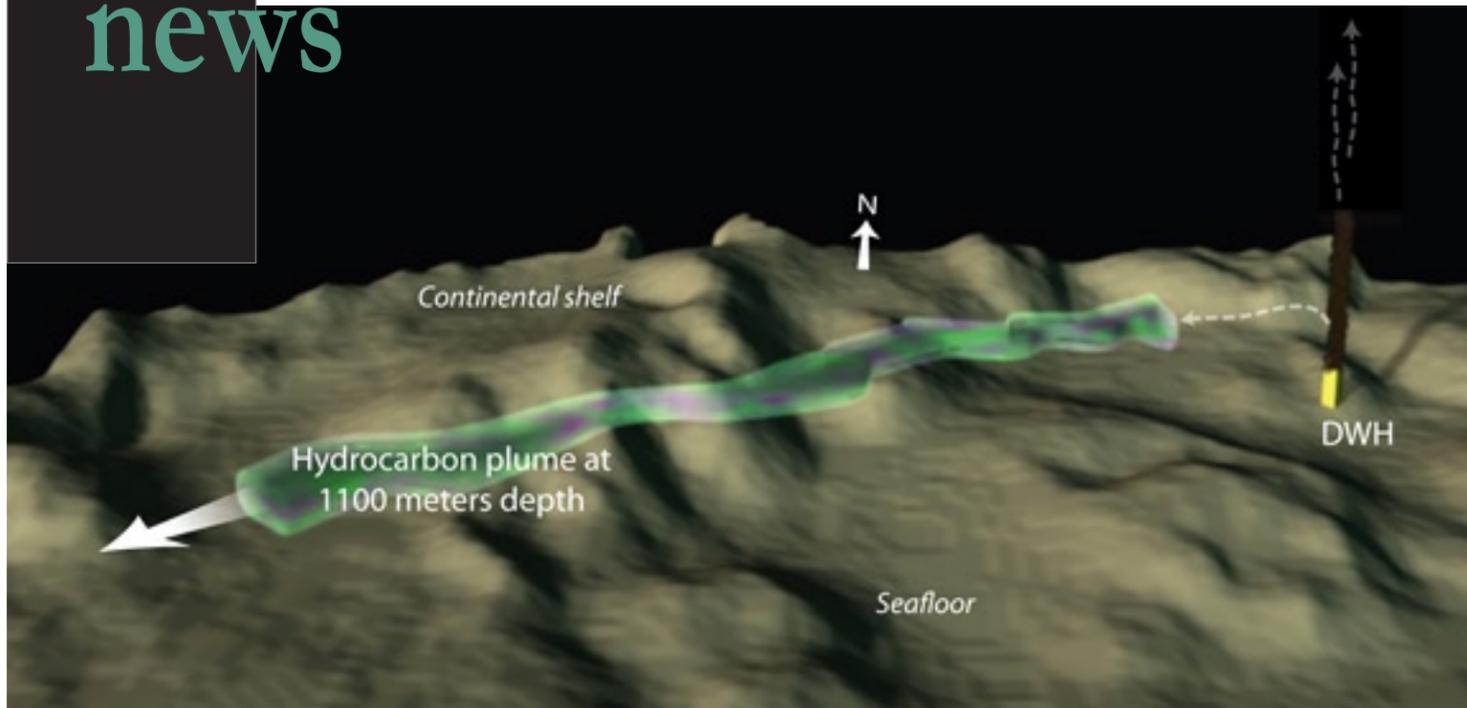
Yet two months later, federal and state officials overseeing the cleanup stated there is no evi-

Damage to Deep-sea Corals observed



A single colony of coral with dying and dead sections (on left), apparently living tissue (top right) and bare skeleton with very sickly looking brittle star on the base

LOPHELIA II 2010 EXPEDITION. NOAA-OER/BOEM/RE



WOODS HOLE OCEANOGRAPHIC INSTITUTION (WHOI)

The plume of hydrocarbons emanating from the Deepwater Horizon oil spill. The plume was identified using the autonomous underwater vehicle (AUV) Sentry, instrumented with a TETHYS mass spectrometer

survive? Did they have healthy offspring? It will take a couple of years for that to unfold."

Beating

Nevertheless, the region's fishing industry took a beating, said Ewell Smith, president of the Louisiana Seafood Promotion and Marketing Board, a state fishing industry group. NOAA has teamed with the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) to test the seafood along with various state agencies. "All of them have come back with a clean bill of health, which is all different groups doing the testing. That's the good news," said Smith. "It is the most tested food source in the world right now."

The lack of fish deaths and contaminations is not a surprise to Smith, who said fish just swim out of the way when they see something dangerous in the water. "It's like, if there is a burning building, you're not going to walk into it if you see it," Smith said. "You're going to turn around and walk

in the opposite direction. That's what fish do. They're able to get out of the way."

Dying corals

Despite the seemingly large fish numbers, scientists on a recently completed research trip discovered dead and dying corals near the deep-sea well. Located 4,600 feet below surface, the damaged coral was "covered by what appeared to be a brown substance". A subsequent NOAA report stated it wouldn't be clear whether the substance was oil—and, if so, whether it was oil from the BP well—until further tests are done.

This recent report is the latest to flag potential underwater environmental damage from the oil spill. Earlier this year, other researchers found sediment on the sea floor several miles from the BP well that was covered in a substance

that appeared to be oil. Testing to determine the source of that substance is still ongoing, those researchers say. Scientists continue to fan out across the Gulf to try to determine the extent of environmental damage from the spill.

Apparently, the cold water and high pressure that exist at these depths are preventing the mix from coming to the surface. Dispersants may be playing a role as well.

In a statement after the research trip, NOAA Administrator Jane Lichens said the coral damage observed by the scientists "capture our concern for impacts to marine life in

places in the Gulf that are not easily seen."

All and all, the consistent news reports on the state of the Gulf can be both overwhelming and confusing. Devastation or hype? In reality, it is probably a mixture of both. Ultimately, it will take years to see the full impact of the worst oil spill in U.S. history. ■



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Female fish tango too

Researchers have long thought of males as the lone dancers in courtship display, leaving females to judge, but in one species of cichlid fish, the opposite occurs, according to new research.

Male cichlid fish, *Pelvicachromis taeniatus*, prefer females with a larger pelvic fin, which indicates good body condition, proving that male mate choice may lead to changes in the scale of a female sexual trait. *Pelvicachromis taeniatus* is a dwarf cichlid from West Africa that is occasionally kept as an aquarium fish. In this species, females seek to impress potential mates

as well by fanning out their large, violet pelvic fin. The results, published this month in *BMC Evolutionary*

Scientists have widely studied the effect of female choice on male traits, such as the peacock's extravagant tail or the stag beetle's massive horns, but until relatively recently neglected the effect of

male choice on female appearance. Typically, females of a species will invest a great deal of energy into eggs or young, and males will invest nearly none, causing females to be highly selective with their mates and males to take whatever they can get. However, in biparental species, where both males and females invest equally in their young, "males will become very choosy as well," said Sebastian Baldauf, post-doctoral student at the University of Bonn in



Biology, also suggest male choice can drive females to evolve exaggerated traits, a finding that disputes the traditional belief that sexual selection is a one-way road, allowing only females to affect male appearance.



