Haitian Recycled Metal Art of Mermaids & Marine Life

X-ray mag

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May 2010
Number 36

Sub-Arctic Canada
Churchill

Equipment
Wetsuits

Sharks
Spiney Dogfish

Florida
Blue Heron Bridge

Wrecks
Jade Treasures

Profile
Mike Valentine

BALTIC DIVING & WRECKS
Sweden

COVER PHOTO BY STEIN JOHNSEN

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COVER PHOTO: *West Coast, Sweden,* by Stein Johnsen

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Canons found on 17th century wreck, Baltic Sea, Sweden

JONAS DAHM

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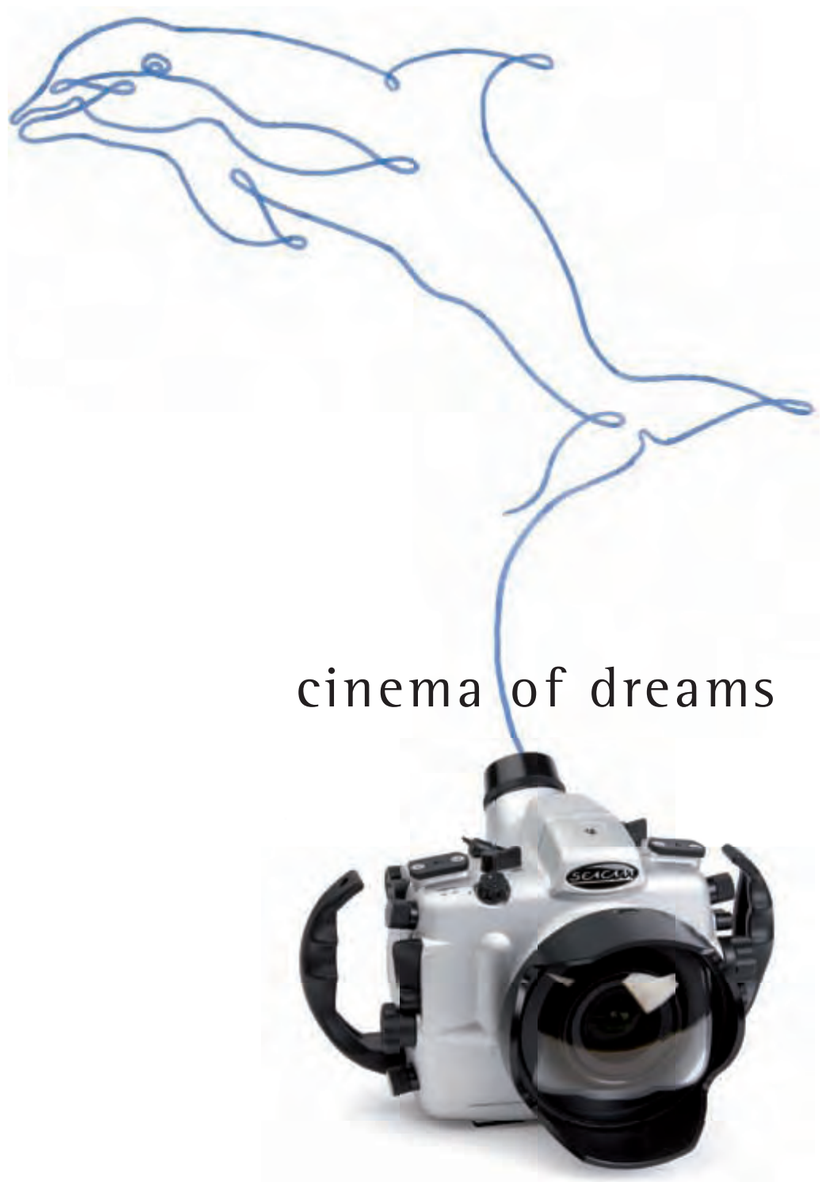

www.seacam.com

Cool diving in Our own backyard

The theme of this issue is something that we have wanted to do for a very long time.

While the team behind *X-RAY MAG* is truly international, spanning several continents from Catherine GS Lim in the East, who faithfully and solidly takes care of our business out of Singapore, to Barb Roy in Canada, the tech-diving grandma of British Columbia, and all our other wonderful editors in the times zones in between, our founding editor-in-chief, Peter Symes, is a native Copenhagener of British-Scandinavian heritage-

Once upon a time, "in another century", Peter and his Scandinavian colleagues, Arnold Weisz and Millis Keegan, were editors of the Norwegian, Swedish and Danish print dive magazines, before pooling their expertise and experience and putting it behind the publication you are now reading.

Over the years, *X-RAY MAG* has covered exotic locales —such as Tasmania, Lake Baikal and Patagonia—gone to the Southern Ocean and Bikini Atoll, joined scientific expeditions and gorged on coral havens in South East Asia—such as Raja Ampat— and explored the rugged beauty of Iceland, British Columbia, Russia and Norway, just to mention a few. (Most of our many travel reports are now available on our website.)

While our headquarters are still based in Copenhagen, we think the time has come to invite you inside our very own backyard and the waters upon whose beaches our dear Scandinavian editors played as kids and where they took their first nervous breaths through a regulator.

With this issue, which features Sweden (Denmark and Norway will be featured at another time), we want to put the spotlight on some of the unique diving that the Scandinavian peninsula has to offer.

Scandinavia has some awesome underwater treasures, which have not quite yet received the international recognition they deserve—in particular, the amazing historic wrecks from centuries past, many of which are still stunning and in pristine condition.

While some of the diving can be demanding at times, and a sunny holiday cannot be guaranteed, few places on the planet can beat the still pristine beauty and easy access to wilderness above and below the surface that Scandinavia has to offer. This is especially true around midsummer, when the white nights cast almost everlasting sunsets and romantic evenings on the beach, when one can grill seafood on a camp fire and go diving around the clock without needing a lamp.

While most Scandinavians are habitual dive travellers yearning to see as much of the world as possible, none of them have a desire to leave home during these pleasant summer months.

This issue sets out to explain why.

— *Værsågod!* (Bon appetit)

Fresh and delicious *smørrebrød* (open-face sandwiches) in Denmark, or *smörgåsbord* (buffet) in Sweden, served with beer and snaps, is typical of Scandinavian fare for lunch or brunch. Photo courtesy of Elleinterior.se

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X-RAY MAG is a member of Diving Equipment & Marketing Association: **Dema.org**

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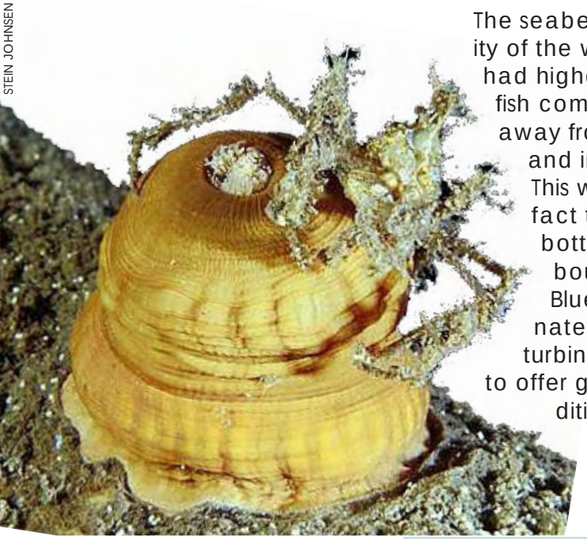
NEWS

With wind and wave energy farms, it should be possible to create large areas with biologically productive reef structures, which would moreover be protected from bottom trawling

Off-shore wind turbines also good for marine life

Offshore wind power and wave energy foundations can increase local abundances of fish and crabs. The reef-like constructions also favour for example blue mussels and barnacles. What's more, it is possible to increase or decrease the abundance of various species by altering the structural design of the foundation.


STEIN JOHNSEN

The seabed in the vicinity of the wind turbines had higher densities of fish compared to further away from the turbines and in control areas. This was despite the fact that the natural bottoms were rich in boulders and algae. Blue mussels dominated on the wind turbines that appeared to offer good growth conditions, wrote Dan Wilhelmsson of the Department of Zoology, Stockholm University, in a recently published dissertation.

"Hard surfaces are often hard currency in the ocean, and these foundations can function as artificial reefs. Rock boulders are often placed around the structures to prevent erosion (scouring) around these, and this strengthens the reef function," says Dan Wilhelmsson.

Not only were the foundations giving a boost to marine life, but interestingly, we might be able to build in features to them in such a way as to enhance conditions to favor those species that need more protection.

"With wind and wave energy farms, it should be possible to create large areas with biologically productive reef structures, which would moreover be protected from bottom trawling. By carefully designing the foundations, it would be possible to favor and protect important species, or, conversely, to reduce the reef effects in order to minimize the impact on an area," said Dan Wilhelmsson.

Come to think of it, this shouldn't come as such a surprise. There are many instances of sunken boats, planes and other metal and concrete objects having been thoroughly repurposed by the creatures of the deep for their own needs. We already use artificial reefs to rebuild populations of marine life. ■

Marine scientists discover ocean "superhighway" for tiny life forms

Working in a rare, "natural seafloor laboratory" of hydrothermal vents that had just been rocked by a volcanic eruption, scientists from the Woods Hole Oceanographic Institution and other institutions have discovered what they believe is an undersea superhighway.

Text and images by the National Science Foundation

This superhighway carries tiny life forms unprecedented distances to inhabit the post-eruption site.

One such "pioneer species," *Ctenopelta porifera*, appears to have traveled more than 300 kilometers to settle at the site on the underwater mountain range known as the East Pacific Rise.

"Ctenopelta had never been observed before at the study site, and the nearest known population is 350km to the north," said Lauren Mullineaux, a senior scientist in WHOI's biology department.

The discovery—in collaboration with scientists at the Lamont-Doherty Earth Observatory (LDEO) and the NOAA Pacific Marine Environmental Laboratory (PMEL)—clashes with the widely accepted assumption that when local adult life is wiped out in a hydrothermal eruption, it is replaced by a pool of tiny creatures from nearby vents.

In this case, however, the larvae that re-settled the post-eruption vent area are noticeably different from the species that were destroyed, according to David Garrison, director of the National Science Foundation's (NSF's) Biological Oceanography Program. In addition, the larvae appear to have traveled great distances to reach their destination.

