



GLOBAL EDITION  
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Number 60



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Caribbean  
**Cayman Brac**

Polar Diving  
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# DIRECTORY

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COVER PHOTO: Hairy Frogfish, Anilao, Philippines  
Photo by Mike Bartick

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Lionfish on reef, Gorontalo, Indonesia. Photo by Steve Jones



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# Progress

In old movies or documentaries from the 60's, it always stands out how different the thinking was back then. People smoked on airplanes. Drivers did not wear seatbelts, which sometimes weren't even fitted.

Not only did manufacturers not want to create any associations between their products and possible accidents, but the whole mindset was fundamentally different, and safety, as we know of it today with airbags, anti-lock braking systems and deformation zones, was still far into the future.

How odd it is to watch how people i.e. went about driving then. What was considered normal practice then, around the time of my early childhood, gives me the shudders now. If I was offered a ride in a finely restored vintage car, I would most probably take up the invitation just for experience sake, but I would certainly be mindful of the absence of seatbelts and airbags, too.

Safety features and principles—being active or passive, being built into the design, or being part of the procedures—have,

thankfully, come a very long way, and accident rates have diminished accordingly. But, as we all are aware, not gone. While we may have come a long way, there is still a lot to be accomplished.

The same can be said about diving. I've been certified for about as long as I have held a driver's license, and methods, knowledge and procedures have surely changed over the years. In most cases in progressive ways, but sadly not without casualties either.

Fast-forwarding a couple of decades, I can't help ponder what the future will make of present day standards and procedures. I imagine they will seem both as antiquated and ill-informed as when we now look back in time on how we used to drive or dive in the last century. At least I hope so, because it will mean we have learned something in the interim and developed new techniques and practices to make diving safer, better and consequently more enjoyable.

One of the most important aspects will be 'human factors'—how we interact with the

technology we employ. As mentioned before in this column, the human factor is the focus of much of the current research in both aviation and the automotive industry who strive to find new ways to make their products safer.

In a way, it is therefore logical, or fitting, that Gareth Lock, who will contribute a series of features in X-RAY MAG on human factors and safety cultures, including an article in this issue, works for the Royal Air Force.

It may not come across as very sexy science, and the strain of thinking about our present ways of diving in a new way, or new light, may put off one or two divers who could otherwise benefit from a new mindset. But I believe the research into this very field will be instrumental.

It is my prediction that the greatest improvements in future equipment and procedures will be built on its findings.

So now's a good time to pay attention.

—X-RAY MAG

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News edited  
by Peter Symes

*from the deep*  
**NEWS**

# Can corals really adapt to rising sea temperatures?

Reef corals are generally highly sensitive to heat, yet some populations resistant to climate change have recently been identified. Stanford researchers show that some corals can adjust to hot water much faster than through evolutionary change alone.

It has been known for some years that some corals resist bleaching by hosting types of algae that can handle the heat, while others swap out the heat-stressed algae for tougher, heat-resistant strains.

To investigate the biological processes that enable corals to adapt to higher temperatures a group of Stanford researchers led by biology professor Mike Palumbi conducted a unique experiment in the shallow reef pools of Ofu island in American Samoa.

The island offered a perfect laboratory setting with numerous corals hosting the most common heat-sensitive and heat-resistant algae symbionts. Ofu also has pools of varying tempera-

tures that allowed the research team to test under what conditions the symbionts formed associations with corals.

*Corals are certainly threatened by environmental change, but this research has really sparked the notion that corals may be tougher than we thought*

### Swapping corals

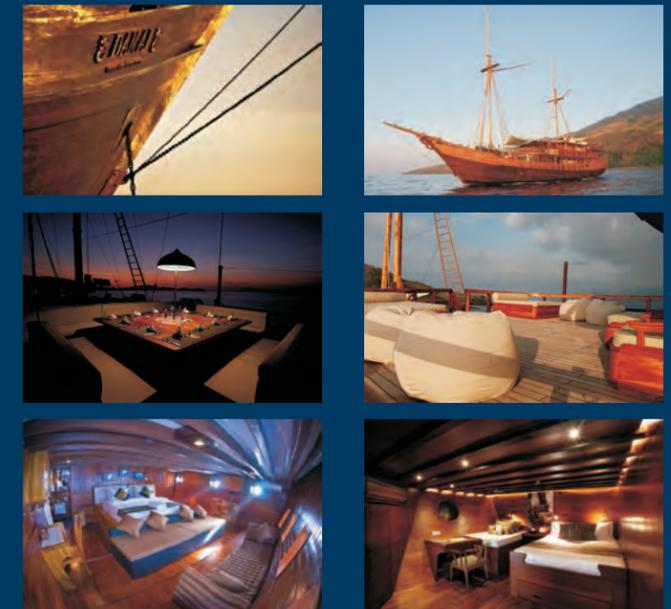
The scientists transplanted transplanted colonies from a warm pool to a nearby cool pool and vice versa.

The researchers found that, over time, cool-pool corals transplanted to the hot pool became more heat-tolerant. Although the transplanted corals were only about half

as heat-tolerant as corals that had been living in the hot pool all along, they quickly—in less than two years—



*Our results show both short-term acclimatory and longer-term adaptive acquisition of climate resistance. Adding these adaptive abilities to ecosystem models is likely to slow predictions of demise for coral reef ecosystems.*



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adjusted themselves by switching on or off certain genes, depending on the local temperature.

### Everything all well then?

Palumbi cautioned that corals' heat-adaptive characteristics do not provide a magic bullet to combat climate change. They can't respond to indefinite temperature increases and they could be compromised by additional stressors such as acidification and pollution. □ SOURCE: STANFORD UNIVERSITY NEWSLETTER, SCIENCE

acclimatised and achieved the same heat tolerance that we would expect from strong natural selection over many generations for these long-lived organisms.

According to a Stanford University newsletter, these findings make clear that some corals can stave off the effects of ocean warming through a combination of adaptation based on genetic makeup coupled with physiological adjustment to local conditions. The corals Palumbi's group studied

# Taking On the Lionfish

**Getting people to eat lionfish is proving to be a challenge, according to researchers at the University of Southampton.**

Lionfish are an invasive species in the Caribbean, and researchers are keen to get people eating the fish to control its

burgeoning populations. But the common misconception that the fish is poisonous continues to be an obstacle in some regions.

## Is it edible?

According to PhD candidate, Fadilah Ali, who has dissected over 10,000 lionfish, said the fish is not poisonous and is safe to eat. While the barbs at the tips of lionfish fins do contain venom, it is not fatal to be struck by one, only painful. Ali said that education through media could help people understand the benefits of consuming lionfish, and put aside prevailing misconceptions. In addition, Ali suggested that lionfish tasting events be organized so more people could try the delicacy and overcome their fears of the fish.

There is proof that people are eating lionfish safely, said Ali, noting recent lionfish culinary competitions and a lionfish cookbook, as well as successful exporters of lionfish such as Belize and Jamaica. The cull, in Jamaica at least, seems to be having a positive effect. There are reports from Jamaica's National Environment and Planning Agency that in coastal waters there has been a 66 percent decrease in sightings of lionfish in depths up to 75ft.

## Demand

While some vendors in Trinidad feel they will lose customers if they sell lionfish on their menus because people are wary of the venom in lionfish spines, other restaurants, in Florida for example, can't get enough of the fish, which are sporadically on the menu as catches come in, to satisfy a robust demand. Lionfish are difficult

to catch by hand as they like to hide in crevasses in reefs, but they can frequently be found in lobster traps, as they like to eat lobster eggs. However, as voracious eaters with no natural predators in Atlantic and Caribbean waters, they will go after juvenile fish of just about anything from grouper to snapper to parrotfish, according to conservationists of NOAA's Florida Keys National Marine Sanctuary.

## Saving sharks

Conservationists have another reason for promoting lionfish for consumption: saving endangered sharks. If more people eat lionfish rather than shark, it could help the recovery of decimated shark populations due to overfishing. Initiatives such as the first lionfish and bake taste-test at Maracas Bay in Trinidad and Tobago sponsored by Papa Bois Conservation and the Institute of Marine Affairs are getting the locals talking about and trying lionfish in place of the traditional local staple of shark and bake.

## From spears to legislation

In Florida, the state is recruiting divers to combat lionfish. Fishery managers will urge Florida Fish and Wildlife Conservation voting board members to take more steps to allow divers to

kill lionfish. Florida law bans the use of rebreathers for all spearfishing. An exception should be made for lionfish.