Germany and first author on the paper. ■
SOURCE: BMC EVOLUTIONARY BIOLOGY 2010, 10:301

Japanese Corals Change Sexes

Professor Yossi Loya from Tel Aviv University found that Japanese sea corals engage in "sex switching". The discovery may provide the key to the survival of fragile sea corals currently threatened by global warming.

In times of stress like extreme hot spells, the female mushroom coral (known as a fungiid coral) switches its sex so that most of the population becomes male. The advantage is that male corals can more readily cope with stress when resources are limited.

"We believe, as with orchids and some trees, sex change in corals increases their overall fitness, reinforcing the important role of reproductive plasticity in determining their evolutionary success," says Loya, whose findings recently appeared in the *Proceedings of the Royal Society B*.

Survival strategy

"One of the evolutionary strategies that some corals use to survive seems to be their ability to change sex," said Loya. "As males, they can pass through the bad years, then, when circumstances become more favorable, change back to overt females. Being a female takes more energy. And having the ability to change gender

periodically enables a species to maximize its reproductive effort."

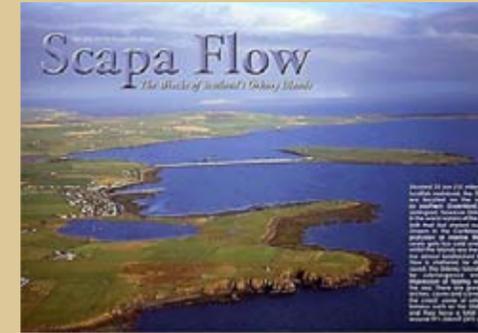
In stressful environmental conditions, male corals can "ride out the storm," so to speak, said Loya. "Males are less expensive—in the evolutionary sense—to maintain. They are cheaper in terms of their gonads and the energy needed to maintain their bodies," he added.

"This knowledge can help coral breeders. Fungiid corals are a hardy coral variety, which can be grown in captivity. Once you know its mode of reproduction, we can grow hundreds of thousands of them," said Loya, currently involved in coral rehabilitation projects in the Red Sea. ■

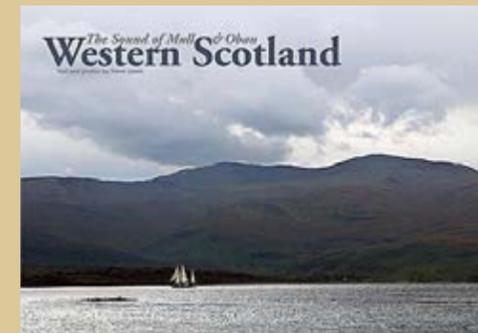


Mushroom coral

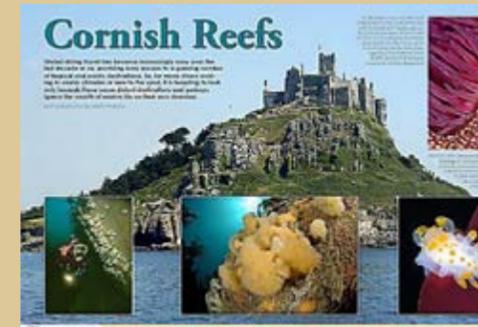
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The technology underpinning the construction of an artificial reef under Venice speculatively employs a species of carbon-fixing species of protocell technology that is engineered to be light sensitive.

Artificial coral to save Venice

Can programmable protocells—“smart salad dressing”—be used to establish the strong foundations needed to stop the historic city of Venice sinking into the spongy marshland it was built on?

Venice is located on the shore of a large inland lagoon some 50km from the northeast Italian coast. Simply stated, the city’s foundations are not what they should be, and the city is slowly sinking, which combined with rising sea levels, has forced the city to look at huge civil and mechanical engineering

projects to save it. Could “smart salad dressing” provide a viable alternative?

Futurevenice.org is an organization dedicated to looking at things differently and how rapid advances in science and technology could be harnessed to solve the extraordinary

environmental and architectural challenges facing the iconic city of Venice.

The city was built on the lagoon some 600 years ago so that the surrounding waters could be used as a large “moat” that would help protect it, but beneath its stone foundations is soft clay, peat and watery sand, which is slowly but surely allowing the city to sink downwards.

Rising levels in the Adriatic Sea and changing tidal surge patterns has meant increasingly common incidents of flooding in the historic city over the last 30-40 years, and each flood causes further damage to its buildings and their foundations. An ambitious and very expensive series of 78 steel floodgates have been proposed to provide a control-

lable barrier at the lagoon’s edge and preventing the flooding. But significant environmental, engineering and financial challenges face this approach.

Salad dressing

This is where the smart salad dressing comes in. Collaborative research between Martin Hanczyc from the Southern University of Denmark with Neil Spiller and Rachel Armstrong from The Bartlett School of Architecture, University College, London, is attempting to utilize “metabolic materials” as a kind of living technology that can be deployed in the built environment.

The research focuses on the use of “protocells”—simple chemical agents that are able to move in their environment, sense it, modify it and perform complex behaviors. Protocells can also be programmed. For example, they can be made light-sensitive and migrate away from the light into the darkest areas.

Protocell

The concept for Venice is to design the metabolism of a light-sensitive protocell that can capture carbon dioxide from a solution and turn

it into its solid carbonate, which would be released en-masse into the city’s canals.

The photocell’s would automatically move towards the darkened areas under the foundations of the city where they would interact with traditional building materials and turn the foundations of Venice into a limestone-like reef that would prevent further subsidence.

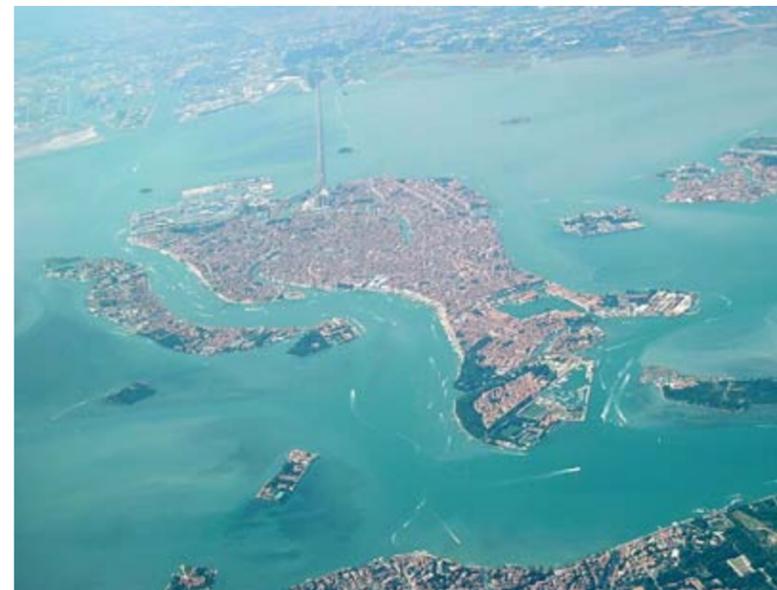
Such a reef would also distribute the point load of the city on the floor of the lagoon across a hard limestone-like base. Simultaneously, it would deposit solid material in any gaps between the buildings and their foundations, which would further stabilise the city base by extending the solid landmass around the city from the lagoon.