"That raises the question of how they can possibly disperse so far," said Mullineaux. She added that the findings have implications for the wider distribution of undersea life.

The discovery of hydrothermal vents on the bottom of the Pacific Ocean in 1977 revolutionized ideas about where and how life could exist. The seafloor vents gushing warm, mineral-rich fluids and teeming with life raised new questions that researchers have been studying ever since, including: How can so much life thrive at the sunless seafloor? What is the nature of organisms at hydrothermal vents? How do animals migrate to other vent sites?

Getting from A to B

It was this last question that motivated Mullineaux and her team as they began their study of a vent area on the East Pacific Rise "to gather observations of currents, larvae and juvenile colonists in order to understand what physical processes might facilitate dispersal", Mullineaux said.

One of the group's primary challenges was to determine where the organisms around the vent came from.

In for a surprise

As the scientists set out on their mission in 2006, "We got a surprise," said Mullineaux. "A seafloor eruption was detected at our study site, resulting in changes in topography and enormous disturbance to ecological communities. The eruption was, in essence, a natural experiment."

By the time the researchers arrived at the site, they found a scene quite unlike that usually observed at a hydrothermal vent.

Normally, such fissures are teeming with life, supported by the hot chemicals that spew from the vents and provide food through microbial chemosynthesis, a deep-sea version of photosynthesis.

But at this spot on the East Pacific Rise, near nine degrees north, there was no ►

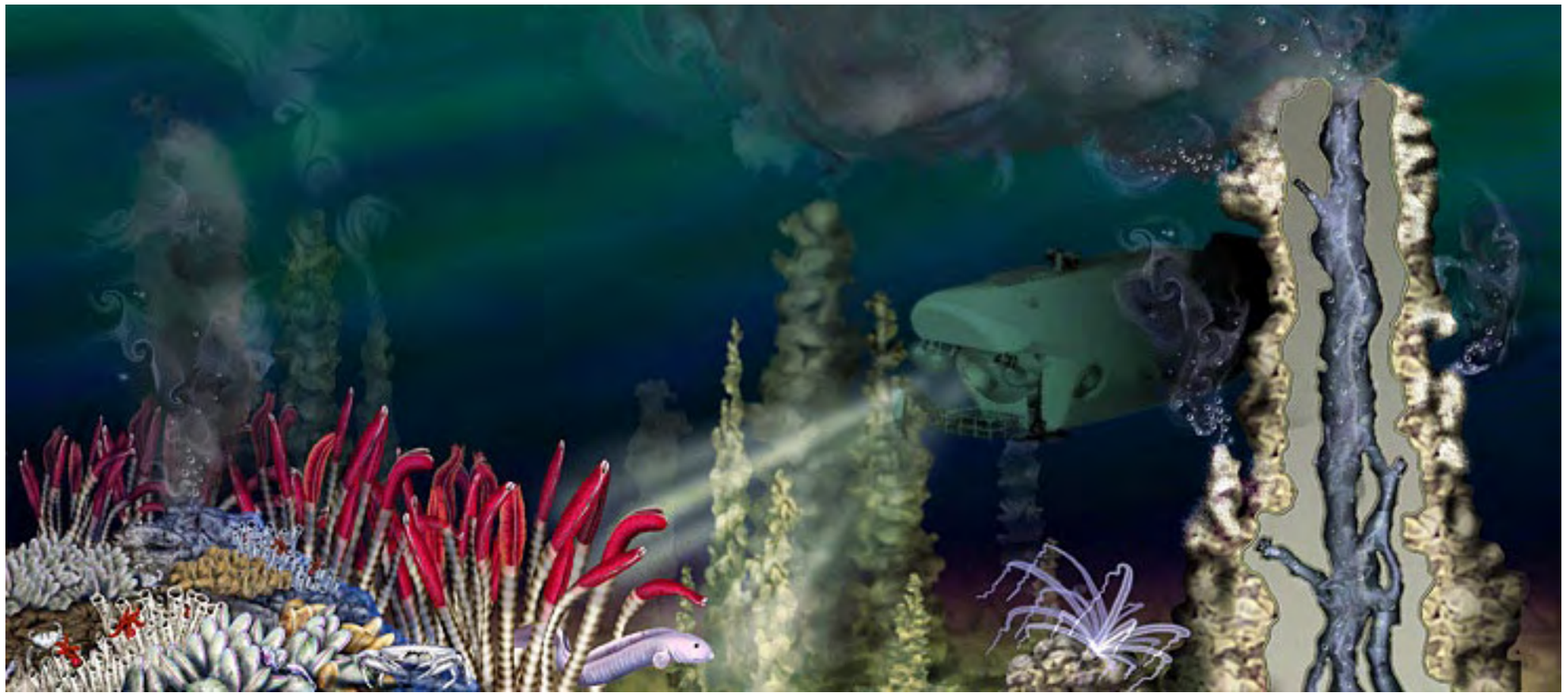


Illustration of life around a hydrothermal vent

Welcome to

Papua New Guinea

Papua New Guinea is located in the coral triangle of marine biodiversity with the highest diversity of tropical fish and coral in the world.

www.pngdive.com

What the scientists found went against the accepted assumption that most of the organisms needed to re-populate an area come from relatively nearby. But instead, the new larval inhabitants were from a considerable distance away.

life. The eruption had wiped it out. "Although the vents survived, the animals did not, and virtually all the detectable invertebrate communities were paved over," said Mullineaux. "For us, this was an exciting event. In essence, it was a natural clearance experiment that allowed us to explore how the elimination of local source populations affected the supply of larvae and re-colonization," she said.

What the scientists found went against the accepted assumption that most of the organisms needed to re-populate an area come from relatively nearby. But instead, the new larval inhabitants were from a considerable distance away.

"These results show clearly that the species arriving after the eruption are different than those before," says Mullineaux, "with two new pioneer species, *Ctenopelta porifera* and *Lepetodrilus tevnianus*, prominent."

The most important finding is that "the processes of the larval stage—as opposed to those of adult organisms—seem to control colonization," Mullineaux said. "We found that a pioneer colonization event by one species, *Ctenopelta porifera*, radically changed the community structure."

Jet set

But a question remained: How were these weak-swimming larvae propelled such vast distances to the decimated vent area?

Seemingly the only way the emigrating larvae could get to their new home from so far away, Mullineaux said, would be to ride ocean-bottom "jets" traveling up to ten centimeters a second, such as those identified in the work of McGillicuddy and Thurnherr.

Theoretically, however, even these ridge-crest jets might not quite be able to transport the larvae from 350 kilometers within the time frame of their 30-day lifespan, she said. "Either the larvae are using some other transport or they are living longer than we thought," said Mullineaux.

How were these weak-swimming larvae propelled such vast distances to the decimated vent area?

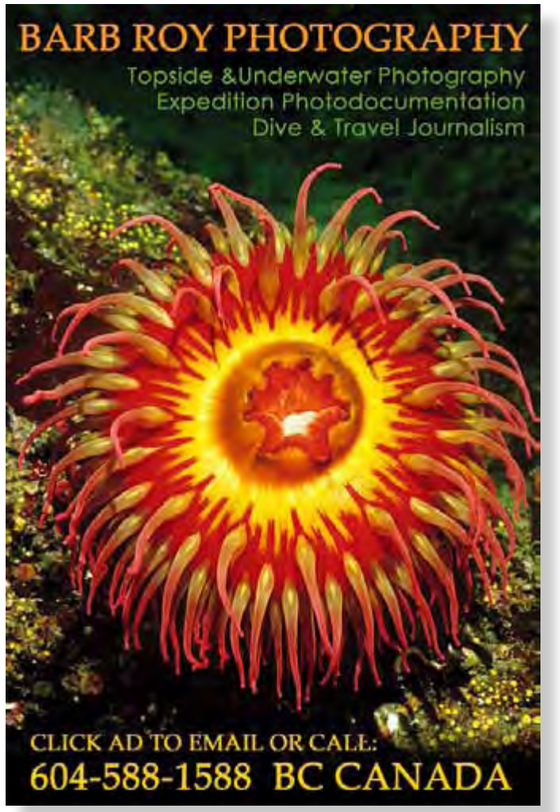
She speculates that large eddies, or whirlpools of water, several hundred kilometers in diameter, may be propelling the migrating larvae even faster—delivering them to their new home while they are still alive. Or perhaps the larvae are able to somehow reduce their metabolism and extend their life.

The findings present an array of fascinating scientific scenarios that warrant further exploration, according to Mullineaux.

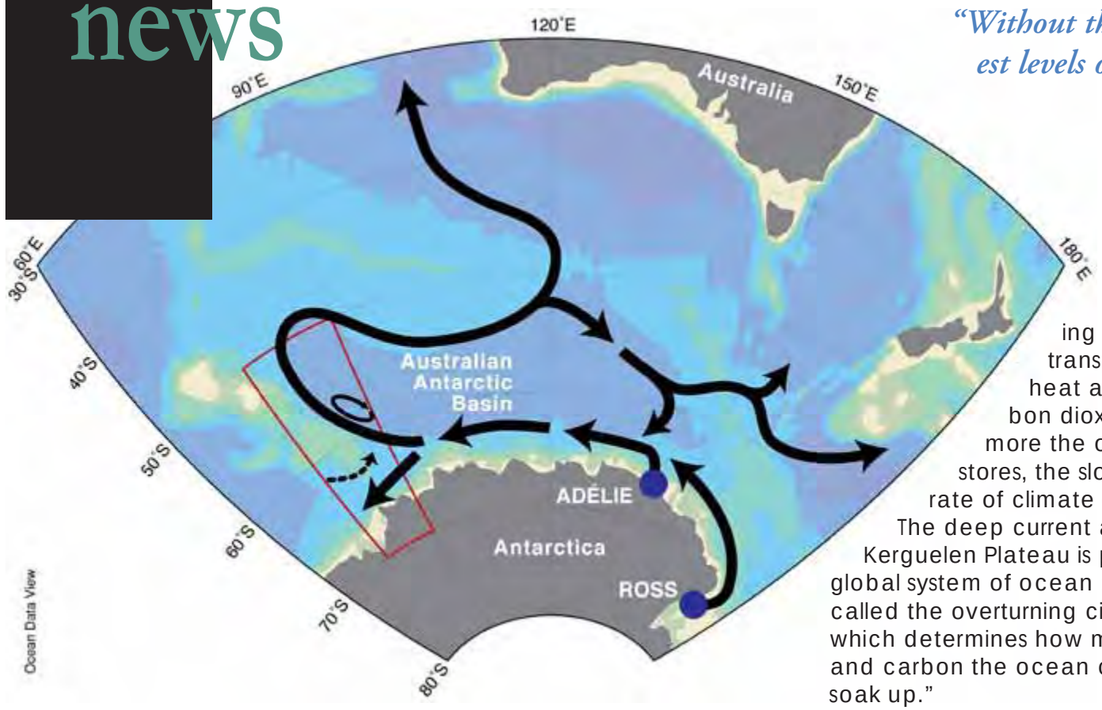
They also may open up new ways of looking at the impacts of human activities on the seafloor, such as seafloor mineral mining, which could alter a vent site in a similar way to an eruption.