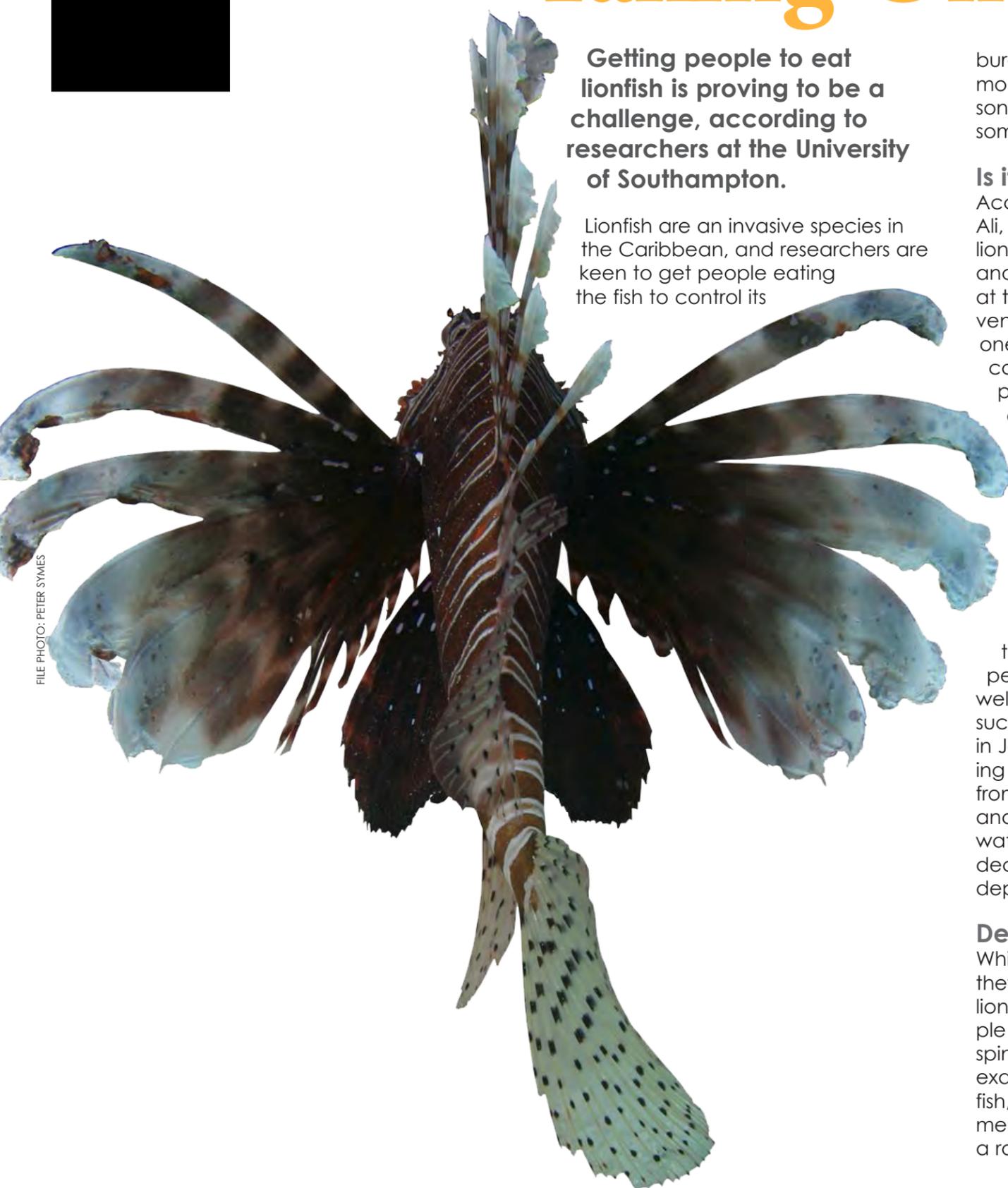
The state has already taken several steps to increase the harvest of lionfish, such as allowing divers to spear or capture lionfish without a saltwater fishing license. Anglers need a fishing license but can take as many lionfish as they want.

The Florida Fish and Wildlife Conservation cites Key Largo lionfish derbies as examples of how allowing the spearfishing of lionfish in waters normally closed to spearfishing proved to be "excellent opportunities to safely facilitate lionfish removal." □ SOURCES: ABC NEWS, TBO.COM,

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FILE PHOTO: PETER SYMES



Want to clean a fjord?

# Call in Some Mussel



PETER SYMES

## Blue mussel beds can clean fjords and bays.

Agricultural fertilizers leaching into aquatic environment can cause massive algae blooms leading to oxygen depletion. Banks of blue mussels can get the algae populations under control, Danish researches has demonstrated.

A project conducted by researchers from Denmark's Technical University showed that 18 hectares of blue mussels in Skive Fjord reduced the levels of algae low enough to prevent oxygen depletion.

The main issue with fertilization of coastal waters causing algae bloom stems from the massive amounts of

dead algae sinking to the bottom in thick layers. As they rot, they consume and deplete oxygen, choking huge swathes of seabed, leading to widespread bottom death. This is a big issue along coasts of agricultural areas.

Shallow waters with a limited exchange of water such as deep fjords are in particular at risk but also bigger

Dense beds of blue mussels, *mytilus edulis*, can filter vast volumes of water. They are edible, too

seas, such as the Baltic, are severely affected by oxygen depletion and huge areas regularly die off.

In an attempt to prevent algae to completely dominate the ecosystems researchers have looked into using blue mussels, which are effective filter feeders, to bring the blooming algae populations under control.

Normal feeding in *Mytilus edulis*, and many other suspension-feeding bivalves, depends on the cirri-trapping principle where bands of lateral cilia produce the main water transport through interfilamentary canals of the gill where suspended particles are separated. In experiments it has been demonstrated that the mean individual filtration rate of 21.5mm shell length mussels was about 15 milliliter per minute. This equates to 22 centiliter, or a quarter liter per 24 hours, just for one small mussel.

Consequently, as many divers can testify, there is often a much clearer layer of water just above dense mussel beds.

The Danish researchers used 90km (56mi) of lines from which the blue mussels were suspended. After a year, the scientists saw significant improvement in water quality in a surrounding area that was ten times bigger than the mussel beds. This effect has been attributed solely to the blue mussels. □

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Island Exposure

## Sargasso Sea gets international protection

Working together, the governments of the Azores, Bermuda, Monaco, the United Kingdom and the United States have formed an international alliance to protect and conserve the Sargasso Sea, located in the mid-Atlantic Ocean and unique for its floating seaweeds that are home to a rich biodiversity.

A first for international cooperation in protecting a marine area, the alliance signed a declaration in Hamilton, the capital

of Bermuda, outlining the use of international organizations such as the International Maritime Organization, the Convention on Migratory Species as well as regional fisheries authorities to protect the Sargasso Sea's unique ecosystem.

Executive Director of the Sargasso Sea Alliance David Freestone said, "This is a truly historic occasion. It is the first time an international alliance has been formed to protect an iconic high

seas ecosystem, using existing legal international frameworks."

The Sargassum seaweeds of the Sargasso Sea serve as an ecological crossroad in the Atlantic, where 30 species of cetaceans live or migrate through as well as other species such as sea turtles, sharks, tuna and eels.

Unfortunately, the area has been threatened by pollution, ocean acidification, climate change, fishing and harvesting of algae for biofuel production and fertilizer. □

SOURCE: WILDLIFE EXTRA



View from Akajima Island in the Kerama group of islands

## Japan designates new marine park in Okinawa

Kerama Islands and surrounding waters in Okinawa Prefecture has become Japan's 31st national park—the first such designation in three decades. In addition, surrounding waters shallower than 30 metres will become a marine park. The Kerama Islands are a group of 22 islands

located 32 kilometres (20 mi) southwest of Okinawa Island in Japan

The designated area includes 30 islets and reefs, and covers 3,520 hectares of dry land and 94,750 hectares of ocean. It lies 35 kilometres west of Okinawa Main Island and is famous for its rich aquatic environment. It is

home to 248 species of coral.

The government will restrict development within the areas, such as the extraction of sand. It also plans to build coral restoration facilities to counter the damage done in the past. □ SOURCE: JAPAN TIMES, JAPAN UPDATE

## Oman protects two coral-rich bays

On the Musandam peninsula of Oman, the bays of Khor Najd and Khor Hablain are now off limits to all types of fishing, with the exception of handline fishing. In addition, all forms of nets and cages are prohibited. These measures have been put in place by the Ministry of Agriculture and Fisheries in order to protect and conserve the pristine coral reefs, marine life and resources as well as the natural beauty of these practically untouched areas.

The result of five years of research and campaigning by the international organization Biosphere Expeditions, the ban is hailed as "a wise and important step" by the group's founder, Dr Matthias Hammer. "This area has a high coral coverage at nearly 60 per cent of the underwater surface. This is greater than that of most reefs around the world, and the Musandam reefs are certainly the best in the region," said Hammer.