Finally, the reef would also reduce the volume of water flowing around the city, thereby buffering it against the effects of water erosion and large movements of subterranean soil. ■

[Future Venice on Facebook >>>](#)

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A 18th century view of Venice by Venetian artist Canaletto



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Coral Algae Found in Deep Water Black Corals

Inhabitants of deeper waters, black corals were considered to be void of symbiotic algae, because they are typically found at great depths where light levels are very low.

Black corals are of substantial cultural and economic importance in Hawaii. Some species are harvested commercially for the precious coral jewelry industry in deep waters off Maui, and black coral is considered the official gemstone of the State of Hawaii. Even though most people have heard of black coral jewelry, very few ever get to see these corals in their natural environments because of the

depths in which they are found. As a result of their remote habitats, very little is known about the basic biology of black corals.

Scientists at the Hawaii Institute of Marine Biology (HIMB), examined 14 black coral species collected between ten and 396m from around Hawaii for the presence of algae using molecular and histological (tissue studies) techniques. Surprisingly, 71 percent of the exam-

ined species were found to contain algae, even at depths approaching 400m.

"Because black corals are predominantly found in deep and dark environments, most people assumed that they could not harbor these photosynthetic symbiotic algae. At this point, we do not know how these algae are able to exist in extreme environments, and it certainly highlights how little we know about deep reefs," said Daniel Wagner, who led the investigation at Hawaii Institute of Marine Biology (HIMB).

Important discovery

This new and important discovery also implies that some members of these algae have extremely diverse habitat preferences and broad environmental ranges. ■

SOURCE: PROC. R. SOC. B DOI:10.1098/RSPB.2010.1681

Black coral takes its name from the distinctive black or dark brown color of its skeleton. Its living tissue is brilliantly colored

"At this point we do not know how these algae are able to exist in extreme environments, and it certainly highlights how little we know about deep reefs."



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Sparks fly over theory that volcano caused BC salmon boom

Speculation has arisen that a 2008 volcanic eruption on an Alaskan island was responsible for this year's salmon glut in British Columbia. After dismally low numbers in 2009, sockeye salmon mysteriously returned in record numbers to the Fraser River this year.

Tim Parsons, one of Canada's most eminent fisheries researchers, has suggested that the boom may be the result of an eruption on Alaska's Kasatochi Island. The last big salmon run in the Fraser River occurred in 1958, some two years after a huge eruption on Russia's Kamchatka Peninsula.

ally seeding the ocean with iron to boost diminishing fish stocks. However, some researchers warn that the theory is "far fetched".

Parsons' suggestion relies on a study in *Geophysical Research Letters* by Roberta Hamme of the University of Victoria, British Columbia. The paper links the 7-8 August 2008 eruption of the Kasatochi volcano in the Aleutian Islands to a huge phytoplank-

ton bloom later that month. The eruption wasn't particularly large, but a storm spread its ash over a wide area. The resulting bloom was the biggest in 12 years of records, covering 1.5-2 million square kilometres of ocean. "We'd never seen anything like that," said Hamme.

Volcanoes important

It has long been known that the growth of phytoplankton in the North Pacific is limited by the amount of iron in the water.

Dust storms from Asian deserts add doses and volcanoes have recently

been considered to be another important source. The question is whether such eruptions can have an impact on salmon. To benefit from the food boom, this year's returning salmon would have been in the Alaskan Gulf in the autumn or early winter of 2008. Salmon don't eat phytoplankton; they eat zooplankton and small fish, which in turn feed on phytoplankton. Zooplankton take months to a year to reproduce, so a single big burst of food for them over 3-4 weeks doesn't necessarily boost their numbers much, said Welch. Hamme said there were high levels of zooplankton in surface waters in August and September of 2008, but not as high as in early summer, before the eruption occurred.

A stretch too far?

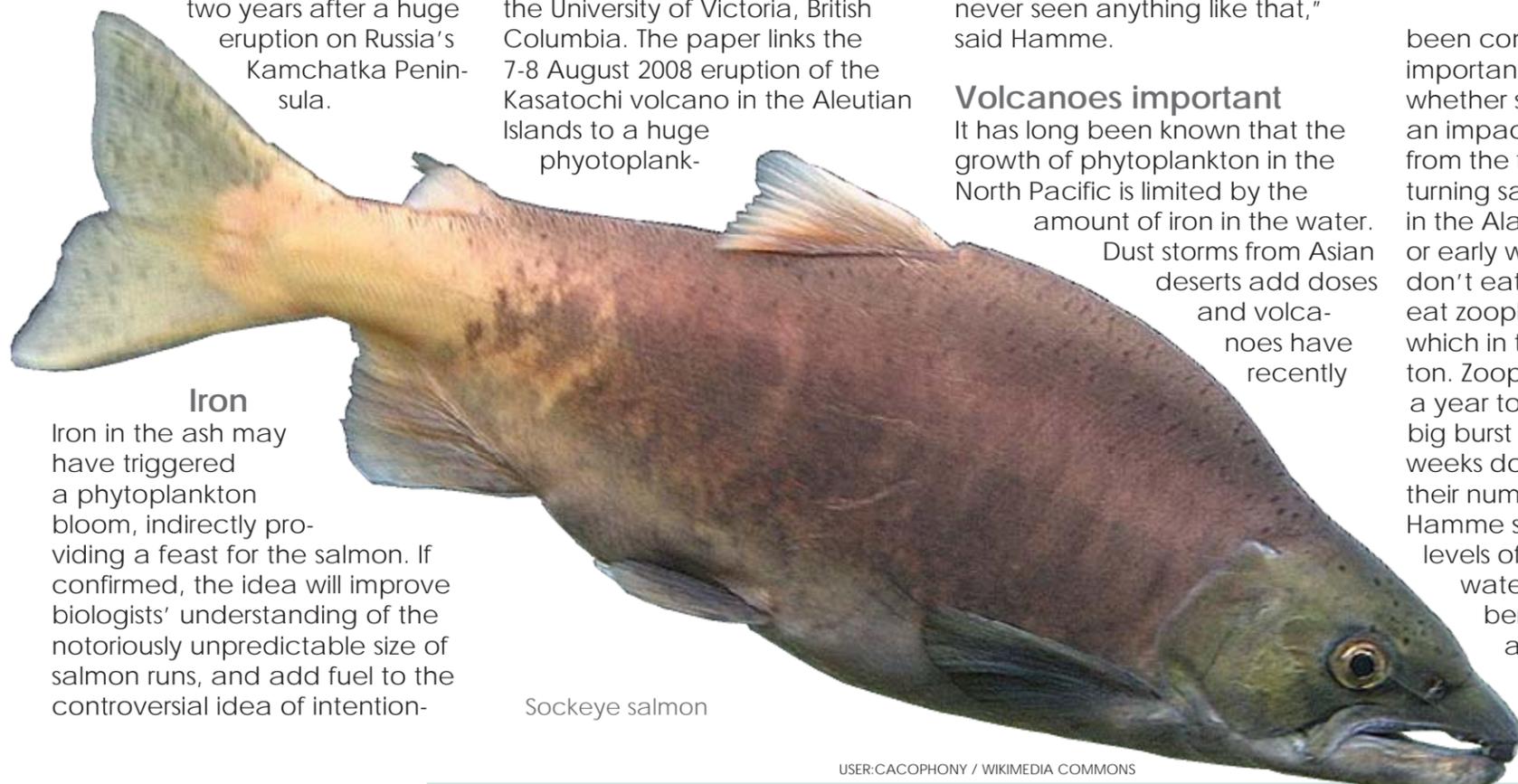
If the Alaskan volcano was responsible, such a glut could happen elsewhere, too. However, for this hypothesis to work, a series of events have to coincide. The volcano has to have iron-rich ash and has to dump it in those parts of the oceans that are iron-limited: the northern and equatorial Pacific or the Southern Ocean. The eruption has to happen in the spring or summer, when phytoplankton growth isn't limited by low light, and it has to spur the growth of zooplankton rather than algae. Finally, the fish have to stumble on that particular patch during their critical growth period.