Such activity could conceivably foster a greater diversity of species at a vent that has just been mined, or it could cause extinction, Mullineaux said. But such scenarios are still highly speculative, she emphasized. ■

MULLINEAUX'S WHOI CO-AUTHORS ON THE PAPER ARE DIANE ADAMS, CURRENTLY AT THE NATIONAL INSTITUTES OF HEALTH, SUSAN MILLS AND STACE BEAULIEU.



THIS PAGE: Types of critters found living near hydrothermal vents



Massive Southern Ocean current discovered

A deep ocean current with a volume equivalent to 40 Amazon Rivers has been discovered by Japanese and Australian scientists near the Kerguelen plateau, in the Indian Ocean sector of the Southern Ocean, 4,200 kilometres southwest of Perth.

Text and images by CSIRO

Researchers have described the current—more than three kilometres below the Ocean's surface—as an important pathway in a global network of ocean currents that influence climate patterns.

"The current carries dense, oxygen-rich water that sinks near Antarctica to the deep ocean basins further north," said co-author Dr Steve Rintoul from the Antarctic Climate and Ecosystems CRC and CSIRO's Wealth from Oceans Flagship.

"Without this supply of Antarctic water, the deepest levels of the ocean would have little oxygen.

"Without this supply of Antarctic water, the deepest levels of the ocean would have little oxygen

The ocean influences climate by storing and transporting heat and carbon dioxide—the more the ocean stores, the slower the rate of climate change. The deep current along the Kerguelen Plateau is part of a global system of ocean currents called the overturning circulation, which determines how much heat and carbon the ocean can soak up."

While earlier expeditions had detected evidence of the current system, they were not able to determine how much water the current carried. The joint Japanese-Australian experiment deployed current-meter moorings anchored to the sea floor at depths of up to 4,500m. Each mooring reached from the sea floor to a depth of 1,000m and measured current speed, temperature and salinity for a two-year period.

The current was found to carry more than 12 million cubic metres per second.

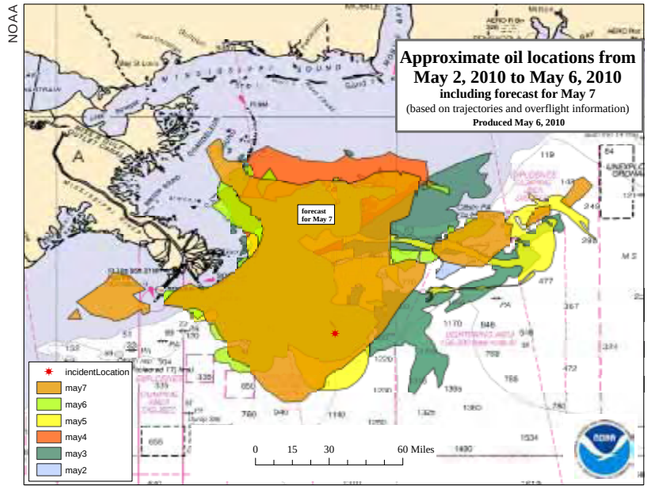
"It was a real surprise to see how strong the flow was at this location. With two-year average speeds of more than 20cm per second, these are the strongest mean currents ever measured at depths three kilometres below the sea surface.

"Mapping the deep current systems is an important step in understanding the global network of ocean currents that influence climate, now and in the future. Our results show that the deep currents near the Kerguelen Plateau make a large contribution to this global ocean circulation," Rintoul said.

Antarctic waters carried northward by the deep currents eventually fill the deep layers of eastern Indian and Pacific Oceans. ■

NOAA responds to Gulf oil spill

NOAA



The National Oceanic and Atmospheric Administration (NOAA) is the leading scientific resource for oil spills in the United States. As such, it has, from the start, been on the scene of the recent Deepwater Horizon spill in the Gulf of Mexico. NOAA is providing coordinated scientific weather and biological response services to government and local organizations.

In the response, hundreds of thousands of feet of boom have been set out to contain the spill, with more ready to be deployed. Remotely Operated Vehicles (ROVs) were used at the source to cut off a section at the end of the riser pipe, which once led from the well to the rig, and then, capped it with a valve. This stopped one of the three leaks, but oil continues to enter the Gulf of Mexico at a rate of around 5000 barrels (210,000 gallons) per day.

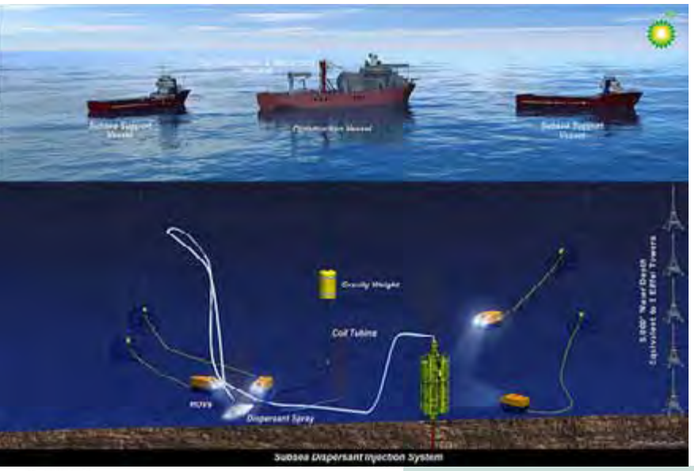
Dispersants are being tested at the sea floor, and if successful, might reduce oil at the surface. A fully rigged collection dome, a large cofferdam-like structure, has been dispatched.

Damage to the environment is being conducted by NOAA's Damage Assessment Remediation and Restoration Program (DARRP), employing the Natural Resource Damage Assessment (NRDA). Based on past experience, NOAA is worried about the impact of the oil spill on fish, shellfish, marine mammals, turtles, birds and other sensitive resources. Impact on their habitats, including wetlands, mudflats, beaches, bottom sediments and the water column is also a concern. They are also evaluating lost uses of these resources, for instance, fishery and beach closures.

High resolution images of the threatened Gulf shoreline are being provided by NASA, which has agreed to use their ER-2 aircraft, equipped with a highly specialized scanner (the Airborne Visible/Infrared Imaging Spectrometer (AVIRIS) system), at NOAA's request. With NASA's findings, spill trajectories can be forecasted and mass balance calculations can be conducted. NASA's satellite instruments have been employed to detect the extent of the entire oil spill and to see the details of the extent of selected areas of the spill.

Seafood samples are being collected by NOAA Fisheries and transfered to the National Seafood Inspection Lab. In addition, NOAA is conducting marine mammal survey and ocean imaging missions by air in order to gain valuable information about the oil thickness and density on the sea surface. Aerial photographic flights are also being conducted over marsh areas. In addition, seafloor and water column data is being collected from areas near the oil spill source during a mission sponsored by the NOAA Office of Ocean Exploration and Research.

Further updates can be read at: ***www.noaa.gov*** ■



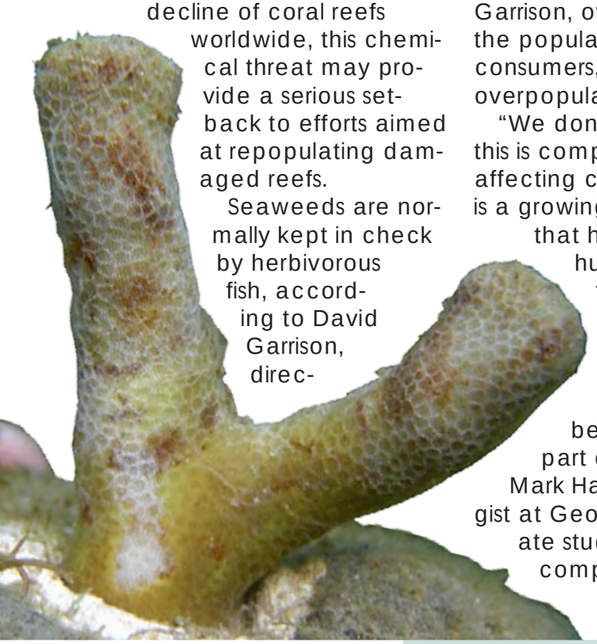
In response to the Deepwater Horizon oil spill following the explosion on 20 April 2010, subsea operations and methods are being used to manage the flow of oil using subsea dispersants before they reach the surface. Graphic provided by BP

Douglas Rasher, Georgia Institute of Technology checks for effects of seaweed on a coral culturing rack in Fiji

MARK HAY/DOUGLAS RASHER, GEORGIA INSTITUTE OF TECHNOLOGY

Chemicals from Seaweeds Damage Coral on Contact

Field studies have shown that several common species of seaweeds in both the Pacific and Caribbean can kill corals upon contact.



While competition between seaweeds and corals is just one of many factors affecting the decline of coral reefs worldwide, this chemical threat may provide a serious setback to efforts aimed at repopulating damaged reefs.

Seaweeds are normally kept in check by herbivorous fish, according to David Garrison, director of NSF's Biological Oceanography Program, which funded the research. But in many areas, says Garrison, overfishing has reduced the populations of these plant-consumers, allowing seaweeds to overpopulate coral reefs.

"We don't know how significant this is compared to other problems affecting coral, but we know this is a growing problem. For reefs that have been battered by human use or overfishing, the presence of seaweeds may prevent natural recovery from happening at all."