Oman Marine Sciences and Fisheries Centre which recommended the ban stated, "The destruction of corals means severe damage to the marine life in the area. So this measure not only protects reefs but also helps in sustainability of marine resources."

Aiming for the creation of a full marine protected area, Biosphere Expeditions hopes this measure is the first step toward a network of MPA's in the region. □ SOURCE: WILDLIFE EXTRA



Get beneath the surface

### Okinawa: Diving's best kept secret

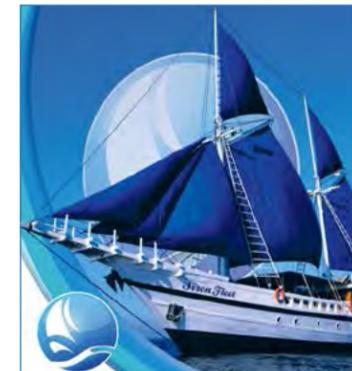
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## Oxygen via pills?

Scientists have developed a new microparticle filled with oxygen that can be injected into the blood stream.

The microparticles are tiny capsules (2-4 micrometers) made of a single layer of lipids surrounding a small bubble of oxygen gas.

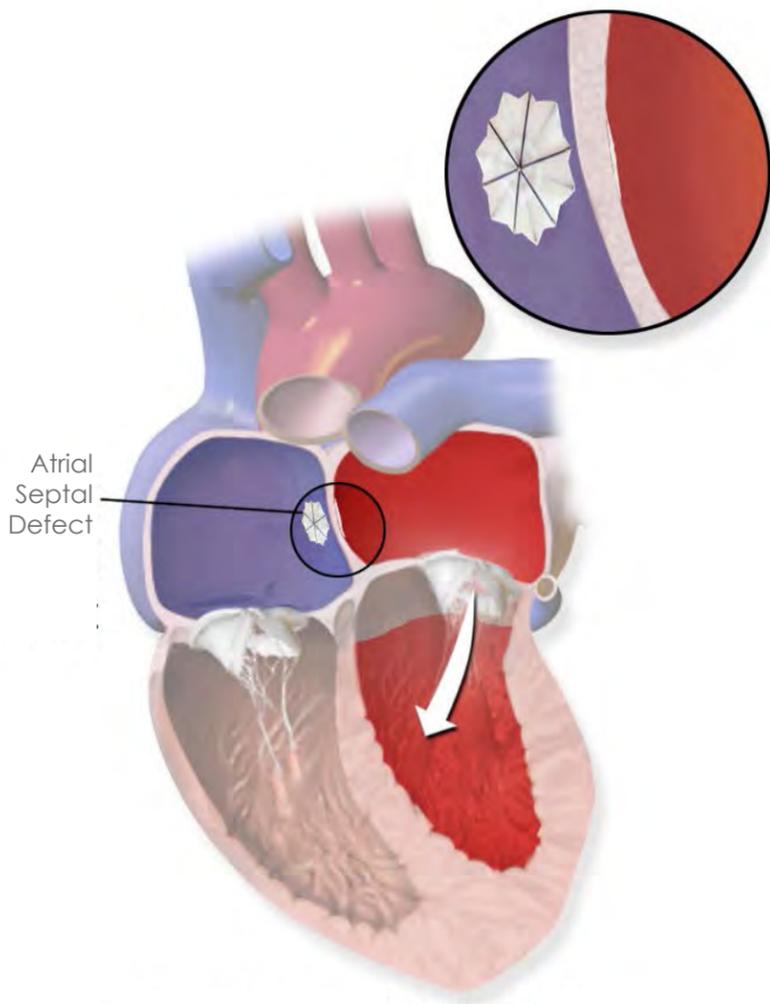
Upon injecting a capsule-filled liquid into the bloodstream, the capsules bump into red blood cells, transferring the oxygen to the cell in the process. About 70 percent of the oxygen injected successfully makes its way into the blood stream this way.

While the technique is primarily being developed

for short-term resuscitation by boosting oxygenation during acute respiratory failure, it does give raise to some mind-boggling perspectives; Not only could this exciting new technique provide first responders attending dive accidents with better tools, but is it also a glimpse into the future where divers could have gases provided via particles in the bloodstream?

Food for thought. □

## Doctor recommends screening divers for PFO



Atrial Septal Defect

Device Closure for Atrial Septal Defect

WIKIMEDIA COMMONS

Atrial septal defect (ASD) is a form of a congenital heart defect, such as a hole, that enables blood flow between two compartments of the heart called the left and right atria.

During fetal development a hole in the septum called the foramen ovale allows blood from the right atrium to enter the left atrium. This opening allows blood to bypass the nonfunctional fetal lungs while the fetus obtains its oxygen from the placenta.

In approximately 25 percent

of adults the foramen ovale haven't entirely sealed after birth. In some cases elevation of the pressure in the pulmonary circulatory system can cause the foramen ovale to remain open. This is known as a patent foramen ovale or PFO. In many cases an ASD may not produce noticeable signs or symptoms, especially if the defect is small.

### PFO in divers

However ASDs, and particularly PFOs, are a predisposing risk factor for decompression

Closure of patent foramen ovale (PFO) may alleviate decompression sickness. A small study in hyperbaric chamber finds arterial bubbles was detected in 12 percent of divers with PFOs and none in divers who had their PFOs closed. Serious divers should seek screening, said doctor.

sickness in divers because a proportion of venous blood carrying inert gases, such as helium or nitrogen does not pass through the lungs.

The only way to release the excess inert gases from the body is to pass the blood carrying the inert gases through the lungs to be exhaled. If some of the inert gas-laden blood passes through the PFO, it avoids the lungs and the inert gas is more likely to form large bubbles in the arterial blood stream causing decompression sickness.

Czech medical researchers put two groups of divers through simulated dives in a hyperbaric chamber of either 18m for 80 minutes or 50m for 20 minutes. The 'divers' were categorized according to whether they had a PFO or not.

After the dives, using echocardiography, venous bubbles were detected in both groups with equal frequency.

### Bubbles

However, arterial bubbles were detected in 12 percent of the

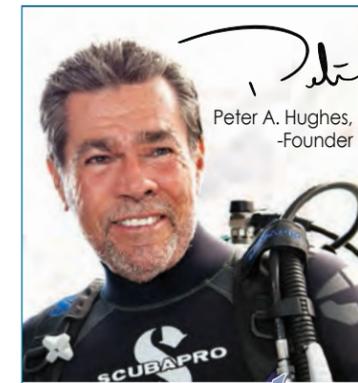
PFO group but none of the closure patients. Furthermore, in 21 percent of divers with PFO and detected arterial gas bubbles, neurological symptoms of decompression sickness were present (ie. headache, unusual fatigue, and transitory visual disturbances). Conversely, none of the divers in the closure group reported decompression sickness symptoms.

The data should convince serious divers to seek screening for the presence of a PFO, Robert J. Sommer, MD, of Columbia University Medical Center stated to the medical industry website TCTMD.

Sommer notes that he has seen professional divers from organizations such as the New York Police Department and the New York Fire Department who have experienced symptoms on the job and subsequently been

found to have a PFO. "And then those patients come to me to get their PFOs closed because otherwise they would be classified as disabled," and would not be allowed to dive again, he said. □

*"And then those patients come to me to get their PFOs closed because otherwise they would be classified as disabled and would not be allowed to dive again..."*



Peter A. Hughes, -Founder

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Diver on wreck of the *Oriskany*, Pensacola, Florida; Bay County Hathaway Bridge (below)

Text by Kathalyn Gaither, Florida Department of Environmental Protection. Photos by A. Emtiaz, Bill Horn; and Keith Mille of the FWC Artificial Reef Program

Miles of white sandy beaches, family vacation destinations, infamous spring break festivities and outstanding state parks attract millions of visitors to Florida annually from around the world. But there is so much more

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Artificial reefs themselves cannot compare to the magnificent beauty of Florida’s natural coral reefs. However, the spectacular marine species of all shapes, sizes and vibrant colors is of equal amazement.

And while Florida’s coral reef tract lies in south Florida waters, divers and snorkelers can find more than 2,800 artificial reefs located off 34 of the 35 coastal counties.

Species such as moray eels and sea turtles, red snapper and cobia, Atlantic spadefish and butterfly fish—and even goliath grouper reaching up to seven feet in length and weighing several hundred

pounds—frequent the reefs as thousands of tiny fish spiral around them.

The artificial reefs vary from as little as one ton in size to in excess of 30,000 tons. These structures had varying roles before becoming a part of the vast underwater artificial reef community. There are former combat army tanks, barges, freighters, schooners, tugboats, box cars, airplanes and water towers.