This could spur some to think of intentionally seeding the ocean with iron to increase fish numbers.

However, is that a good idea? "Good God, no," stated Carl Walters of the University of British Columbia's Fisheries Centre in Vancouver. "Our experience with fertilizing things is it's way too easy to fertilize the wrong thing. In general, it's a pretty dangerous thing to do."

Official inquiry

Canadian Prime Minister Stephen Harper ordered an inquiry into what is happening with salmon numbers, and why predictions of the British Columbia salmon runs have been so wrong in recent years. They are now considering whether the 2010 boom is a sign of improvement, or just a fluke event — whether caused by the volcano or by something else. ■



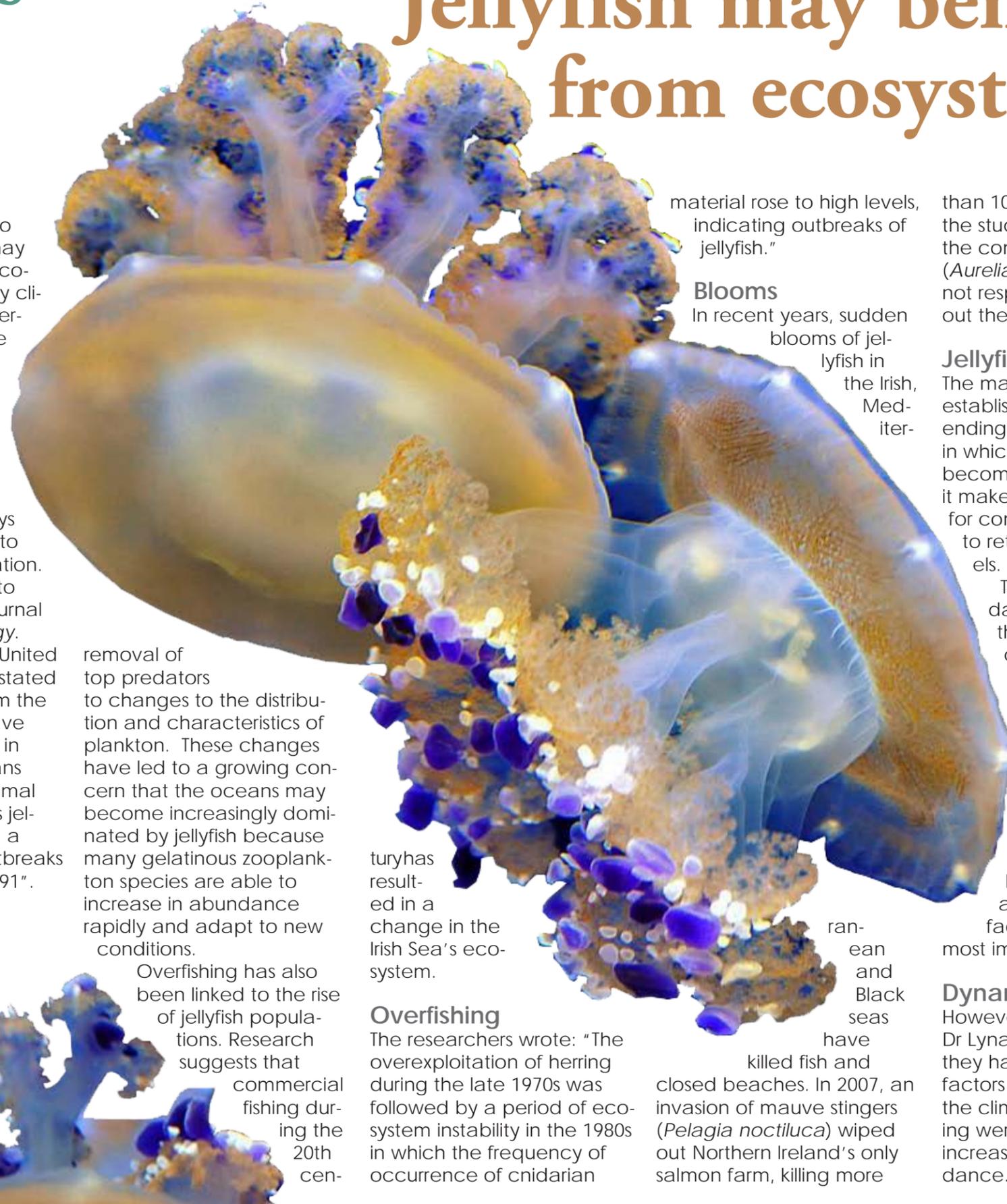
Sockeye salmon

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News edited by Scott Bennett

Jellyfish may benefit from ecosystem instability



A team of researchers have been trying to identify how jellyfish may benefit from marine ecosystems destabilised by climate change and overfishing. Concerns have arisen that increased jellyfish populations could prevent the recovery of depleted commercially important fish stocks. However, a study by European scientists says more data is needed to fully appraise the situation.

The findings are set to be published in the journal *Global Change Biology*. Researchers from the United Kingdom and Ireland stated samples obtained from the Irish Sea since 1970 have recorded an increase in material from cnidarians (the division of the animal kingdom that includes jellyfish and coral), "with a period of frequent outbreaks between 1982 and 1991".

Domination

Previous studies have recorded changes to marine ecosystems as a result of various factors ranging from the

removal of top predators to changes to the distribution and characteristics of plankton. These changes have led to a growing concern that the oceans may become increasingly dominated by jellyfish because many gelatinous zooplankton species are able to increase in abundance rapidly and adapt to new conditions.

Overfishing has also been linked to the rise of jellyfish populations. Research suggests that

commercial fishing during the 20th cen-

material rose to high levels, indicating outbreaks of jellyfish."

Blooms

In recent years, sudden blooms of jellyfish in the Irish, Mediter-

tury has resulted in a change in the Irish Sea's ecosystem.

Overfishing

The researchers wrote: "The overexploitation of herring during the late 1970s was followed by a period of ecosystem instability in the 1980s in which the frequency of occurrence of cnidarian

ran-ean and Black seas have killed fish and closed beaches. In 2007, an invasion of mauve stingers (*Pelagia noctiluca*) wiped out Northern Ireland's only salmon farm, killing more

than 100,000 fish. However, the study was dominated by the common moon jellyfish (*Aurelia aurita*), which was not responsible for wiping out the salmon.

Jellyfish joyride

The main concern is the establishment of a "never-ending jellyfish joyride" in which the creatures become so established that it makes it almost impossible for commercial fish stocks to return to historical levels.

The team, using data provided by the U.K. Met Office, commented: "The regional seas of the northeast Atlantic have been warming for the past 15 years at a rate not experienced in recent centuries. For the recent period where we have good data, it appears as if sea surface temperature is the most important variable."