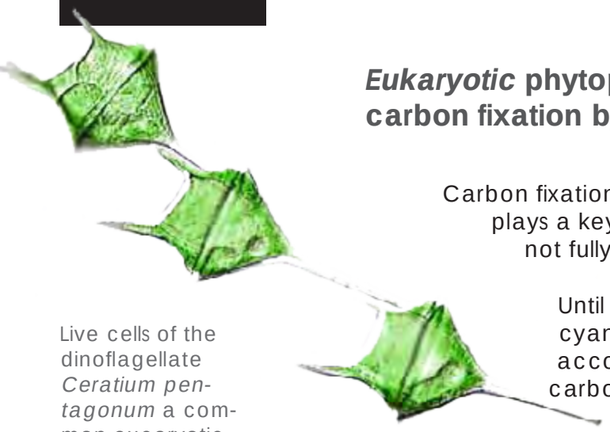
Using racks of coral being transplanted as part of repopulation efforts, Mark Hay, a marine ecologist at Georgia Tech, and graduate student, Douglas Rasher, compared the fate of corals from two different species when they were placed next to different types of seaweed common around Fijian reefs in the Pacific, and Panamanian reefs in the Caribbean.

They planted the seaweeds next to coral being transplanted—and also placed plastic plants next to some of the corals to simulate the effects of shading and mechanical damage. Other corals in the racks had neither seaweeds nor plastic plants near them. The researchers revisited the corals two days, ten days and 20 days later. In as little as two days, corals in contact with some seaweed species bleached and died in areas of direct contact.

"Between 40 and 70 percent of the seaweeds we studied killed corals," said Hay. ■

SOURCE: THE NATIONAL SCIENCE FOUNDATION

'Black Box' Plankton Found to Have Huge Role in Ocean Carbon Fixation



Live cells of the dinoflagellate *Ceratium pentagonum* a common eucaryotic algae

Eukaryotic phytoplankton actually account for almost half the ocean's carbon fixation by phytoplankton.

Carbon fixation by phytoplankton in the open ocean plays a key role in the global carbon cycle but is not fully understood.

Until now researchers believed that cyanobacteria, overwhelmingly accounted for phytoplankton's role in carbon fixation in the open ocean.

The cyanobacteria or *Blue-green algae* which belong to the *picophytoplankton*—the tiniest phytoplankton—grow in vast numbers in the sunlit surface waters of the oceans. By way of photosynthesis, they 'fix' carbon by converting carbon dioxide into sugars and other organic compounds. Until now, they have been thought to dominate carbon fixation in the open ocean.

Like all bacteria, cyanobacteria are prokaryotes, distinguished from eukaryotes by the absence of a cell nucleus. However, although much less abundant than cyanobacteria, the photic zone also has a high biomass of small eukaryotic phytoplankton capable of carbon fixation.

But what scientists at the University of Warwick and the National Oceanography Centre in Southampton discovered is that eukaryotic phytoplankton actually fix significant amounts of carbon, contributing up to 44 percent of the total, despite being considerably less abundant than cyanobacteria.

"This is most likely because eukaryotic phytoplankton cells, although small, are bigger than cyanobacteria, allowing them to assimilate more fixed carbon," said Professor Mikhail Zubkov of the National Oceanography Centre. ■

An **eukaryote** is an organism whose cells contain complex structures inside the membranes.

The defining membrane-bound structure that sets eukaryotic cells apart from *prokaryotic* cells is the nucleus, or nuclear envelope, within which the genetic material is carried.

Most eukaryotic cells also contain other membrane-bound organelles such as mitochondria, chloroplasts and the Golgi apparatus.

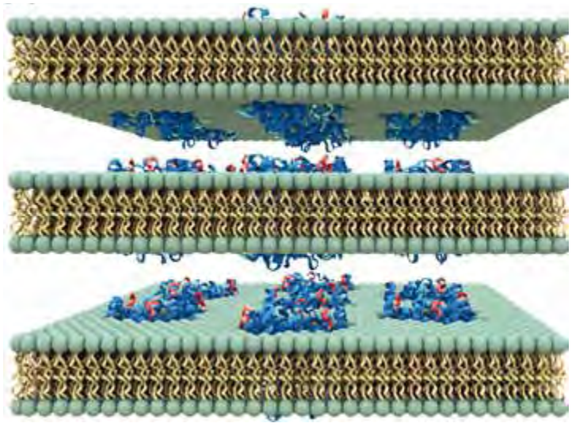
Almost all species of large organisms are eukaryotes, including animals, plants and fungi, although most species of eukaryotic protists are microorganisms. ■

Ocean Bacteria Can Harvest Energy from Sunlight for Survival

Bacteria in the ocean can harvest light energy from sunlight to promote survival thanks to a unique light-capturing pigment.

Proteorhodopsin is a photoactive protein found in marine bacterioplanktons, which can interact with light and convert it into energy for growth and survival. It consists of a single, membrane-embedded protein that is related to the pigment in the retina that enables human vision in less intense light. It was only discovered in 2000.

As much as half of the surface ocean bacteria have such proteorhodopsins, implying a potentially significant role of non–chlorophyll-based phototrophy (*phototrophism, obtaining energy from photosynthesis – ed.*) in oceanic carbon cycling and energy flux. However, functional evidence for specific roles for proteorhodopsins in native marine bacteria and the marine environment remains surprisingly scarce. ■



PNAS MAY 15, 2007 VOL. 104 NO. 20 8212-8217

Proteorhodopsin sits embedded in the cell membrane.

NASA goes underwater with NEEMO-14

NASA will send two astronauts, a veteran undersea engineer and an experienced scientist into the ocean depths off Florida's east coast this month to test exploration concepts and learn more about working in an unforgiving, treacherous environment. The mission will be held inside the Aquarius Underwater Laboratory near Key Largo, Florida.

Using near-scale mockup vehicles, EVA teams will conduct off-loading, retrieval and survival missions, including the transfer of an incapacitated astronaut from the ocean floor to the deck of the lander.

While inside the Aquarius laboratory, the crew will perform life sciences experiments focused on human behavior, performance and physiology. The mission also includes a study of autonomous crew work. This will include periods of time when there is limited communication between the crew and the mission control center, much like what could happen during missions to the moon or Mars. ■

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Annapolis Update

HMCS Annapolis acquired in 2008 by the Artificial Reef Society of British Columbia, Canada

May 2010 – Anxious divers in Washington State and British Columbia, Canada, await their next wreck dive, the 371-foot long *HMCS Annapolis*. The retired Canadian military vessel was acquired in 2008 by the Artificial Reef Society of British Columbia (ARSBC) from Crown Assets Distribution with the intent to sink in Howe Sound as a new dive site.

Text and photo by Barb Roy

Since acquisition, the ship has undergone major changes as hundreds of local divers and dive-related businesses have rallied together to prepare the ship for sinking.

"Nearly 1,000 volunteers are approaching 7,000 man hours aboard the ship," tells Deirdre Forbes McCracken, Director of Public Relations for the ARSBC and co-owner of Ocean Quest Dive Centre in Burnaby. "Several volunteers have logged between 160-300 hours each! The determination and dedication can be seen as they continue to work through lunch just to get that one last stubborn bolt apart. After all this work, we are now beginning to see the light at the end of the tunnel."

With hopes of sinking the *Annapolis* in September or October of this year, the need for volunteers is still strong, as Deirdre continued: "There are only around 1,000 hours of dismantling, sorting, recycling and cleaning to go before final inspection. We must ensure all standards are met to make the ship suitable for its final resting place on the ocean floor. Therefore, we continue to put out a call for volunteers for every weekend until sinking, along with our mid-week Wednesday Mechanics Team, to disassemble heavy-duty machinery."

Inspections

The ship will soon undergo a series of rigorous government inspections, with the next one through Environment Canada. ARSBC Vice President, Doug Pemberton elaborated: "This is mainly a hydrocarbon inspection of the fuel tanks and machinery spaces. There can be no traces of hydrocarbons in these areas, if we hope to pass this inspection, and passing this inspection is a crucial step towards getting this project under water.

"A couple of weeks ago, we spent a weekend dismantling and cutting several tons of piping from the engine room and boiler room. It was piled up several feet deep. The following weekend, a crew from the Emerald Sea Dive Club in Seattle came up, and together with a crew of volunteers recruited by Vancouver area dive shops, we removed all the accumulated pipe and machinery, sorted it and staged it for future extraction."

Funding

Part of the project funding comes from the sale of scrap metal and items sold off the ship. Project support also includes donated time and incurred expenses from local businesses like Sea Dragon Charters, a dive charter boat in Howe Sound who currently transports volunteers from Horseshoe Bay to Gambier Island where the ship is being prepared.

"We take the ARSBC volunteers to the *Annapolis* on a regular basis for no charge," explained Jan Breckman. "This is costly for us in time and fuel, but we see it as an investment in the Pacific Northwest dive industry. The spirit, excitement, and camaraderie already created by this project is amazing, and the ship has not even been sunk yet! The project will provide a boost to every aspect of the entire industry, as well as further the ecological development of this region."

Nearly 1,000 volunteers are approaching 7,000 man hours aboard the ship... Several volunteers have logged between 160-300 hours each!

Jan and her husband, Kevin, have offered dive charters in Howe Sound for over ten years, and although there are already 25 good dive sites in the area, they feel the addition of a good wreck dive will only add to the existing selection.

"The *Annapolis* will provide a great wreck to dive and to train on, close to large populations like Vancouver and Seattle," added Jan. "In turn, increasing the interest in diving because it will be safely accessible to divers from beginner level through advanced. Located within a marine park will not only enhance marine growth, it will prevent fisherman from tying up and fishing on the wreck where divers are."

Once inspections are completed and the vessel passes, large holes will be cut throughout the hull and decks for diver safety. Quite often the ships provide a controlled setting for advance levels of diving, like technical training, which deals in overhead environments.

"Even if visibility is limited and bad for diving, it is great for training!" commented Ron Akeson, Technical Dive Instructor from Adventures Down Under in Bellingham, Washington. "Having a wreck in Howe Sound will allow us to do wreck training without traveling a day to get to the site. Once the ship is down, I also plan on organizing several fun group dives per year, too."

Members of the ARSBC may be available to give a presentation to your local dive club, if your club or store is located in the Pacific Northwest, if you would like to organize a group of volunteers for a day or weekend. Individuals are also welcome to volunteer.