Currently, these types of reef materials are no longer used since new permits require that reef materials be usable for long-term marine habitat and remain stable on the ocean floor.

Most new reef materials are prefabricated concrete and steel reef structures built specifically for artificial reef use.

Some of the older artificial reefs were even somewhat famous before their sinking.

Before its sinking off the waters near Looe Key in 1998, the 210-foot ship *Adolphus Busch* was in the 1957 film *Fire Down Below* starring Robert Mitchum, Jack Lemmon and Rita Hayworth.

In 2009, the USS *Hoyt Vandenberg*—a 520-foot long missile tracking ship and the star of the 1999 movie *Virus* starring

KEITH MILLE / FWC ARTIFICIAL REEF PROGRAM



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Okaloosa Liberty Ship

Jamie Lee Curtis—was sunk off Key West.

Scrap army tanks and decommissioned old ships may not be thought of in terms of beautiful, but they do evoke a sort of intrigue and magic as artificial reefs.

Many of the structures were just sitting in water or on land, aging away, until Florida's Artificial Reef Program was created in 1982, and once again, they were given a purpose.

Several of Florida's artificial reefs have historical value. Some are registered with the Florida Underwater Archaeological Preserve and the U.S. National Register of Historic Places, such

as the USS *Hoyt Vandenberg* that was sunk in the waters off Monroe County in 2009. It is the second largest artificial reef in Florida surpassed only by the USS *Oriskany*, which was sunk in 2006, about 22 miles from Pensacola Pass.

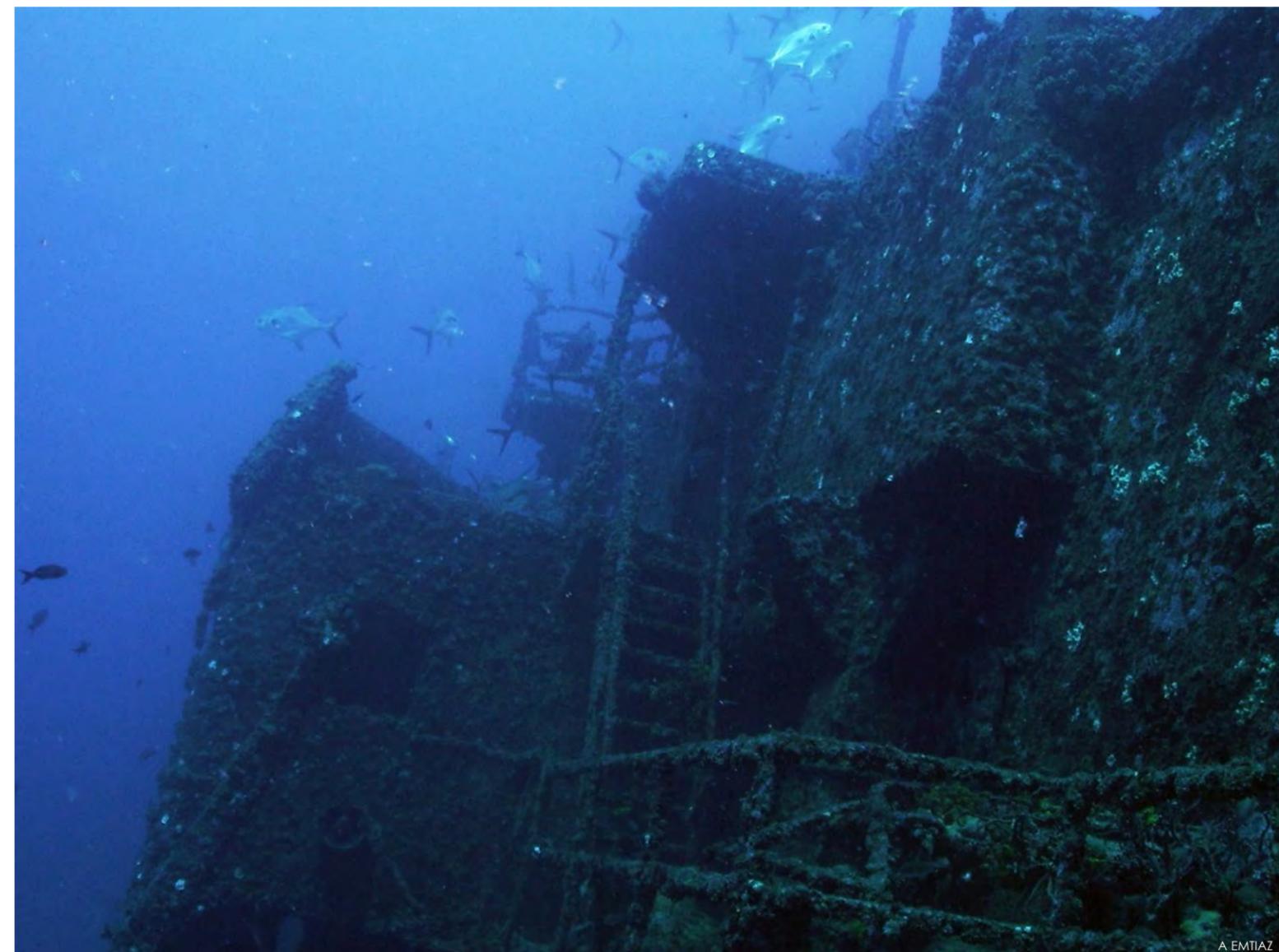
The USS *Oriskany*, measuring 888 feet in length and weighing 32,000 tons, was previously a Naval Air Craft Carrier used primarily in the 1970s and decommissioned in 1976. She is fondly referred to as the Great Carrier Reef.

The USS *Spiegel Grove*, named after U.S. President Rutherford B. Hayes' estate, was active in the military from 1956 through 1984. It transported troops and equipment thousands of miles

and to many countries including Newfoundland, South Africa, Spain and Denmark during the Cold War era. In 2002, the 510-foot ship was sunk in waters off the Florida Keys and is located near the John Pennekamp Coral Reef Underwater State Park in Key Largo.

Especially common in gulf waters off Mexico Beach in Bay County are memorial reefs that honor those who have passed on. Some of the pre-fabricated reef structures actually hold the ashes of families' loved ones in many areas of the state, particularly off Sarasota.

Transportation was a theme for older reef materials in the waters of Escambia and Okaloosa coun-



USCG *Duane* (above) photo taken by Anoosh "Tony" Emtiaz—an employee at John Pennekamp Coral Reef State Park. Two of his favorite sites are sister shipwrecks, the USCG *Duane* and USCG *Bibb*, both sunk in 1987

A. EMTIAZ





BILL HORN

Queen angelfish, Dade County Barge

ties. In addition to the *Oriskany*, there are an additional ten army tanks, some CSX boxcars, at least a dozen M-60 army tanks, some tugboats, several barges and old auto bodies that serve as a refuge and playgrounds for area marine species.

You can also see a little bit of America's past in Pasco County waters where nine army tanks have been sunk, and in Sarasota County there are ten of them.

Many of the artificial reefs have been fondly named by divers or family members, like the Stewart Unkles Jr. Memorial Reef, Red Sea Tugboat, Spirit of Hemingway, Culverts Guardian Reef and Poseidon's Garden—an underwater burial site off Sanibel Island.

There are some ex-smuggling ships,

an old floating saloon and even a Rolls Royce off West Palm Beach.

No matter what it is made of—whether it's a concrete module or a massive retired military vessel—Florida's artificial reefs present awesome opportunities for those looking to explore life beneath the sea, from the novice diver to the most experienced.

Be cautious—there are certain dives that only experienced divers should attempt due to various conditions such as currents, underwater hazards and other variables.

Artificial reefs that lie within nine nautical miles of the coast in the Gulf of Mexico, and within three nautical miles of the Atlantic need permits from both the Florida Department of Environmental Protection ([www.dep.state.fl.us](http://www.dep.state.fl.us)) and

the U.S. Army Corps of Engineers; any beyond those distances need permits only from USACE.

The Florida Fish and Wildlife Conservation Commission ([www.myfwc.com/conservation/salt-water/artificial-reefs/locate-reefs](http://www.myfwc.com/conservation/salt-water/artificial-reefs/locate-reefs)) oversees a grants-in-aid program to assist local governments to help fund the planning, building and monitoring of artificial reefs in their local marine waters, as well as provide technical assistance and guidance for artificial reef projects statewide.