Dynamics

However, team member Dr Lynam explained that they had looked at whether factors such as changes to the climate and overfishing were responsible for the increase in jellyfish abundance. "I don't think that

the hypothesis that jellyfish will come into an area and dominate, not allowing anything to come back again, is really supported. Such a nightmare scenario does not seem to be the case, when you consider the data and studies that have been carried out. It is quite a complicated set of possible linkages that need to be drawn, which we really only have a vague insight at the moment."

Limit fish catches

However, he cited examples in the North Sea and Black Sea where fish species had declined, leading to an increase in jellyfish abundance, but the introduction of measures such as limits on catches had resulted in a recovery of fish stocks. The team urged for the monitoring of jellyfish to continue, and concluded: "The move to ecosystem-based fisheries management requires extensive ecological knowledge and an understanding of the risks posed by any indirect effects... of our utilisation of the sea's resources." ■

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Edited by Roz Lunn

The Conference was organized by Divers Leigh Bishop, Roz Lunn, Mark Dixon and Crispin Brake

EuroTek 2010

The bi-annual Advanced and Technical Diving Conference was held on Saturday the 16th and Sunday the 17th, October, 2010 at the International Convention Centre, Birmingham, England.

This year saw 500 delegates travel from 18 different countries to attend EUROTEK.2010. Over the two days of the conference, 35 leading diving experts delivered 45 different seminars, workshops and presentations covering recent expeditions, wrecks and diving in mines and caves. Technical topics included in-water recompression, CO₂ issues, modern decompression advancements and accident analysis. In addition, Rich Stevenson chaired a Rebreather Panel where delegates were able to discuss and get their questions constructively answered by leading manufacturers in a candid open forum.

EUROTEK.2010 was kicked off by Leigh



Bishop who delivered a poignant and brutally honest presentation about the events that led up to the death of EUROTEK Co-founder Carl Spencer. Carl lost his life in May 2009 whilst filming a National Geographic programme on *HMHS Britannic*. Illustrated by stills and footage of the incident, Bishop explained what went wrong and the hard lessons that were learnt from this tragic accident. The emphasis of this presentation



A tribute to the late Carl Spencer

was to hammer home the harsh lessons learnt and to hopefully save lives, thus preventing this incident occurring again.

Carbon dioxide monitoring issues were a key topic of the conference and Austrian speaker, Arne Sieber, showed delegates a glimpse of the future with some very interesting developments in cell technology. Briefly, Sieber has built a tiny CO₂ monitoring system with two monitors (encapsulated in ceramic) approximately the same size as a rubber on the end of a pencil. These are neatly fitted into the mouthpiece of a CCR, and the CO₂ is monitored by electronics housed in a box about half the depth of a matchbox, mounted on the exterior of a rebreather bail out valve. Currently, this system looks to be a distinct reality within half a decade, with one industry expert of note enthusiastically commenting that this was how he felt 30 years ago when he was pushing the frontiers of biomedical electronics.

In the exhibition halls, several new



products were on display for advanced divers to see, touch and play with including the world debut of the new Kiss Gem diving system from Jetsam Technologies. The GEM system is a gas extender, marketed as one of the lightest, smallest and most inexpensive rebreathers on the market today. The unit is likely to be perfect for the recreational or travelling diver.

At the Gala

On Saturday night, 430 delegates and luminaries from the diving industry sat down to a gala award dinner and raffle. During the evening, over GBE2,000 was raised for Depththerapy, the disa-



Mark Powell, who also writes for X-Ray Mag, gives a presentation

bled diving charity headed up by Fraser Bathgate. The star prize, an X-Scooter Deep Ideas Cuda Scooter, was won by a Spanish delegate who was thrilled, because his next purchase was going to be a Scooter.

The dinner guests then celebrated success with Ric Waring who recently made DIVER news. Ric was voted EUROTEK.2010 Diver of the Conference because of his phenomenal diving season exploring and identifying British shipwrecks. Waring was also noted for his devotion to shipwreck exploration and his significant expedition to date has been to *RMS Carpathia*. She now lies in 155 metres in the challenging Atlantic Ocean.

Well know cave diver Martyn Farr was awarded the EUROTEK.2010 Lifetime

Achievement Award and received a warm and enthusiastic standing ovation from the room for his consistent contribution to cave diving, which has advanced and opened up the field of technical diving. Martyn thanked the delegates of the conference who voted for him, "I am honoured to receive such a prestigious award at such a unique event as EUROTEK."



Watch it on video here
Eurotek 2010 Shutdown Contest: The Badger

EUROTEK.08 saw Mark Powell

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launch his book *Deco for Divers*. It was therefore fitting that Powell received the award for the EUROTEK.2010 Publication of Significance. *Deco for Divers* is now on its second print run, because it is considered by many divers to be an advanced or technical diving publication that has educated, inspired and influenced delegates in diving.

The noted EUROTEK.2010 Innovation Award was given to Narked @ 90 for their Cell Checker. This was considered by the delegates as an Advanced or

Technical Diving Innovation that has enabled divers to further their diving and /or making their diving safer. The Cell Checker will contribute to diver safety, because it helps the individual to check their true milli volt readings of oxygen sensors in the rebreathers.

Industry stalwart John Womack of Divers Warehouse/ Otter Dry suits received a special EUROTEK.2010 Award for Outstanding Contribution to the Diving Industry for over 40 years of service to divers and industry individuals and for sponsorship of advanced diving expeditions such as HMHS *Britannic*.



Jan Willem Bech schlepped his impressive collection of historical dive equipment over from the Netherlands

Co-Organiser Rosemary E. Lunn told Diver, "EUROTEK. 2010 was the perfect opportunity for networking

Oh were we having fun? It is not too often we get to wear our penguin suits but it was nice to see them dusted off and worn on a lot that is usually clad in drysuits. As some delegate mumbled: If the roof were to fall in it would take out 85% of the world's leading technical dives and expertise in one foul swipe. Anyhow... we enjoyed ourselves immensely and the food was excellent.

and meeting divers who enjoy the same kind of diving as you. Thanks to the support of the diving industry we were able to meet everyone's expectations, however we've been quite stunned that many delegates have already asked us how they can reserve tickets for EUROTEK.2012. Just keep on watching www.eurotek.uk.com for further information."

About EUROTEK

EUROTEK is a bi-annual advanced and technical diving conference and exhibition, co-founded by Leigh Bishop and Carl Spencer, and co-organised by Rosemary E. Lunn.

In 2009, Carl Spencer tragically lost his life diving *Britannic*. The Diver of the Conference Award was renamed the Carl Spencer Diver of the Conference Award in his honour.

The Lifetime Achievement Award is named in memory of technical diver Keith Morris.

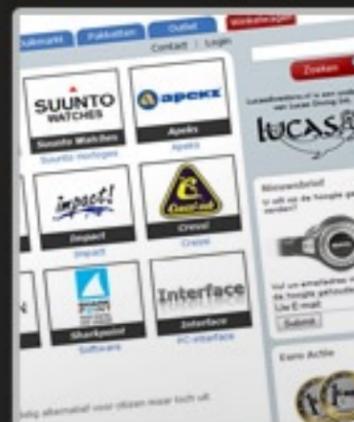
Following Carl's death, Leigh and Roz welcomed Mark Dixon and Crispin Brake to the team in 2010. www.eurotek.uk.com ■



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A 20-year study shows an alarming decline of krill in the Southern Ocean

The scientist leading the krill project, Dr Graham Hosie, said he cannot explain the drop in numbers but is hoping to get some answers from the latest scientific expedition to Antarctica,

"Plankton are extremely sensitive to their environment. We've found that even subtle changes in pattern across the ocean with the oceanography, natural patterns, the plankton can respond very abruptly in composition.