"We welcome anyone who would like to come out and help—divers and non-divers. We can find a job for any skill," said McCracken.

For more information, see www.artficialreef.bc.ca or email: dmccracken@artificialreef.bc.ca ■

A Ming Dynasty dragon: "Traditional Style" blue-and-white porcelain from around 1640 A.D. Wikipedia photo

Marine Archaeology 101

So, you fancy yourself the next Dirk Pitt or Indiana Jones on scuba. Seriously, where do you start, if you're interested in learning about marine archaeology?

The traditional route is to enroll at a university, typically taking a Bachelor of Arts degree. But, this will take you three or more years to complete and cost you tens of thousands of dollars.

Ok, maybe you're not that serious. Not to worry, there's plenty of other ways to learn about marine archaeology without having to take out a whopping student loan or tie up years of your life.

Societies & Workshops

A good first step is to join a marine archaeology society. This is a great way to share in the thrill of discovery, meet other like-minded folks, and develop the skills needed for researching, exploring and conserving shipwrecks.

If you're fortunate enough to live on Canada's west coast, there's the Underwater Archaeological Society of British Columbia. Its members are involved in documenting shipwrecks in that province. It's one of the oldest and best-known groups of "avocationalists" in the world, and it works closely with museums and other marine archaeology groups. It also offers training courses from the UK-based Nautical Archaeology Society.

In the United States, similar training is available through organizations such as the Great Lakes Historical Society. It offers nautical archaeology weekend workshops at its Peachman Lake Erie Shipwreck Research Center. Basic, Advanced and Survey level courses are taught there.

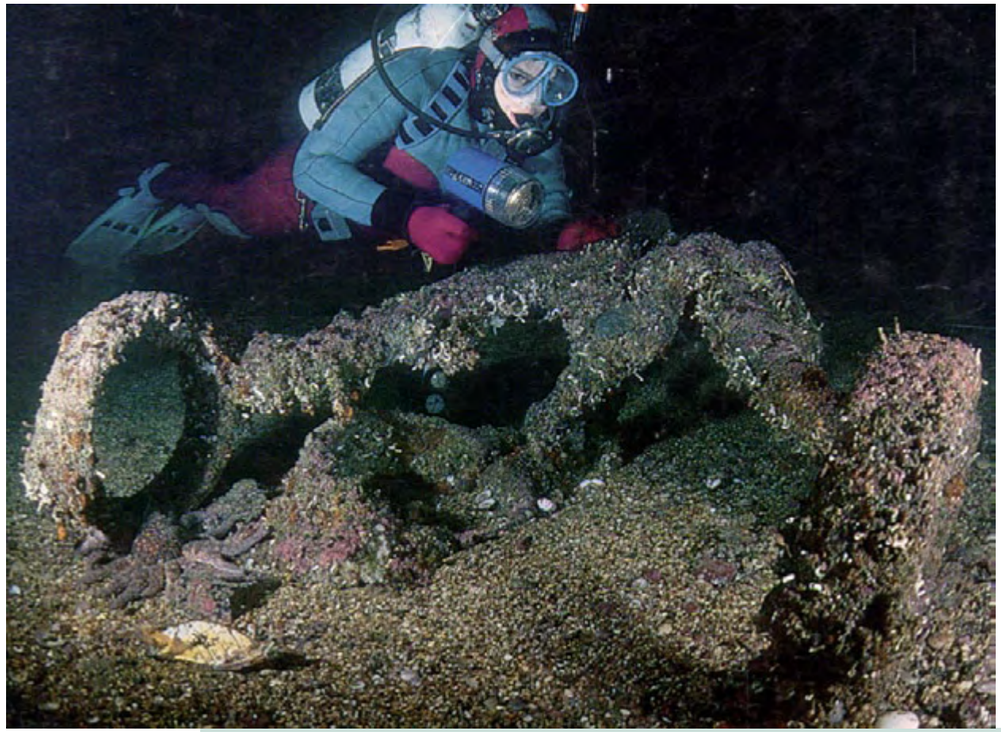
Parks & Preserves

Another great way to experience shipwrecks first-hand is to visit an underwater preserve or marine park. The Dominican Republic's 1724 Guadalupe Underwater Archaeological Preserve is the world's first underwater shipwreck museum. Created in 2002, it's located off Dominicus Beach at Bayahibe. It includes artifacts from the *Guadalupe* and the *Tolosa*—two Spanish Colonial ships that were wrecked in a storm in 1724. Knick-named "the Quicksilver Galleons" because of the large quantity of mercury each was carrying, both ships were discovered on the island's east coast in the 1970's.

One of the ship's anchors and several cannons from each wreck were relocated to the quarter acre underwater museum, which lies 100 meters from the beach in 15 feet of water. Staff and students from Indiana University helped create the unique attraction to better educate the public about the archaeology of shipwrecks and the importance of maritime heritage to Dominican history.

Nearby, in deeper water, rests the *Saint George*, an artificial reef created in 1999 when the former Norwegian cargo ship was deliberately sunk. It's a great wreck dive for both the novice and experienced diver alike.

The 1733 Spanish Galleon Trail is found in the Florida Keys National Marine Sanctuary. The wreck of the *San Pedro* is among one of the most picturesque



Diver with Parrel

UASBC director Al Morgan with a cannon from the 19th Century shipwreck, *Swordfish*. Photo by Jacques Marc

of the 1733 wreck sites, due to her location in a white sand pocket surrounded by turtle grass and the prolific marine life that inhabits her grave.

Since the 1500's, more than 800 documented shipwrecks have occurred around the reefs and sand flats of the Florida Keys. These "windows to the past" give the Keys a rich and exciting maritime history.

Travel & Tours

Diving into History is a new liveaboard for shipwreck enthusiasts vacationing in the Belitung region of Indonesia's Gaspar Strait. Divers can experience a handful of 19th century shipwrecks. There's even a yet unidentified Chinese Junk. The wreck is a spectacular sight—a three-meter high pile of blue and white china.

"It's strictly look but don't take," according to tour operator Pascal Kainic. Divers are not allowed to remove any artifacts from the wrecks as souvenirs, he says.

Shipwrecks & Social Networking

Another great way to learn about marine archaeology is to join the social networking website, Facebook. There, you'll find plenty of groups dedicated to marine archaeology and wreck diving. A few are: Archaeological Divers Association, Sea Research Society and Wrecks Worldwide.

— Rob Rondeau
Marine Archaeologist
www.procomsurvey.com ■

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A Costa Rican jade celt exhibits characteristics similar to artifact #50049 (next page). Photo K5177f © Justin Kerr

Stones of Green & Other Treasures

Text by Carol Tedesco

Then I saw the things brought to the King from the new Land of Gold... all manner of wondrous weapons... all sorts of marvelous objects for the human use which are much more beautiful to behold than things spoken of in fairy tales... In all the days of my life I have seen nothing which so filled my heart with joy as these things. For I saw amongst them wondrous artful treasures, and I marveled over the subtle genius of those men in strange countries. Indeed, I cannot tell enough of the things which I saw there before me.

—Albrecht Dürer

The German artist Albrecht Dürer penned this poetic ode to "those men in strange countries" in the year 1520, upon viewing the first of the Mexican treasures sent by Spanish conquistador Hernán Cortés to King Charles V of Spain.

In the year 2010, on a day of high winds and tempestuous seas, I joined W. Keith Webb, CEO of Blue Water Ventures of Key West, and Captain Dan Porter, Blue Water's Operations Manager, at the Hogfish Bar and Grill, a favorite Key West haunt. With the weather too rough to work at sea and in no hurry to be anywhere else, conversation soon turned to our favorite subject, the 1622 Fleet *Santa Margarita* shipwreck and the treasures she carried. (If the reader is not familiar with the background history of the *Santa Margarita*, see *X-RAY MAG* issue #34.) I shared the Dürer quote with Webb and Porter.

"But, there are numerous qualities that can contribute to the perception of an object as precious," observed Webb. "Dürer was an artist, viewing the treasures through the eyes of an artist. His reverence for creative genius directed into artistic expression is what made these objects so precious to him. An accountant no doubt would have composed an ode of a different stripe."

"It is an amazing thing—treasure and the forms it comes in," added Porter. "Not only gold and silver, but works of jade, marble, Italian quartz and even green cut glass have been recovered on the *Margarita* trail in the last few years—all of which, at some time or other, were treasured by someone."

So, what overall qualities can contribute to the perception of an object as precious? Rarity would naturally rank high on the list. An object is considered rare when it is uncommon or unusual; beauty—a quality that is more subjective and less measurable than rarity; complexity—meaning that creation of the object is labor intensive or difficult to bring to fruition; agreed-upon value—whereby a specific type of object, such as paper money, is accepted in trade for a variety of objects and services. And then of course there are the magical, mystical qualities that humans perceive or invest in objects to give them power.

The Power of Gold

The Spanish conquistadors believed passionately in the power of silver and gold, and this belief propelled them to sail across vast seas in its pursuit. Christopher Columbus expressed this conviction in a letter to his monarchs, writing, "Gold is most excellent, of gold there is formed treasure, and with it whoever has it may do as he wishes in this world and come to bring souls into Paradise."

The Spanish quickly learned that the peoples of Mesoamerica—Olmec, Maya, Aztec, Toltec, and others—treasured green stones above silver and gold. The Spanish soldier and chronicler, Bernal Díaz del Castillo, in his *True History of the Conquest of New Spain* described an incident in which "the great prince Moctezuma", upon learning that the Spanish were approaching his provinces, sent orders to his governors that they should barter gold for the Spaniard's beads. "...especially the green beads," Díaz wrote, "which are something like their chalchihuites, which they value as highly as emeralds." Díaz described some

GREEN TREASURES

A high carat gold ring discovered by Blue Water's Captain Dan Porter was set, not with an emerald as it appeared at first glance in the murky waters of the Florida Straits, but with a bead of green glass. Photo by Dan Porter © Blue Water Productions.

The Spanish chronicler Bernal Díaz del Castillo, a soldier in the army of Hernán Cortés, documented numerous examples of the Spanish trading green glass beads like this one with "the Indians" for gold, explaining that the Indians thought they were chalchihuites, a green stone that they valued more highly than gold. Photo by Ron Pierson © Blue Water Productions.