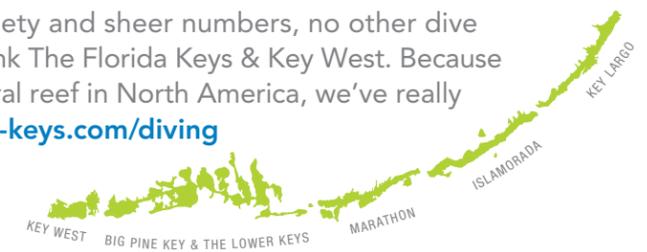
With so many different reefs out there to explore, divers and photographers will never need worry about becoming bored with the scenery. So plan your next excursion to Florida and experience the undersea world of adventure that Florida's artificial reefs bestow! □



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# Dalarö

— Marine Archeological Wreck Park

Text by Millis Keegan  
Photos courtesy of the  
Swedish Maritime Museums

**The Baltic Sea offers some very treacherous waters even under the best of circumstances. The price to pay for sailing the Baltic through the millenniums has been high, and traces of those costs are scattered over the bottom. At the time and up to a very short while ago in the big scheme of things, no one knew how valuable these wrecks would be.**



"Every dive we discover something new on the Dalaröwreck!" said Jim Hansson, Swedish Maritime Museums (above); Under wheel of canon hides handle of flint lock pistol (inset)

The value is not measured in money, but in knowledge. Due to extremely favorable conditions, the wrecks and the remains found are virtual time capsules, waiting to tell their stories about people and their way of living in the past, about the countries and the cultures of Europe.

Nowhere else in the world are there as many well preserved wooden wrecks as in the Baltic Sea, and there is much to tell, but for now, we are going to zoom in on Stockholm's archipelago in Sweden. Over 20,000 islands made navigating through these parts extra challenging in times long before the Viking Era.

Through well-kept archives, we have information of over 20,000 wreck site locations in this region. Yet, only a few of them have actually been found and explored by divers. The wrecks are hard to find, even with modern technology. When a new find is presented, it is a big deal and very exciting.

## Finding lost history

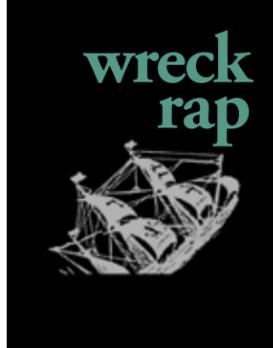
Strides in new technology have made it easier than ever to find wrecks lost for centuries. Note that I say easier than ever, not easy. Easy it is not, but with a 'little' bit of funding, a crew made of the right stuff, lots and lots of time and a pinch of luck, it can and is done. Not too long ago a team of Baltic divers brought attention to

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Visitors can follow what happens in real time on the wrecks, dry and comfortable over a cup of coffee, by signing up for a full ROV experience



Dive platform used during early excavations on the Dalarö wreck provided the divers with a great base camp

some really spectacular and significant finds in the Baltic, among them, the wooden warship *Mars*, which sank in 1564 (read the story in *X-RAY MAG #59*). That discovery brought a bit of frenzy to the world.

Researchers and marine archeologists should have a

field day, but there is always that tiny little hindrance called money. Excavating something from the bottom of the sea is a costly matter, so the wrecks are protected with a no-dive clause attached to the protection. Now no one can enjoy the wrecks, everything comes to a stand still, and no

one is happy. How can we find a solution in which the wrecks can be enjoyed in the meantime?

### Nordic Blue Parks

In 2012, museums and cultural and natural heritage authorities in Sweden, Finland, Denmark and Norway part-

nered up in a project called Nordic Blue Parks. The aim was to develop a sustainable marine tourism combining outreach with protection. They wanted to do so by opening underwater parks that combined cultural experiences with nature. Through the Blue Parks, all visitors, not only divers, were going to be able to experience even the most fragile shipwrecks. Perhaps tourists could be brought to the wreck sites by boat charter, with ROV (remote operated vehicle) capacity? Or through an interactive museum experience using computer animations? Ideas were tossed around, and tossed away.

### Dalarö Shipwreck Preserve

Haninge Kommun, in cooperation with Swedish Maritime Museums (SMM), took the ideas and ran with them. It is 2014, and the first ever Maritime Historical Underwater Shipwreck Preserve is about to open up in the Baltic Sea. Three wrecks have been chosen for the preserve, and there will be possibilities to dive the wrecks as well as opportunities to sign up for the full ROV experience.

It has taken eight years

of hard work and the cooperation of the municipal of Haninge Kommun and the Swedish Maritime Museums as well as some private actors that just wanted this to happen, such as myself, to come to this point. The work has been ground breaking, a true learn-as-you-go experience, as nothing like it exists in the world. Anyone, scuba diver or not, can visit the location of the wrecks, and see what is going on in the deep, in real time.

### The wrecks

Of the three wrecks chosen initially, two are well known in the dive community, but 20-something years ago, dive restrictions were put on the *Jutholmswreck* and *Anna Maria*.

The *Jutholmswreck* is a small flute. She sank near the end of 1780. A flute is a ship type known for its loading capacities, and was mainly used for trading. There are still parts of the cargo left on the wreck, like barrels of tar and iron bars.

*Anna Maria*, another flute, but bigger, sank in the harbor of Dalarö in the harsh winter of 1709, after a fire broke out while the crew were downing some beers at a nearby



The ROV pilot really needs to know what he is doing, navigating the fragile wrecks

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Stephen Frink



A mosaic of pictures shows the aft of the Dalarö wreck

establishment. Both these wrecks are well documented and excavated.

The third one is a wreck found only eight years ago, a magnificent wreck with a mysterious past from the mid-late 17th century. An immediate dive ban was put in place, so very few have seen this pristine and truly unique ship. She sits upright on the bottom with everything, and I mean everything, completely intact. Give or take some hundred years of wear and tear of course—she did go down about 350 years ago after all—but the location is so sheltered that even parts of the masts are still standing and pieces of the sail have been spotted.

The Dalarö wreck will be the signature wreck of the park. Even though she is extremely well preserved, she is the most fragile. Some excavation has been done, but so far, her story remains a secret. Spread out on the deck, artifacts from everyday life aboard can be found. Two

flintlocks and one wheel lock pistol, Bartmann jugs from the city of Amsterdam in Holland, an open toolbox and more. All is out in the open, and that is how the authorities want it to remain, for everyone to see. That will be done through careful restrictions and regulations.

Dendrochronology suggests that the ships timbers were felled after 1613, possibly from Northumberland. A glass bottle found in the wreck bears the Crest of the Boynton or Ogle family from Northumberland in England, which is quite a significant clue, but more information is needed. There is a good chance that the answer can be found through future excavations, so stay tuned.

### Restrictions & regulations

The cultural resources of the Baltic are under constant threat from pollution, looting and deterioration as it is. To avoid any undue and unnecessary damage, spe-



cially trained dive guides will be the guardians of the wrecks' well being.

As a diver, you will be allowed to dive the wrecks only if the wreck park rangers determine that you have the necessary qualifications.

It will be pretty straightforward

in regards to *Anna Maria* and the *Jutholms* wreck, as long as you can prove that you can handle yourself, your equipment and have a clue about your buoyancy in cold water.

With the signature wreck, things will be a bit different. It will not be enough to just have a clue

A diver gets ready to investigate below deck (top and left); Taxi at Sea, M/S Vindbådan, takes non-diving passengers to the wreck sites

about your buoyancy control, you will need to know exactly what you are doing, and you will be judged during other dives, so you might want to plan more than a day at this destination to have a possibility to experience the

Dalarö wreck.

It took eight years and a lot of hard work to reach this point, to be able to visit these unique wrecks, but make no mistake, the permission can be taken away in less than a day.

Peter Norman from RAÄ, the Swedish National Heritage Board,

explained that their mission is to play a proactive, coordinating role in heritage promotion efforts. Although they welcome the interest for historic remains under water, they have to ensure that the historic environment is preserved in the most effective possible manner. Any sign of unnecessary wear and tear, and they will reassess the permissions.

### Looting, wear and tear

Bad buoyancy skills are not the only danger to the Dalarö Historical Ship Wreck Preserve. Looting is also a very real threat and will be even more so as the



The green water of the Baltic promises exciting and beautiful dives, as long as the visibility cooperates

park opens up and the location becomes more widely known. The coast guard and the Baltic Sea Police have been part of the project from the start, and are well aware of what is at stake. They are not the only ones, the society as well as the Swedish dive community are very protective of these gems as well, and will make sure that the coast guard and the Baltic Sea Police will be alerted to any suspicious movement around the wrecks.

### Wreck Park Rangers

Diving will only be allowed in small groups, and with a specially trained dive guide, an underwater wreck park ranger. The Swedish Maritime Museums invited anyone with at least a level of dive master or equivalent certification to become certified as an underwater wreck park ranger for Dalarö Ship Wreck Preserve. That required two days of training, beginning with classroom training in the form of lectures, and a dive

day in the preserve.