"So they're very good at telling us what's happening in their environment. What we need to do is try and interpret that. So we are using the plankton as an indicator of the ocean health. The hypothesis is that, because they are so sensitive to their environment that they will change earlier than other parts of the system.



Krill (*Meganyctiphanes norvegica*)

"And because they're the foundation of the system, if they're changing, we then look to see if there's any flow-on effect through the rest of the ecosystem."

Krill is the common name given to the order Euphausiacea of shrimp-like marine crustaceans. Also known as euphausiids, these small invertebrates are found in all oceans of the world.

Krill are considered an important trophic connection—near the bottom of the food chain—because

they feed on phytoplankton and to a lesser extent zooplankton, converting these into a form suitable for many larger animals for whom krill makes up the largest part of their diet. Over half of this biomass is eaten by whales, seals, penguins, squid and fish each year, and is replaced by growth and reproduction. Most krill species display large daily vertical migrations, thus providing food for predators near the surface at night and in deeper waters during the day. ■

Rhode Island adopts nation's first Ocean Special Area Management Plan

Using the best available science and working with well-informed and committed resource users, researchers, environmental and civic organizations, and local, state and U.S. federal government agencies—the Ocean Special Area Management Plan (SAMP) provides a comprehensive understanding of the complex and rich ecosystem of the state's offshore resources.

The SAMP lays out enforceable policies and recommendations

to guide CRMC in promoting a balanced and comprehensive ecosystem-based management approach for the development and protection of Rhode Island's ocean resources within the Ocean SAMP study area. The SAMP will also dictate the location of the state's offshore wind projects.

"This collaborative two-year process is a model for all other states in marine spatial planning, and will make Rhode Island the first state in the United States to

zone its offshore waters for renewable energy development, while also protecting commercial fishing, critical marine habitats, and marine transportation," said Governor Donald L. Carcieri. "Rhode Island is truly fortunate to have such a dedicated team at CRMC and knowledgeable scientists at URI's Graduate School of Oceanography." ■

SOURCE: GOVERNOR OF RHODE ISLAND





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Discus fish can be surprisingly attentive parents

A recent study has suggested that tropical fish actually wean their fry, “encouraging” them to forage for themselves, and when it comes to looking after their young, discus fish have more in common with mammals. This nurturing in discus fish is a well recognised behaviour, but this is the first time it has been studied in detail.

Jonathan Buckley from the University of Plymouth, United Kingdom, was a member of the team that carried out the study. Along with his supervisor, Dr Katherine Sloman, and colleagues in Brazil, he discovered that, when it comes to looking after their young, discus fish have more in common with mammals than with most other fish. “For the first couple of weeks—when

the fry first hatch—the parents take amazingly good care of them,” explained Buckley.

Both parents’ skin is covered in the mucus; the offspring surround the parent and constantly nibble on it. At this stage, the tiny, vulnerable fry are never on their own. The male and female even share parental responsibility, “flicking” the young from one parent to the other when they need a break from feeding them. This behaviour has been likened to mammals suckling their young.

Like mammals

The team have now documented some even more striking similarities between the way these fish take care

of their fry and the way mammals nurture and feed their babies. After the first two weeks, the parents appeared to deliberately wean their young.

“In week three there’s a change—the parents are constantly swimming away,” Buckley explained. “We think this is the beginning of the weaning period—they’re trying to make it more energetically efficient for the fry to forage rather than feed.”

When the researchers studied the mucus itself, they found that it contained antibodies—immune system-bolstering substances. “This transfer of antibodies to offspring is primarily a staple of mammalian parental care and [previously] unseen in fish,” he said. ■



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Guam: Bill could penalize for damage to reef

A new bill, the Guam Coral Reef Protection Act, could create a legal avenue for penalizing boaters who damage coral reefs by running aground, dropping anchor or spilling chemicals.



Aerial Photo of Apra Harbor, Guam

If passed, the bill would allow the government of Guam to fine boaters who damage local reefs. The money would be used to fund government projects that restore or benefit the reefs. Federal laws collect similar fees, but that money doesn't go to the Government of Guam, Vice Speaker Benjamin Cruz said. It could also allow the government of Guam to claim millions of dollars in damages if the military moves ahead with a dredging plan. The Navy plans to build an aircraft carrier wharf in Apra Harbor. Both current possible wharf locations require about 70 acres of sea floor to be dredged.

According to the bill, civil penalties can be levied if someone anchors a boat on a reef, or for "any other damage to a coral reef." That would include dredging, Cruz said. "If I am going to want to protect the coral reef, then I need to protect the coral reef from everyone who is damaging it."

According to the draft Environmental Impact Statement, the Navy estimated about a third of the dredging area is covered in coral. Using those estimates,

Cruz's bill could levy about US\$283 million in penalties if the dredging occurred, according to a proposed fees in the bill. If all 70 acres are deemed to have coral, Cruz's bill could levy almost \$850 million in penalties, according to the proposed fees.

Largest threat

Guam Governor Felix P. Camacho said the military buildup "is the largest threat to coral reefs on this island."

The military buildup involves the relocation of some 8,600 U.S. Marines and their 9,000 dependents from Okinawa, Japan, to Guam. It also involves the construction of facilities and infrastructure to support training and operations on Guam and Tinian for the relocated Marines.