Shortly after the death of Moctezuma, with the Spanish force under siege and preparing to retreat from Mexico, Cortés loaded eight horses and more than 80 "friendly Tlaxcalans" with Mexican gold, jewels and silver, as much as each could carry. The rest, Díaz wrote, "over seven hundred thousand pesos in gold" was piled up in heaps for any soldiers willing to carry it. Díaz wrote that while many of the soldiers loaded themselves with gold, he chose to take only four chalchihuites, the value of which later, "served me well in healing my wounds and getting me food." ■

The archive of Justin Kerr photographs (research.mayavase.com/kerrportfolio.html) revealed this set of strikingly similar Aztec clay stamps. Photo K7846 © Justin Kerr

Green Stones

A tiny square of embossed gold, discovered by Blue Water Ventures crewmember Jesse Van Houten. Two nearly identical squares have been recovered from the site previous to the February 2009 discovery of this one. Photo by Dan Porter © Blue Water Productions

Blue Water Ventures CEO W. Keith Webb examines recovered artifacts of bone, pottery, and wood aboard the *Blue Water Rose*. Photo by Carol Tedesco

chalchihuites as being "worth a vast quantity of gold," and episodes of the Spanish exchanging green glass bead "chalchihuites" for gold are repeated continuously throughout Díaz' chronicle and in various other records of the conquest.

The *Santa Margarita* was a Spanish galleon transporting treasures deemed precious by the Spanish, so it is not surprising that the wealth of her cargo was made up of silver, gold and pearls. However, in the past couple of years, as Captain Porter pointed out, Blue Water Ventures has recovered several artifacts that point to Mesoamerican craftsmanship, values and lore. These discoveries include a high carat gold ring, set with a green glass bead of the type that the Spanish would trade for gold; an exquisite, tiny square of patterned gold; and an artifact tentatively documented as a paperweight—possibly carved from aventurine.

Masters of lapidary work

I reminded Webb and Porter that during the summer of 2000, on one of the *Santa Margarita's* scatter trails, visiting U.K. diver Phill Short had discovered an artifact of obvious pre-Columbian cultural origin (#50049). Searching the internet for similar specimens in that year returned images of fewer than a dozen comparable artifacts, none of which were shipwreck recovered, each described as jade—though it soon became clear that the term *jade* was being used loosely to describe a variety of hard green stones.

Queries to online professional archaeological discussion lists about the 5.5 inch long, one inch wide, rectangular carved stone artifact were unproductive, though this was not totally unexpected. A decade ago, even if they might have cared to do so, the vast majority of professional archaeologists were loath to work with or advise any private sector historic shipwreck exploration company, regardless of its professional caliber. Those who did risked being blackballed by their peers.

Now seemed like the perfect time to renew my inquiries into artifact #50049 and to see what information might be available to further our understanding of the recent *Santa Margarita* discoveries.

First, I contacted Sandy Kavanaugh, curator for Blue Water's joint venture partner, Mel Fishers Treasures, and Dylan Kibler, registrar for the Mel Fisher Maritime Museum, to find out if any other green stone artifacts might have been found on the *Santa Margarita* prior to 2000.

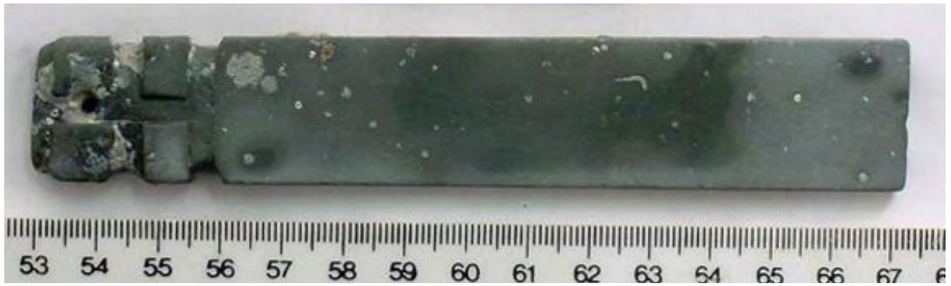
Kavanaugh and Kibler were able to provide images of three other *Santa Margarita* artifacts carved from green stone. One of these, though not intact, is similar in shape to #50049, being rectangular, with squared edges, carved to a blunt end. However, because of its condition, it is impossible to know if there was once any decorative carving or drilled holes. Of the other two, one is intact and the other sheared into two pieces. Both of these are long and slender, with drilled holes, and thin, tapered ends shaped more like blades than artifact #50049.

Next, digging in with my trusty MacBook Pro and a stack of books written by 16th century explorers, I selected the word *chalchihuite* from the chronicle of Bernal Díaz and hit "Search Google".

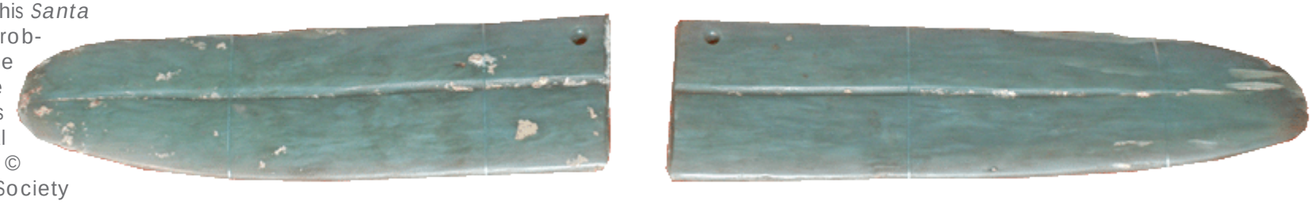
It blows my mind, the difference only a decade has made in the development of the internet as an indispensable research and information sharing resource. Of course, as with any source, a researcher must be discerning—incorrect and misleading information is just as readily available online as that which is accurate. But, unlike ten years ago, now a researcher can quickly identify and locate the leading authorities on almost any given subject—or at least their publications.

I soon learned that the name chalchihuite, or chalchihuitl, actually encompassed a variety of hard green stones, and is a word related to the name of the Aztec goddess of lakes, rivers and seas—*Chalchiuhtlicue*—meaning "She of the Jade Skirt".

The Mesoamerican's were masters of lapidary work and carved astonishingly elaborate amulets, charms, pendants and tools from many types of minerals, but hard green stones such as jadeite, nephrite, turquoise, aventurine, and serpentine were of the greatest value, and considered sacred.



The greenstone "celt" pendant, artifact #50049, discovered by visiting U.K. diver Phill Short. Photo © Mel Fishers Treasures, Inc



Double drill holes in this *Santa Margarita* greenstone artifact, probably sheared in two during the destruction of the vessel in the hurricane of 1622, suggest it was worn horizontally, as a pectoral ornament. Photo by Dylan Kibler © Mel Fisher Maritime Heritage Society

PHOTO K7696B © JUSTIN KERR

A Maya greenstone belt mask with dangles

The motherlode

The path to learning more about jade and other green stone artifacts eventually led, via the Jay I. Kislak Collection at the U.S. Library of Congress web site, to three treasures nonpareil: FAMSI, the Foundation for the Advancement of Mesoamerican Studies, Inc., and Mesoamerican art experts Barbara and Justin Kerr—truly a Mesoamerican researchers resource motherlode.

Sandra Noble, PhD, FAMSI executive director, created the famsi.com web site to advance the foundations mission "to foster increased understanding of ancient Mesoamerican cultures." Among its numerous features, the site provides an extensive research department, which, according to Barbara Kerr, is used by scholars worldwide. Barbara and Justin Kerr are Mesoamerican art experts, educators, and publishers. Barbara is a restorer of ancient sculptures and artifacts. Her husband Justin is renowned for his magnificent photographs of Maya vases, captured with his innovative rollout camera—a camera that allows him to create peripheral images of Maya vases in a single exposure. The FAMSI research department provides access not only to the Barbara and Justin Kerr Photographic Collection, but to the Linda and David Schele Image Collection, the John Montgomery Drawing Collection, and the Bibliografía Mesoamericana.

In separate e-mails to Dr Noble and Barbara Kerr, I attached an image of artifact #50049, the 5.5 inch long, one inch wide, rectangular carved stone *Santa Margarita* artifact. Each wrote back almost immediately and shared her first impressions—impressions drawn from decades of training, experience, and knowledge.

Dr Noble wrote, "The shape of your stone made me think of the anthropomorphic "Axe-figures" carved by the ancient Nicoya culture of Costa Rica." She then directed me to two Justin Kerr images that display a resemblance in form.

Barbara Kerr wrote, "When I opened the attachment, I thought it looked like an unfinished Costa Rican celt—but maybe it is finished. The sharp edges [as on 50049] appear on K7976 and on the K5177 group; and the surface looks well polished…"

Celts, axe-gods, pendants and dangles

Axe figure? Celt? All along the cyberspace trail that had led to FAMSI and the Kerr's, had been a number of sites showing artifacts with characteristics similar to #50049, variously described as "celts," "axe-gods," "pendants," and "dangles." What exactly was the difference? What made one object a celt and another an axe-god?