### Training

The first part of the training

was held at the world famous Vasa Museum in Stockholm. The lectures touched subjects of laws pertaining to the protection of the wrecks, and criminal activities such as looting and more. Also discussed were safety issues, and the importance of knowing about our past and the role archeology plays in that.

Nina Eklöf, Jim Hansson and Trevor Draeseke were the marine archeologists and the representatives from SMM. They covered topics including what is marine archeology, how do they go about it on an everyday basis, and why marine archeology is such an important science. They spoke about research and the



The figurehead, a lion, was brought up to the surface, after being measured and documented (left and right) she was returned to her original place at the wreck site

fact that there is not as much funding for research, so they have to spend it wisely.

"We rely on you to spread the right information about our historical wrecks, and it will be your job to enforce a positive attitude or change the attitude about them." They pointed out that the wrecks are vehicles for understanding a certain time period in the past, which is what makes them so interesting, and that we now have an opportunity through the wreck park to reach a larger audience with that message.

### So what happens now?

The next step is the in-water training that will take place in mid-May. After that you can book your historical wreck dive with one of the Underwater Wreck Park Rangers. Unique to the park is also the non-diver program. Tourists with an interest in history, but with no intention of getting wet, can be brought to the wreck sites by boat charter. There are even opportunities allowing visitors to experience what happens on the wreck in real time, through ROV (remote operated vehicle).

By now I think I've managed to convey that the Stockholm archipelago really is a fabulous historical underwater maritime museum. It is a museum without real access to the public, unless you are a scuba diver. But times

### QUICK FACT

**THE BALTIC SEA: 10,000 YEARS**  
The Baltic Sea has existed for around 10,000 years, a product of meltwater from glaciers and salt water from the North Sea entering the straits between Denmark and Sweden. There have been human settlements along its shores through the millenia and inhabitants sailed, hunted and warred in the Baltic. □ SOURCE: WIKIPEDIA

have changed, and the authorities' dream of Nordic Blue Parks, open to everyone, diver or not, is really happening. This is a big thing. Welcome to Dalarö Ship Wreck Preserve, and enjoy experiencing the past. □



A survey by NOAA located the wreck of *City of Chester* at a depth of 66m (217ft)

## 19<sup>th</sup> century shipwreck found near Golden Gate Bridge

The wreck of a passenger steamer that went down in 1888 has been found sitting upright on the bed of San Francisco Bay.

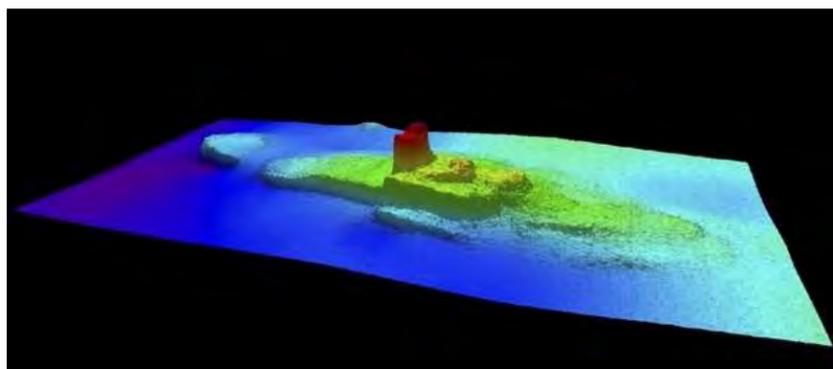
The 202-foot-long steamship *City of Chester* had just left San Francisco and was headed up the California coast to Eureka with 90 passengers on 22 August 1888, when at around 10 a.m. it was struck by the steamer *Oceanic*. Impaled on *Oceanic*, which was arriving from Asia, *City of Chester* remained afloat for six min-

utes before sinking. Sixteen people died in the accident, NOAA stated on its website.

The rediscovery of the wreck restores an important historical link to San Francisco's early Chinese-American community. Reports at the time initially criticized *Oceanic*'s Chinese crew in the racially charged atmosphere of the times. Criticisms turned

to praise, however, when the bravery of the crew in rescuing many of *City of Chester*'s passengers was revealed. The wreck was then largely forgotten.

The wreck won't be raised, but a nearby museum exhibition will tell the story of the ship's sinking. □



A sonar profile view of the iron and wood steamship *City of Chester* sitting upright on the seabed of San Francisco Bay

## HMCS *Annapolis* artificial reef project stalls over spat and funding

Plans to scuttle a decommissioned Canadian naval destroyer escort ship off Gambier Island in British Columbia have sparked opposition amongst local residents.

The Artificial Reef Society of BC (ARSBC) plans to sink the HMCS *Annapolis* in Halkett Bay to attract divers. The vessel is currently moored at West Bay on Gambier Island, which is located in Howe Sound north of Vancouver.

Gambier homeowner Gary MacDonald and members of The Save Halkett Bay Campaign are lobbying to prevent the HMCS *Annapolis* from being sunk in the bay. According to MacDonald, a recently released Environment Canada study reveals pollution levels in some of the ships components are more than eight times the allowable limit. Environment Canada recently issued a request for proposals from companies interested in stripping all insulation from the ship as it contains polychlorinated biphenyls (PCBs). "We've been calling for a thorough investigation of the ship's state for years," said MacDonald. "We're adamant that Halkett Bay is absolutely the wrong place to sink a ship. There is too

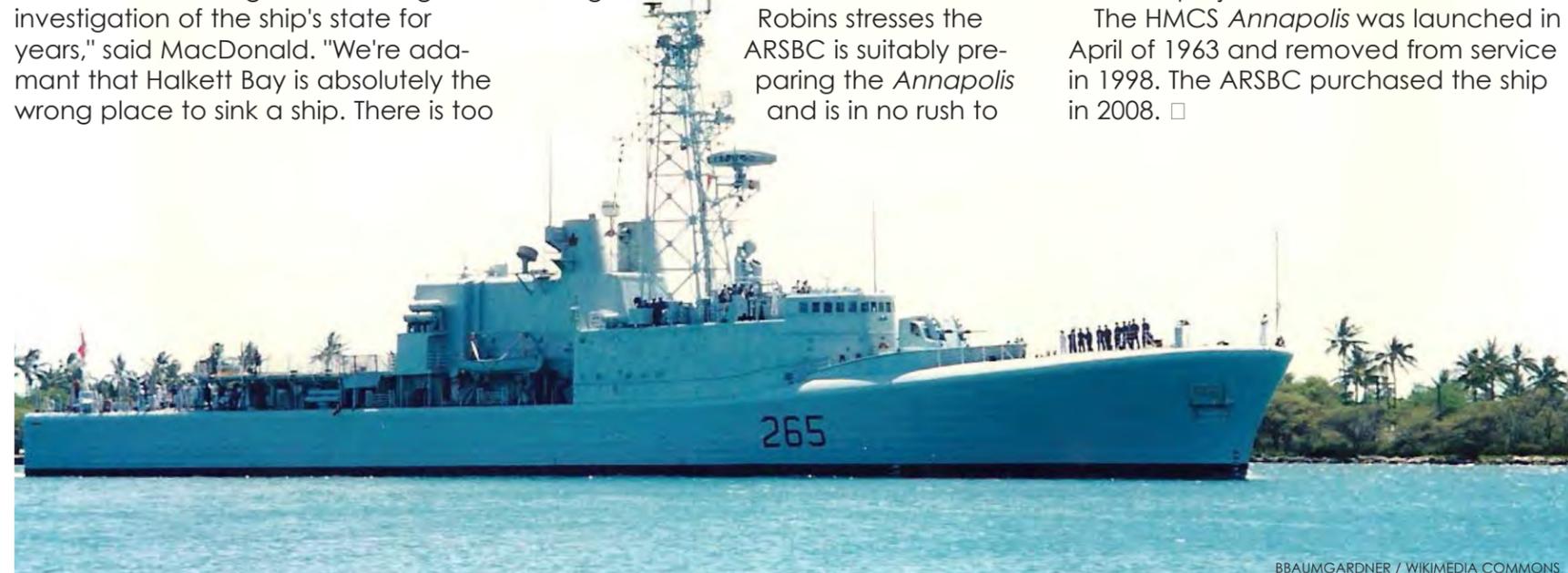
much tidal action and there is a fair likelihood that the ship will actually come apart once it's sunk. It's simply the wrong place."

Howard Robins of the ARSBC is heading up the *Annapolis* project. He said the sunken vessel would bring marine biodiversity to Halkett Bay. "These are very good projects, they do a lot for the marine ecology and they certainly bring in a lot of tourism dollars to the province because it's based on eco-adventure dive tourism—but fundamentally artificial reefs help bring back biodiversity," said Robins. "It's needed and that's exactly why we've got it in Halkett Bay. It's all a good thing."