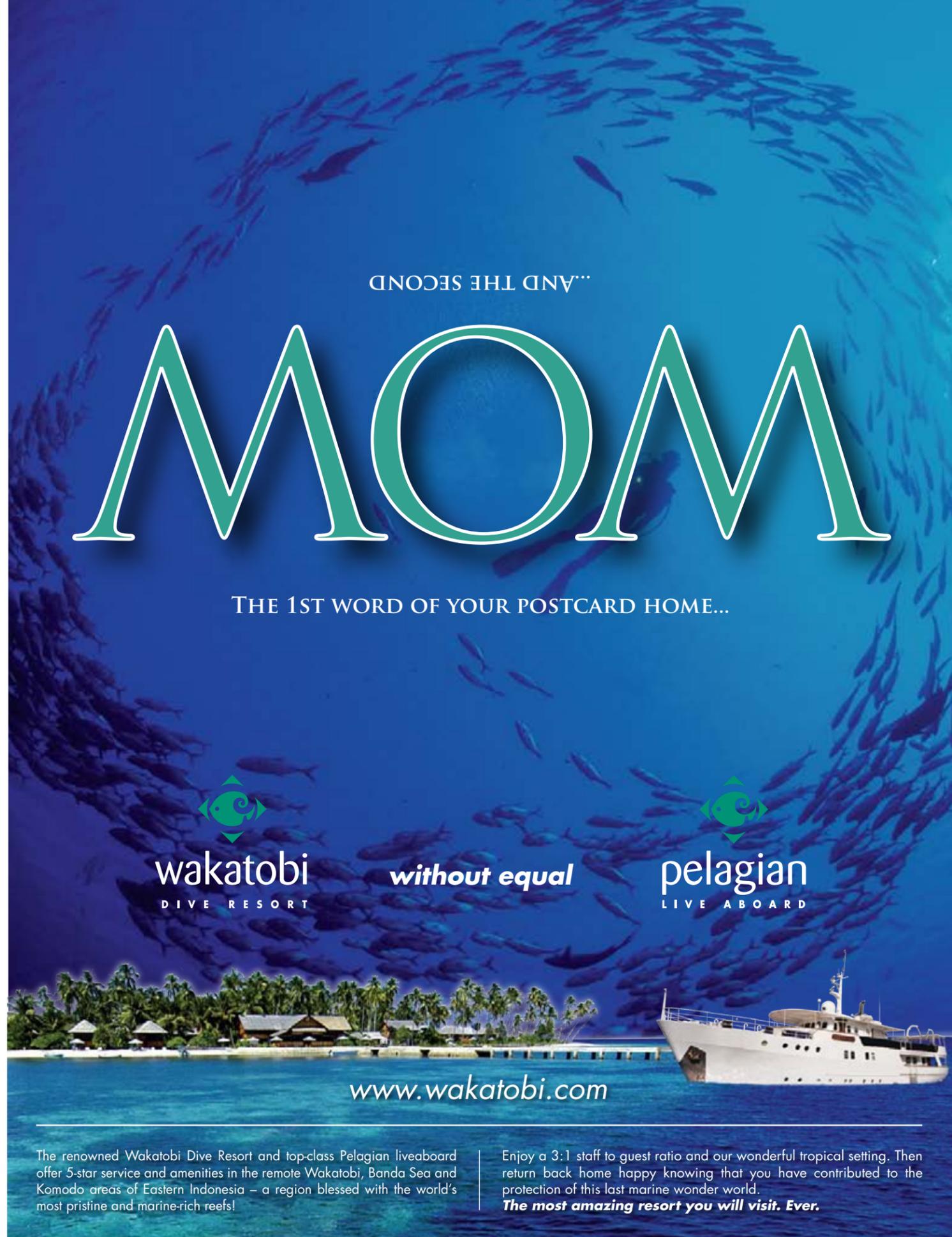
"I stress that our ability to manage our resources and our infrastructure during the military buildup and beyond will affect our

island and our families for generations to come. The efforts of local natural resource managers will be wasted, if the military buildup is not handled in a manner that respects the people of Guahan [Guam] and the natural resources we rely on-for sustenance, for economic viability, for our culture, and for our way of life," Camacho said.

Extensive dredging

One of three major projects related to the military buildup in Guam is a deep-draft wharf for transiting aircraft carriers. The U.S. Navy earlier chose the Polaris Point in Guam's Apra Harbor as its preferred site for a carrier berth.

This would require some extensive dredging of sand and coral to accommodate the 1,325-foot wharf, designed for the larger Nimitz-class carriers, a "turning basin" in the harbor, and a widened ship channel. ■



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Parks Canada 2010 Arctic Surveys *HMS Erebus* and *HMS Terror*

In 1992, the Government of Canada declared the wrecks to be a national historic site of Canada. This designation came as a result of their association with Franklin's last expedition—namely its role in the history of exploration of Canada's north and the development of Canada as a nation.

A memorandum of understanding (MOU) was signed in August 1997, between Great Britain, as owners of the vessels, and Canada, as the nation in whose water they were lost. If and when found, the MOU assigns control over site investigation, excavation or recovery of either wrecks or their contents to Canada. Mandated to protect and present subjects of national significance, Parks Canada has been identified as the federal agency responsible for the search and subsequent preservation of the vessels.

The search for *HMS Erebus* and *HMS Terror* is extremely complex due to the vastness and harsh conditions of the Arctic, coupled with the varying interpretations of Franklin's history. Although a number of attempts to locate *HMS Erebus* and *HMS Terror* have been unsuccessful to date, a general search area has been identified based on one particular interpretation supported by Inuit knowledge. ■

Search for *HMS Erebus* and *HMS Terror* heats up

Two British naval ships belonging to the renowned explorer Sir John Franklin—lost 165 years ago while navigating the famed Northwest Passage—are once again at the centre of an intense search.

What happened to Sir John Franklin's two superbly equipped ships when he and all 150 members of his expedition died in the search for the North-West Passage more than 160 years ago? The fate of the 1845 expedition haunted Victorian imagination, and expensive rescue expeditions continued for almost 20 years, spurred on by Franklin's formidable widow, Jane Griffin. Evidence confirming Franklin's death was only discovered in 1859. Dumped supplies were

recovered along with personal possessions, letters describing his death and those of many of his senior officers, and finally bodies, but his twin ships—the *Erebus* and the *Terror*—have never been located.

Although Franklin's crew left two messages in the Arctic at a cairn for any rescue mission, according to naval protocol, the details of their last position was either never recorded or has yet to be found.

Huge reward

The British Admiralty's reward at the time Franklin and his men disappeared—20,000 pounds sterling or 100,000 dollars (the equivalent of a million pounds today)—sparked one of the greatest rescue efforts in naval history. Even this summer, Parks Canada searched for the boats, encouraged by its discovery earlier this year of *HMS*

Investigator, a British naval ship sent to locate Franklin before also becoming stuck in ice farther along the Northwest Passage at Mercy Bay. Now, if he can borrow a Canadian government icebreaker for next summer's diving season, Robert Grenier, the archaeologist who has led the hunt for the past 30 years, believes he can close in on the *Terror* at last.

Buried journals

Meanwhile local Inuit in the remote Arctic hamlet of Gjoa Haven are also touting the possible excavation of some alleged lost journals, which could shed light on the vessels' location. Organisers today hope to unearth these ancient journals—believed to have been buried in an ancient cairn some time over the past century. Brothers Andrew and Wally Porter claim that their grandfather, George Washington Porter, buried the papers 60 years ago for prosperity. ■



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HMS Terror thrown up by the ice. Engraving after a drawing by Captain George Back, from his 1836-37 Arctic expedition



HMS Snaefell laden with troops during WWII

Famous WWII paddle steamer found in the English Channel

A paddle steamer that helped ferry troops back from Dunkirk has been found 69 years after it was sunk by German warplanes

The sunken remains of one of the most famous of Dunkirk's "little ships" has been found by a team of divers, after 69 years of mystery over where they lay. The wreck of *HMS Snaefell* was discovered eight miles off Sunderland, some ten miles south of her last engagement with Nazi aircraft in the summer of 1941, *The Guardian* writes.

The *Snaefell* was a classic paddle steamer built in 1907 for pleasure trips off south Wales. It was converted into a minesweeper and served in both world wars. It avoided bombs on trips to Dunkirk, which saw it rescue more than 1,000 British soldiers, but was crippled off Whitely Bay by a direct hit and sank soon afterwards, with the loss of three lives.

Previous searches have focused north

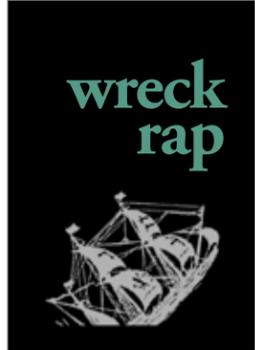
The paddle steamer, which saw service as a minesweeper in both the First and Second World Wars, was bombed and sank in 1941, and all trace was lost.

of the Tyne, but the broken-backed wreck was located by eight members of the Silent Running diving team who were checking stretches of seabed off the County Durham coast. Allan Lopez, who skips the launch *Spellbinder II* out of South Shields, said that the strange silhouette had come as a shock.