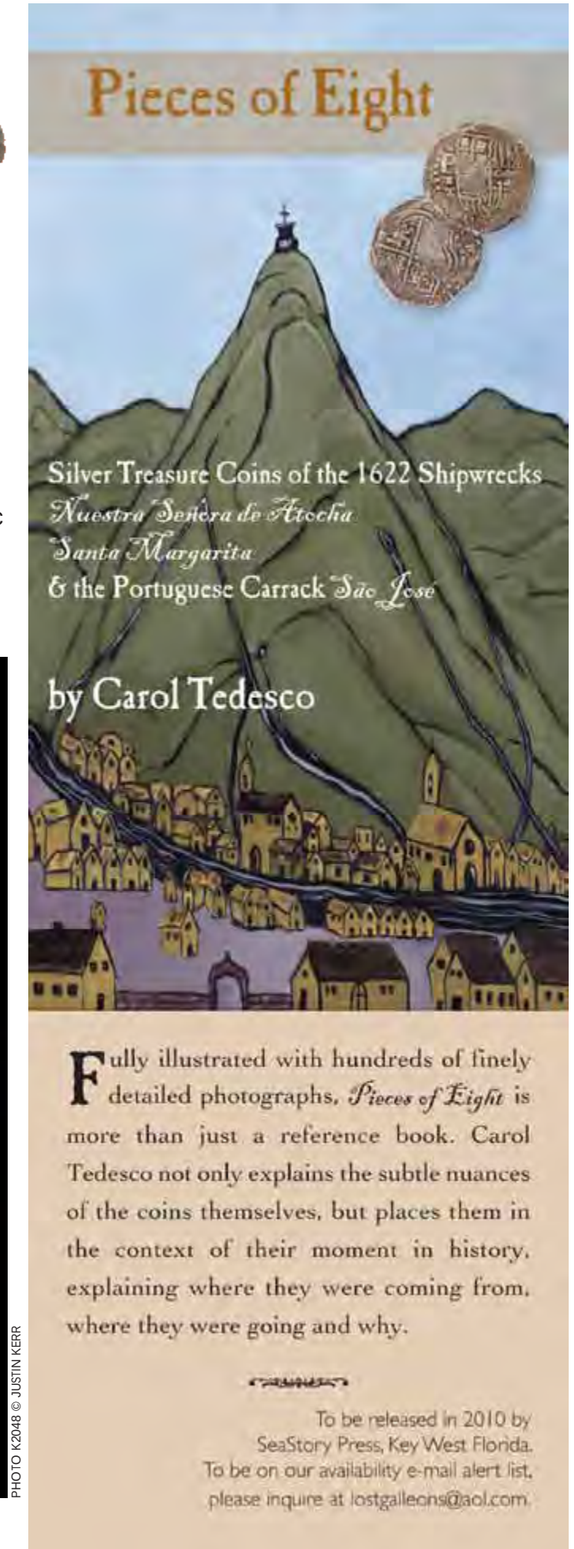
In a nutshell, axe figures are objects shaped like a hand axe. Axe-god figures represent a being and have a face, whether it be human or animal. Ones with drill-holes may be described as pendants (worn vertically) or pectorals (worn horizontally). When intended to be worn hanging from a belt assemblage, which would have been part of a royal costume, they might be described as belt-dangles. Sometimes, the dangles were suspended from a mask and hung from a belt, in which case the artifact might be called a belt mask, or a belt mask with dangles. What they all have in common is that they began with an oblong stone form called a celt.

Jade

Among Mesoamerican peoples, the precious mineral jade and other similar looking hard green stones were symbolic of water (remember Chalchiuhtlicue—the Aztec goddess of lakes, rivers and seas) and of fertility, rulership, young green maize, and of wind, breath and

PHOTO K2048 © JUSTIN KERR

An elite Aztec warrior in elaborate dress; crafted in gold, he carries a shield, a variety of weapons, and ornaments reflecting his social rank



Green Stones

the soul. This concept of jade as sacred and precious was also shared by the Nicoya culture of Costa Rica, and green stone artifacts uncovered there, such as the axe-figures photographed by Justin Kerr, reveal a continuity of style and symbolism with those created by Mesoamerican artisans.

Jade is tough as nails and harder than steel. On the Mohs mineral hardness scale, developed by German mineralogist Frederich Mohs, it measures between 6.5 and 7 on a scale of one to ten.

Nearly 400 years before Blue Water Ventures (BWV) began searching for the remains of the *Santa Margarita*, two 17th century salvors, Captain Gaspar de Vargas and Havana businessman Francisco Núñez Melián, had Florida "Indians" and pearl divers from the Caribbean island of Margarita recover treasure from the sunken galleon. On 21 April 2010, BWV diver Gavin Rall (left above) surfaced with this carved, polished greenstone artifact. Stone amulet-type artifacts like this one, with holes drilled through their breadth, are commonly called "gorgets" and have been located on archaeological sites throughout Florida. Did this gorget fall from the neck of one of Gaspar de Vargas' or Francisco Melián's divers? Photos by Carol Tedesco

While today it may be cut with the use of saws charged with diamond, artifacts like #50049 were cut with... are you ready for this? String.

The late Dr Herman Smith, an expert on the coastal trading practices of the Maya and author of numerous articles, wrote of early Spanish reports that describe the cutting of jadeite being accomplished with the use of a cord drawn back and forth in a sawing motion, using hard sand particles and water as cutting agents. Drill-holes for suspending the piece were bored by twirling hollow bird bones filled with an abrasive, such as hard sand or crushed jade.

A manuscript letter, circa 1528, from Dominican Priest Bartolomé de Las Casas (1474-1566) to Holy Roman Emperor Charles V (1500-1558). Las Casas devoted his life to mission work, and was an advocate for the rights of indigenous peoples of the Americas. Library of Congress, Rare Book and Special Collections Division, Jay I. Kislak Collection, Washington, D.C.

Brian Keegan and Blue Water Ventures investor and crewmember, Hense Robinson, examine pottery sherds recovered from the *Santa Margarita*. Every recovered artifact is tagged and documented with exact location data. Precise documentation allows the team to observe the exact spatial relationship of artifacts and plot the sequence of a ship's destruction. Photo by Carol Tedesco

RIGHT: Map of Mesoamerica, a culturally defined area that includes the lower half of Mexico, Guatemala, El Salvador, Belize and the western tip of Honduras. Dr Sandra Noble, executive director of FAMSI, explained that the Mesoamerican cultures share about 20 traits that are not shared by any cultures north of northwest Mexico, nor south of middle Honduras. These traits include the bar and dot counting system, stepped pyramids, the corbelled arch in architecture, earliest subsistence based on domestication of the "three sisters" of corn, beans, and squash, and the 365 day calendar, to name a few. Image courtesy of FAMSI, the Foundation for the Advancement of Mesoamerican Studies, Inc.: famsi.org

The 1622 Fleet connection

Being of decorative, monetary, and practical use, there is no question of why artifacts like the exotic embossed square of gold or the greenstone "paperweight" would be among a Spaniard's belongings on the galleon *Santa Margarita*. But, what of the pectorals and axe-figures?

Because jade was held in such reverence by New World cultures, carved objects such as axe-figures were bequeathed as heirlooms. Is it possible that an artifact such as #50049 came into the property of a Spaniard through marriage or union with an "Indian" of aristocratic lineage?

Were they stolen? Traded for? Or, since the resilient mineral jade is strong enough to hone the edge of a knife, did a soldier of Spain perhaps value it simply as a tool with which to sharpen his sword?

I put these questions to Blue Water Ventures chief archaeologist James Sinclair, who stressed that while the transfer of beliefs and culture between the Spanish and the indigenous populations can seem superficially to be all one way, it was not. "As you can imagine," he wrote, "the acculturation process works to some degree in both directions, and with a couple of generations removed from the actual conquest we can reasonably expect that traditions from both cultures are being mixed and passed along. The *value* of these green stones, while unknown in classic Spanish contexts, is obviously highly thought of in indigenous cultures. Could these beliefs have existed in passengers or servants of passengers aboard the *Santa Margarita*? Undoubtedly. Did they hold the exact same meaning as those of the uninfluenced aboriginal cultures? We cannot say. However, discoveries such as these provide a fascinating view into the mysteries of a culture, a society, and beliefs that have little to do with those of the conquering Catholic Spanish."

Carol Tedesco

Carol Tedesco is an internationally recognized Spanish Colonial coin expert and historic shipwreck professional who has worked with projects in North America, South America, Africa, and the Pacific. A member of the Explorers Club, she is a popular radio guest and speaker throughout the U.S. on the subject of the 1622 Fleet shipwrecks. Today she consults for some of the most prominent historic shipwreck search and recovery companies in the world. Her forthcoming book, Pieces of Eight ~Silver Treasure Coins of the 1622 Shipwrecks *Nuestra Senora de Atocha, Santa Margarita* and the *Portuguese Carrack São José, published by SeaStory Press, is due to be released in the fall of 2010.*

For more information about Keith Webb's Blue Water Ventures of Key West and the treasures of the Santa Margarita shipwreck, visit www.bwvkw.com. ■

Green Stones

WHAT IS IT?

This greenstone artifact (below), unlike any other known 17th century shipwreck recovered artifact, was discovered by Blue Water Ventures crewmember Gavin Rall. Based on the context in which a similarly shaped object was presented in a 17th century artwork, the artifact was tentatively documented as a paperweight.

Curious to know if she had ever encountered anything similar, I sent this image to Mesoamérican art expert Barbara Kerr. Her response assured me that decades spent in the study of ancient artifacts had not dulled her sense of humor. She wrote: "Thank you for the new image. We've never seen anything like it… We speculated from the sublime to the ridiculous—it could be anything from a paperweight to a scale weight to a bacon press…"

To illustrate how some of the most enlightening insights arrive by the most delightfully unexpected means, when I submitted this story to *X-RAY MAG's* co-publisher, editor and art director, Gunild Symes, for publication, she e-mailed back with observations unique to her own experience as an artist. She wrote: "Having studied some printmaking and papermaking in art school, I can't help but think that the 'paperweight' artifact has something to do with one of these processes. Because of its shape and handle, it could have been used for letter or envelope folding, embossing or sealing, or for flattening wrinkled, water-damaged paper."

A few days later she had more to add: "It has been such an interesting puzzle for me that I had to Google the history of parchment, paper, glue and bookbinding. Parchment—or velum—and paper are very susceptible to humidity, and warp easily with moisture. I can imagine that on a ship crossing the ocean, humidity and water would be a constant problem. Plus, glue at the time took a long time to dry and dried hard and crackly, so a heavy, level weight was needed to keep the layers flat. Bookbinding was an art done by hand back then, most likely by glueing of papers together, so may have needed a heavy press of some sort. I am not sure about the processes of each, but it is likely that they needed to press whatever layers they used with a weight in a screen, or box. Hence, the shape of the artifact may be formed so it can slide down and fit into a wooden frame, or a sided-tray, holding paper or vellum. The use of greenstone for the artifact, especially with its large size, clean carving, and polished quality, could point to a high social ranking or wealth of the owner, as these were quite valuable stones." (Photo of Artifact 74073 by Ron Pierson © Blue Water Productions.) ■

Edited by
Scott Bennett

Dominica gears up for annual dive fest

The Nature Island Kicks Off Its Signature Ten-Day Event on July 9, 2010

Known as "The Nature Island", Dominica is the largest and most mountainous of the Windward Islands, encompassing an area of nearly 290 square miles. Situated between the French islands of Guadeloupe and Martinique in the Eastern Caribbean, Dominica's natural diversity is truly unique. Boasting a bevy of natural attractions towering volcanic peaks, lush rainforests, waterfalls and pristine coral reefs, Dominica is a place where humankind and nature live in harmony. Adventurers and nature-lovers alike will revel in a range of eco-tourism options include scuba diving, snorkeling, mountain biking, kayaking, horseback riding, nature tours, hiking/trekking, whale, dolphin and bird watching, sailing and fishing.