Robins stresses the ARSBC is suitably preparing the *Annapolis* and is in no rush to

sink the vessel. The ARSBC needs to deal with environmental concerns and one more permit is required before the ship can be sent to the bottom of the bay. "They have to be done right, and they have to be done to code, and done to the standards," he said of artificial reef projects.

The HMCS *Annapolis* was launched in April of 1963 and removed from service in 1998. The ARSBC purchased the ship in 2008. □



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## Rebreathers USA becomes US distributor of JJ-CCR

Rebreathers USA, which is based in Everett, Washington State, has been designated exclusive distributor of the JJ-CCR for the

United States. Rebreathers USA is a certified JJ service center, offering a complete stock of replacement parts and supplies.

While they do not conduct training on the units, a list of JJ-CCR instructors is available by contacting Rebreathers USA. □

## UK's Will Goodman descends to 290m on JJ-CCR rebreather

After a year's training and preparation, Will Goodman, a technical diving Instructor Trainer,

and Guinness World Record holder for the longest scuba dive, descended to a recorded

depth of 290m off Gili Trawangan, Lombok Indonesia using an unmodified JJ-CCR. □

## Manta Industries and Sartek team up

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## Huish Outdoors acquires Liquivision

"By combining Liquivision and Atomic Aquatics' design and engineering teams, it instantly gives us unparalleled expertise in dive computer design and manufacturing, along with an appetite for innovation and amazing technology," wrote Mike Huish, president of Huish Outdoors, in a press release.

Founded in 2004 by former freediving World Record holder and inventor Eric Fattah, Liquivision has made itself noted by its series of compact but innovative dive computers, which were often the first on the market to embrace and incorporate new technologies such as OLED display. Other notable computers include the X1 trimix CCR computer that featured a novel tap based user interface, and in 2013, the company unveiled the world's first long range wireless dive computer, the Lynx with a 100 meter range. □



## Halcyon and Santi join forces

In April, Halcyon Dive systems and Santi Diving Equipment launched their cooperation, bringing together two of the technical diving industry's most innovative brands. The joint venture will mean that customers will get better access to products, sales support and service.

Jarrod Jablonski of Halcyon and Tomek Stachura of Santi are reknown, experienced divers, who, together with partners, developed businesses to further their passion for diving and achieve their ambitions in the field, as well as make diving safer and more easily accessed by others.

"The dive industry continues to grow, as well as our desire to discover more and more, and yet [there are still] undiscovered corners of the underwater world," said Jablonski in a press release. He said he'd known Stachura for many years and that they had worked well together on the Mars wreck project in Sweden. "[It] became obvious to me that Tom and Santi share fully in my vision for the future of diving, and that together, we will create the ideal for work on new products and common diving projects around the world," said Jablonski. □

## British manufacturer launches new apres dive clothing collection

British manufacturer Divesangha has launched their inaugural collection of apres dive clothing: [www.divesangha.com](http://www.divesangha.com). This garment range is aimed at divers and sea enthusiasts alike who want comfortable, practical and fashionable 'surface gear'.

The resulting collection is functional and smart and individualistic. (Each t-shirt is individually numbered). There is huge care and attention to detail in the manufacturing of these clothes, down to the logo'd buttons and high quality stitching.

Divesangha garments feature the unique Hung Dry system, which is currently being patented. Hung Dry is a simple system that allows clothes to be securely hung to dry



or air on a rail or a line, without the need for pegs, and more importantly, with no risk that the wind will blow them away.

The word *sangha* means *association* or *community*, and it expresses something of the unique and uniting harmony divers experience with nature in the marine environment. The environment is something that Divesangha takes very seriously. They are committed to ethical manufacturing. All of Divesangha products are exclusively designed and manufactured in the United Kingdom. And their packaging is fully recyclable, too. □

## Divers raise funds for a documentary about ancient underwater forest

The 50,000-year-old forest is a half-mile-square area of 50,000-year-old cypress stumps perfectly preserved under the ocean floor off the coast of the U.S. state of Alabama. As of Sunday, April 20, the fundraising project on Kickstarter has passed the critical \$15,000 mark, but the divers can definitely use more than the \$15,000 with which they know they can get a film made. The fundraising runs until May 1.

The forest's existence has generated intense interest around the world since its

discovery was announced a couple years ago, said team member Ben Raines

Thousands of stumps dot the seafloor, carpeted with anemones and providing homes to fish, crabs and octopi. Some of the trees are more than ten feet in diameter, relics from the prehistoric woods before people lived in America, when the Gulf Coast was covered in trees the size of redwoods.

They contain invaluable



information about the prehistoric climate, when sea levels were 60 feet lower. Swim over the ancient river channel that meanders through the site and you are instantly transported to a strange, fairylike world. It is among the most magical spots in the sea. When the wood is cut, it has a "cypressy" smell, and sap oozes out of it, Raines said. □

## New guidelines for divers in England

A guidance for divers in England has been issued by the following agencies in a joint statement: BSAC, GUE, PADI, PSAI, SSI, SAA and TDI / SDI. The new guidelines are endorsed by all diver-training agencies active in England. Instructors, members and divers are seriously encouraged to follow them.

On behalf of all divers and diver training agencies, the BSAC, acting as the National Governing Body for Scuba diving, with SAA and PADI, has been negotiating with the Marine Management Organisation (MMO) in regards to the interpretation of the legal requirements for divers pursuant to the Marine and Coastal Access Act 2009 (MCAA).

After long discussions, there is now an accord on a set of guidelines for all divers diving in English waters. These guide-

lines allow divers to go about their standard usual diving and training activities without the need for a licence. Divers should refer to the guidelines to be sure that they follow the law.

Activities not requiring a licence include:

- Deploying and recovering temporary shot lines for divers
- Using delayed or permanently inflated SMBs
- Using a lifting bag to recover items which have been underwater for less than 12 months
- Conducting surveys of shipwrecks by hand
- Using lifting bags for underwater litterpicks.

For other specific activities, the MMO still requires either previous notification or a licence application; Please consult the MMO for direction in these cases. Similar guidelines will

soon be made available for the waters of Scotland, Wales and Northern Ireland.

For more information, please see *Marine Licensing: Guidance for Recreational Divers* information sheet at [www.bsac.com/marinelicensing](http://www.bsac.com/marinelicensing).

For all other inquiries regarding these new guidelines, contact the Marine Management Organisation (MMO) directly at telephone: 0300 123 1032, or email: [marine.consents@marinemanagement.org.uk](mailto:marine.consents@marinemanagement.org.uk)

This update has been issued by: British Sub-Aqua Club (BSAC), Global Underwater Explorers (GUE), Professional Association of Diving Instructors (PADI), Professional Scuba Association International (PSAI), Scuba Schools International (SSI), Sub Aqua Association (SAA), Scuba Diving International; Technical Diving International (TDI / SDI). □

## Staying alive

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## Florida dive operators face charges of illegal shark feeding

**Florida Fish and Wildlife Conservation Commission (FWC) have filed charges against four men linked to the illegal feeding of sharks and fish within state waters. The investigation started after the FWC received several complaints that shark feeding was taking place off the coast of Palm Beach County during dive charter trips.**

One complainant told dispatchers she was on a dive trip where sharks were being fed. The person said the sharks had become so aggressive she had to get out of the water.

"This is a public safety issue," said FWC Maj. Camille Sovarel. "The FWC's Division of Law Enforcement wants to ensure these beautiful coastal waters remain safe for divers."

FWC investigators and the Palm Beach County Sheriff's Office (PBSO), working jointly,

conducted two separate investigations involving two northern Palm Beach County dive charter operators.

### Caught on video

On February 8, deputies from the PBSO dive team took part in a dive trip on board Emerald Charters of Jupiter. During the dive, video was taken of Randall Jordan feeding sharks by hand while within state waters. He also used a milk crate filled with fish chunks to lure sharks to his location. Thomas Smith was operating the vessel during the dive.

On February 22, the deputies took another dive trip on board the vessel *Miss Jackie*, which is owned by Luis Roman of Orlando and

operated by Toni Crumrine. The boat was used by the Lake Park-based compa-

ny Calypso Dive Charters.

During this trip, deputies took video of Roman feeding a goliath grouper and a lemon shark. Video also shows Roman trying to lure sharks to his location by shaking a milk crate filled with barracuda chunks. Both feeding incidents happened in state waters.

### Illegal since 2002

FWC investigators and PBSO divers used several GPS devices and other methods to confirm these activities were occurring in state waters, which, in the Atlantic, is within (or up to) three nautical miles from the nearest point of Florida coastline. Fish feeding in Florida waters has been illegal since 2002.