"Paddle steamers are rare ships. When one of the divers reported that he had seen paddles, we didn't believe him at first. When we went down a second time, we saw them, and we knew this was something special," he said.

The team's leader, Brian Matthewman, told *The Guardian*: "The paddles are huge, the size of houses. The wreck was not meant to be in that area, so it was difficult to identify what we had found." ■

IMPERIAL WAR MUSEUM



2000-year-old pills found in Greek shipwreck

In 130 B.C., a ship fashioned from the wood of walnut trees and bulging with medicines and Syrian glassware sank off the coast of Tuscany, Italy. Archaeologists found its precious load 20 years ago and now, for the first time, archaeobotanists have been able to examine and analyse pills that were prepared by the physicians of

ancient Greece. DNA analyses show that each millennia-old tablet is a mixture of more than ten different plant extracts, from hibiscus to celery.

"For the first time, we have physical evidence of what we have in writing from the ancient Greek physicians Dioscorides and Galen," said Alain Touwaide of the

Smithsonian Institution's National Museum of Natural History in Washington, DC.

The box of pills was discovered on the wreck in 1989, with much of the medicine still completely dry, according to Robert Fleischer of the Smithsonian's National Zoological Park, also in Washington, DC. ■

SOURCE: NEW SCIENTIST

Ottoman frigate *Ertuğrul* goes on display in Japan

Artifacts from a famous Ottoman ship that sunk off the coast of Japan more than a hundred years ago have now been put on display in the southern province of Mersin, Turkey.

After sailing in Asian waters for more than a year, a time filled with

various mishaps and difficulties, the *Ertugrul* arrived in June of 1890 in Japan, where Osman Pasha and his crew had a successful visit with the authorities and the imperial family. On the return voyage, however, the Ottoman frigate sank in a severe typhoon on the 16th day of September after foundering on dangerous sharp rocks off the coast of Wakayama in southwest Japan. Except for a mere 69

survivors, the waves of the Pacific Ocean claimed the Pasha and his men. One of the striking remains in the exhibition is a small perfume bottle, which is believed to have been sent by the captain's wife and believed to hold tears.

Tufan Turan, the leader of a multinational expedition that has been working on the *Ertuğrul* shipwreck for the past three years, said they started working on the *Ertuğrul* shipwreck in 2007 and added that Turkish, Japanese, Spanish and U.S. researchers study the ship at Oshima Island, near Kobe, every January and February. The research teams work underwater two hours a day, Turan said, adding that more than 6,000 pieces have been removed from the shipwreck since 2007.

The exhibition will visit other Turkish cities in 2011 before traveling to Japan for display. ■

On 15 September 1890 at noon, *Ertuğrul* set sail from Yokohama for Istanbul. The very good weather conditions at the departure changed the next day in the morning



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Worldwide Dive and Sail Announces New Maldives Liveaboard



With over 3,000 coral reefs offering spectacular pelagic encounters with sharks, manta rays and whale sharks, the Maldives tops many a diver's wish list. The free flowing tides of the monsoons have resulted in the creation of one of the world's richest diving coral reef areas, with over a thousand species of fish and other underwater creatures to be observed. Add shipwrecks, channel dives and 50m visibility to the mix, and you've got a destination guaranteed to enrapture the most jaded divers for a lifetime.

From July 2011, Worldwide Dive and Sail will offer four different itineraries around the Indian Ocean nation on their newest vessel, the S.Y. *Maldives Siren*. A traditional

Indonesian gaff-rigged Phinisi, handcrafted from ironwood and teak, the 34-metre S/Y *Maldives Siren I* has been custom-made with all the luxury facilities for the modern diver. Catering up 14 guests aboard each trip, the vessel has been specialized for the underwater photographer and videographer.

All itineraries are ten nights in duration and cost 2,400 Euro per person, all offering the Siren Fleet's renowned level of service. In addition, itineraries will feature land excursions to many of the many stunningly beautiful tropical and uninhabited islands and, where possible, visits to a local community. ■

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Diver left behind in open ocean awarded US\$1.68 million

A Los Angeles County Superior Court jury has awarded Daniel Carlock, a Santa Monica aerospace engineer US\$1.68 million in damages in his five-year legal battle against Venice-based Ocean Adventures Dive Co. and Long Beach-based Sundiver Charters who abandoned him floating in the ocean 12 miles off Long Beach during a diving excursion.

The *Sundiver*, carrying 20 scuba divers, was staging a dive near the oil rig, Eureka, when Carlock surfaced 400 feet from the vessel after having trouble equalizing the pressure in his ears. Despite his absence, a dive master for Ocean Adventures marked him on the dive roster as present on the boat. Then, to escape strong currents, the boat moved to a second dive site seven miles away. Once the

vessel was there, Carlock was again marked on the roster as having taken a second dive — although by then he was bobbing alone in the ocean miles away.

“Being abandoned at sea is not a risk inherent in the sport.”

After a 23-day trial and two and a half days of deliberations, the jury assessed total damages in the negligence suit

at US\$2 million. But it reduced Carlock's award on the grounds that he was partly responsible because he had been told to surface closer to the boat.

Amorpheus standards

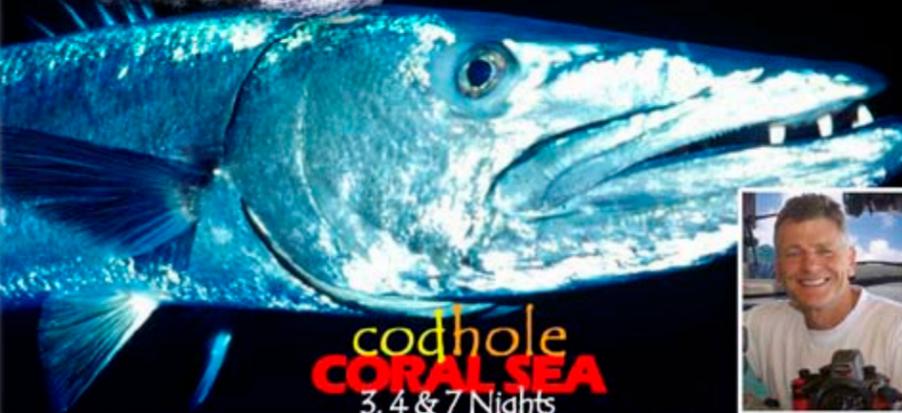
“Dan has changed the industry's safety standards so that other divers won't be left out in the ocean and endure this kind of terror,” said Carlock's attorney, Scott Koepke. He said industry standards had previ-

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ously been “amorphous” on how to count divers. “Now they have to have visual verification and redundancy. And the dive boat captains, not just the dive masters, are responsible for the count.”

Assumed risks?

Lawyers for the companies had contended that by participating in the dive, Carlock had assumed certain risks, thereby waiving his right to hold opera-

tors responsible. But a judge refused to dismiss the case, saying that being abandoned at sea is not a risk inherent in the sport.

Stephen Hewitt, an attorney for Ocean Adventures, acknowledged that “everyone involved had some obligation to look for and account for Mr. Carlock.” ■

SOURCE: LOS ANGELES TIMES