### Charges pressed

The FWC presented results from the joint investigations to the Palm Beach County State Attorney's Office, which charged Jordan, Smith, Roman and Crumrine with operating a vessel for hire within state waters to allow passengers to observe fish feeding. Jordan and Roman were also charged with fish feeding. These are second-degree misdemeanors, punishable by up to 60 days in jail and a fine of up to US\$500. □



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Edited by  
Scott Bennett



ANDREY BIZYUKIN

## India to develop dive tourism on Andaman, Nicobar and Lakshadweep Islands

**In a push to “augment country’s beach and diving tourism”, the Indian government plans big upgrade to infrastructure and better airport facilities.**

“We have identified [four] islands for development. A large number of tourist attractions exists across the Andaman and Nicobar Islands, but we are planning to do more to attract tourists,” said AK Singh, lieutenant governor of the Andaman and Nicobar Islands.

In addition, the government plans to build beach resorts and water sports facilities on three uninhabited Lakshadweep islands located in the Arabian Sea. “Thinnakkara, Suheli Par and Cherium are the three islands in Lakshadweep where we are planning to build tourism infrastructure at

a cost of Rs6 billion (US\$99.8 million),” said AM Hussain, assistant director of Lakshadweep Tourism. Other islands in the cluster offer scuba diving, snorkelling and windsurfing.

Tourist-friendly infrastructure offering scuba diving and water sport options should be completed by 2016. Night landing facilities would be developed at Andaman and Nicobar’s Port Blair airport by the third quarter of 2014 to allow the stopover of international flights. Currently, 96 flights pass the airport every day but none land there. □

## New Zealand reigns in shark diving operators

**Shark cage-diving operators in New Zealand will now be regulated after fears that lives were being put at risk.**

Conservation Minister Nick Smith said a permit system under the Wildlife Act was needed to ensure cage diving was done responsibly.

The move comes after locals on Stewart Island accused the island’s cage-diving firms of operating in a way that has led to a change in the behaviour of sharks, leading to more interactions between the predators and divers.

Shark cage diving is becoming a still more popular thrill. This image is from Guadaloupe Island off the Mexican coast

Stewart Island is the third-largest island of New Zealand. It lies 30 kilometres (19mi) south of the South Island, across Foveaux Strait. Every year between December and June, 100 great whites travel to the Foveaux Strait to feed off a large colony of fur seals.

Viewing the predators underwater has become a major tourist attraction for the little island, which has a population of less than 400, most of which live in

the island’s only town Oban. Companies offering tourists the opportunity to dive with great whites will need to apply for a permit and follow a code of compliance by the end of the year. Both Stewart Island shark cage diving operators are said to have welcomed the rules.

Owing to an anomaly in the magnetic latitude contours, this location is well placed for observing *Aurora australis*. □



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PETER SYMES

Taba Heights in the Northern Sinai—an area which is now affected by travel advisories issued by a number of Western governments—was a peaceful and pleasant location to visit

## Rising militancy in the Sinai becomes an issue for Red Sea dive operators

Egyptian government has stated Islamist militants in the Sinai Peninsula are becoming a threat to foreign tourists.

Egyptian officials say they are taking seriously a reported ultimatum by Islamist militant group Ansar Beit al-Maqdis for tourists to leave the country.

### Ambiguous reactions

Meanwhile and following the deadly bombing of a Tour bus that in February killed three South Koreans and an Egyptian driver in Taba near the Israeli border, a number of western nations such as Germany have amended their travel advisories to also advise against all but essential travel to all of Sinai including the resort areas around Sharm el Sheikh. Other countries such as the United Kingdom still give a green light for travel to Sharm el

Sheikh. Meanwhile the resorts along the Red Sea's west coast such as Hurgada, Safaga, El Quesir, and Marsa Alam are currently in the clear, as this issue goes to press, but all travellers are advised to stay updated and check the latest advice before travelling.

It is certainly not the first time the country, which is massively dependent on its tourist industry for revenue, has been in the grips of terror threats and forced to find ways to both protect tourists and reassure the general public that it is safe. Since the 1997 attack at the temples at Luxor, which killed 62 people, mostly tourists, the authorities have deployed a massive security ap-

paratus—in particular around tourist attractions and resort areas—an effort which was ramped up further following the 2005 Sharm el-Sheikh attacks and the 2006 Dahab bombings.

Despite of these incidences, the Red Sea resorts have generally been safe—and felt safe, as far as our own experiences go.

### So what has changed?

Sinai, being primarily resort areas and located across the Gulf of Suez far from the Nile Valley and any main population centers, used to be an area that was exempt from disturbances and risk, even during times of major troubles and unrest on the mainland. However in the

latter years, militants in the Sinai have become a growing issue and the security issues have shifted eastwards.

### Who cares?

To some extent the predominantly European tourists who have taken to the Red Sea for its affordable holidays at nice hotels, guarantee of sunshine and short flights, seem to have largely reconciled themselves with these occasional disruptions and disturbances, and the country still remains a very popular destination. However and somewhat unsurprisingly, many travel agents have seen a significant dip in bookings over the last year. Sources in the travel industry tell X-RAY MAG that

customers do not seem so much to hold back out of concerns for the security situation per se. Rather what seem to be at play are the uncertainties surrounding government travel advisories, which may change at a later stage forcing families—who are often limited to go on vacation during public school holidays—to either outright cancel their holiday all together or find other options at a stage where the alternatives may be sold out or come at a premium rate. Consequently to err on the side of caution, they book vacations to alternative destinations.

Meanwhile the Egyptian hospitality industry and with it, the many Red Sea operators, are left high and dry, seeing their livelihoods dry up for lack of customers.

### Insurance may be void

It should also be noted that while flights, hotels and operators appear to remain readily available for online bookings and some nationalities are still in the green to go, travel insurances will often become void if one chooses to disregard an official travel advisory and venture into an area contrary to a warning, however peaceful and safe it may appear and probably be.

As Egypt and the Red Sea offer some of the best diving on the planet, we can only hope that matters once again settle down, as they always seem to do, and we can get back to some sort of normalcy in this regard. In the meantime, do check with the official travel advisories.

*When X-RAY MAG did a report from Taba Heights in 2012 (published in issue #45) it was entitled Tranquility in Taba. It was peaceful, relaxing and offered some really good shore diving and macro photography opportunities. □*



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## Cayman Islands gets new underwater attraction

Bronze sculpture placed on the bottom off Grand Cayman.



*Guardian of the Reef* is a new bronze sculpture by Simon Morris, located in West Bay off Lighthouse Point on Grand Cayman Island.

The 13-foot-tall statue is a representation of a mythological creature, the top half of which is a warrior-guardian in Ancient Greco-Roman armour and decorated breastplate. The figure carries a circular shield and a staff atop of which is a globe representing the world's oceans.

The figure's helmet is fashioned into a stylized seahorse head, and

from the back of the breastplate, a dorsal fin protrudes. In the same way that a mermaid has both human and fish elements, the sculpture transforms from human to seahorse at the waist. The seahorse tail is wrapped around a heavy bronze ring, which is attached to a Roman column. This column acts as the guardian's sentry post.

The column is shattered and aged, with several open spaces that reveal an inner cement column, which will attract encrusting marine life, and over

time, will actually become part of the natural reef.

The symbolism in the sculpture reflects the fragile state of the oceans, which are in need of our protection, but have been sorely neglected.

The sculpture was created in a global limited edition of four signed, dated and numbered castings. The first of the numbered castings was bought by Jay and Nancy Easterbrook, owners of Divetech, a full-service dive resort on Grand Cayman. □

Divers lower and position the new sculpture, *Guardian of the Reef* by Simon Morris, to the sea bottom in West Bay, Grand Cayman. All photos this page by Ryan Canon

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## Now, where did your bag go!?

We've all been there at one time or another—arriving at your holiday destination, euphoria turns to aggravation upon the discovery that your bags are missing in action. According to the International Air Transport Association (IATA), about one percent of luggage worldwide was mishandled last year, costing an estimated US\$2.6 billion. Fortunately, a number of apps have arrived on the scene to help alleviate the situation. The question is, just how useful are they?

Apple's solution is iBeacon, which can be placed in your suitcase for short range tracking. However, maximum range is only 20m and can be hampered if it is packed too deeply in your luggage. See:

[itunes.apple.com/us/app/travel-radar-luggage-tracking](http://itunes.apple.com/us/app/travel-radar-luggage-tracking).

An option with greater range capability is the Trace Me Luggage Tracker. Airline baggage services staff worldwide can enter the unique serial identification number into the airline's SITA WorldTracer unclaimed baggage record. Once found, the owner will be notified by SMS and email that the luggage is being held at a specific airline and location. The owner can then contact the airline for appropriate action. See: [www.tracemeluggagetracker.com](http://www.tracemeluggagetracker.com).

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