Roseau, Dominica and the Dominica Watersports Association, promise to deliver an action-packed ten-day program during its 17th annual Dive Fest from 8-9 July 2010. Dominica hotels and tour operators are offering a variety of dive packages, just in time for the festival. Take advantage of Dominica's island-wide "6 Dive, 5 Pay" Dive Fest special offered at all dive shops between July 1 – October 31.

For more information on Dive Fest and to view their full schedule of events, contact the Discover Dominica Authority at 866-522-4057 or visit the official websites at:

www.dominica.dm/site/divefest.cfm
www.discoverdominica.com ■

'Cattle' class becomes 'cuddle' class as Air New Zealand introduces beds in economy

Having been subjected to ever-decreasing comfort levels in recent years, the new seating is a welcome development for economy travellers. With business class seats becoming more luxurious and economy seating more cramped, Air New Zealand has thrown down the gauntlet and is giving exhausted economy class passengers a chance to put their head down. Dubbed "Cuddle Class", the Air New Zealand offering applies to the three-seat blocks on its new planes and is being pitched at couples and families with young children. The new seating row can partially recline, with a retractable platform that can be raised to create a flat space across the foot-well.

For couples, the third seat comes at half-price. Whereas, for a family of four, the idea is that one adult can lie down with their children while their partner must make do with an ordinary seat. The airline has also suggested that children could be allowed to use the space as a place area.

The airline has, however, been quick to squash any lingering thoughts from couples wishing to join the "mile high club". "Just keep your clothes on please!" stated Rob Fyfe, the airline's CEO.

Read more: http://www.dailymail.co.uk/travel/article-1246145/Air-New-Zealand-offer-economy-class-lie-beds.html#ixzz0lBT4X0T7 ■

Need a snuggle bear to bring with you? Find this one at The X-RAY MAG Store where a percent of all sales goes to ocean conservation. Click on the image to buy

Senators fight airlines over carry-on baggage fees

U.S. Senate Democrats take aim at carry-on baggage fees after Spirit Airlines became the first U.S. carrier to propose charging passengers to store luggage in overhead bins.

"This latest fee crosses the line and is a slap in the face to travelers," stated Sen. Charles Schumer, D-N.Y. "Our legislation will rein in the airlines and keep air travelers from being gouged every time they board a plane." The effort comes one day after two other senators put forward a bill that would change how the Federal Aviation Administration regulates carry-on baggage fees.

The legislators were motivated by Spirit Airlines's proposal of to charge passengers up to US$45 to stow luggage in overhead bins, making it the first airline to charge for carry-on bags. As a result, Schumer and the bill's other co-authors called upon the U.S. Treasury Department to close a loophole they say gives airlines preferential tax treatment for fees on services that are not deemed "reasonably necessary" for air transportation.

The goal is to ensure that passengers are not penalized for bringing items such as medication, food and laptop computers onboard, the senators said. "So far, one airline has announced their intention to make fees for carry-on bags a reality," he added. "We cannot allow these flood gates to open," stated Senator Menendez. Under current laws, airlines pay a 7.5 cent tax for every dollar they collect in fares, but no tax is imposed on fees collected for "non-essential" services. ■

Edited by
Scott Bennett

Commentary

The Weighting Game

Is it too much to ask for there to be some degree of consistency when it comes to rules governing checked and carry-on baggage?

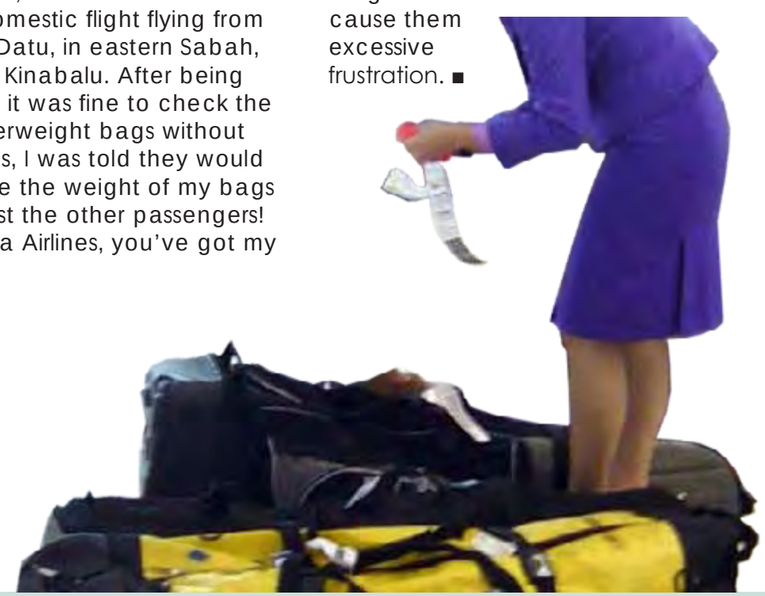
In light of Spirit Airlines' recent proposal to charge for carry-on items, it is increasingly apparent that luggage fees are exasperating issues, which seem to be increasing exponentially. As a diver AND an underwater photographer, airport check-in is a stressful exercise, to say the least. You just never know what will happen. Often, the rules seem to be at the whim of the person on duty at the counter. This point was well-illustrated on a recent trip to Southeast Asia.

Flying on assignment from Manila to Kota Kinabalu on Cebu Pacific, I really tried to minimize my gear as much as possible. While the airline does provide an option for excess baggage payment at the time of booking, the flight had been arranged for me, and this option hadn't been selected. The agent said I was a good 20 kilos over. To minimize the excess charges, he suggested I take the smaller bag to the departure gate, where it could be checked in there. I still had to pay US$50.00, which was a lot less than I would have. I then asked if I could do this in Kota Kinabalu on the way back. "It shouldn't be a problem," he responded. On the return trip, it didn't work out that way. The agent there said she had never heard of this practice, and I would have to pay US$100.00 for excess baggage, which was essentially the same as the cost of a one-way ticket.

In Malaysia, it was a different scenario entirely. Not only was I not charged excess baggage, but I was also allowed to carry on two bags plus my laptop! However, the real kicker came on a domestic flight flying from Lahad Datu, in eastern Sabah, to Kota Kinabalu. After being assured it was fine to check the two overweight bags without any fees, I was told they would average the weight of my bags amongst the other passengers! Malaysia Airlines, you've got my vote!

This got me to thinking. Why can't all airlines follow this procedure? Seriously, with today's technology, can't someone develop software to keep track of the total baggage weight utilized on a person-to-person basis? If two people are under and one is over, the weight can then be averaged out and everyone is happy.

On that topic, why can someone weighing 200kg get on the plane with no questions asked, yet I get charged excess for camera gear? In a time when airlines need to increase passenger traffic, they should be looking to attract passengers not cause them excessive frustration. ■



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POINT & CLICK ON BOLD LINKS

Top of the Pops Equipment

Fin design's a new switcheroo

Blades tuck in compactly under the foot pocket for travel or walking on the beach. Drag your foot backward and the jointed poly-carbonate blades splay out in front of the foot pocket, ready for kicking action. Interchangeable blades allow divers to choose the flexibility for the diving conditions. Quick release fittings ease doffing the fins at the end of a dive. Polycarbonate was chosen for its light weight and near indestructibility, allowing Ultimate to extend a limited lifetime warranty on the product. **www.SwitchbladeFin.com**

40 years

To celebrate 40 years of manufacturing quality dive kits, A.P.Valves introduces the new special edition BUDDY Commando TD40. Developed to meet the punishing demands of Navy SAR divers in the mid-1980s, the original BUDDY Commando subsequently took the UK and northern European sport, technical and commercial (sat-diver) diving market by storm, out-selling its rivals for over 20 years and still going strong. The special edition TD40 is based on the original Commando blueprint. The new Commando TD40 combines the best of old and new with classic Commando TD looks, lift and build quality together with the innovative comfort, custom-fit and precision buoyancy control features of the contemporary BUDDY re::flex range. Available in yellow/black or all-black. **Apvalves.com**

GEO updates into the future

The redesigned 2.0 GEO dive computer allow users to keep updating the instrument as algorithms are refined. With an optional cable, the PC interface can download new software from the company as it is made available. Users can choose between Pelagic DSAT or the more conservative Pelagic Z+ algorithm, with an option to switch on or off deep stop computations. Divers also can switch between two different nitrox mixes – each up to 100 percent – during dives. Four modes allow operation as a watch, normal operation with air / nitrox, gauge with a run timer and free, which tracks calculations when switching between normal and free. It can be programmed for deco and non-deco diving and features audible or vibrating alarms. The control interface allows users to step back to earlier screens while programming the unit. Up to 24 dives are stored in the GEO 2.0's memory and uploaded to a digital logbook. **www.OceanicWorldwide.com**

Eliminate bad air days

Chances are slim that a tank fill will contain carbon monoxide, but CO is definitely a gas no diver wants to deal with at depth, especially in the special mixes that enable deep diving. The potentially lethal gas can get pumped into tanks filled with a faulty air compressor or if the compressor is downwind from a CO source and its CO filter has been overwhelmed. KWJ Engineering has a handy portable sensor called the Pocket CO Scuba 300 that's designed to allow divers to check tanks for this deadly gas before they jump in the water. Put the key-sized sensor in a leak-proof bag, and then fill it with air from the tank. Within three minutes it will sense if CO is present in concentrations as low as 2 parts per million. **www.kwjengineering.com**

Deep Outdoors Cold Fusion

Deep Outdoors' Cold Fusion lighting system's array of light-emitting diode bulbs can deliver up to five hours of burn time at the low-beam setting or 3.5 hours on high. It also has a beacon setting to signal the boat after a dive. And if that's not long enough, the battery unit is equipped with three-pin wet connectors, so the rechargeable lithium ion battery pack can be switched underwater with a fully charged backup. The light head is fitted with a Goodman handle, which leaves fingers free for gripping. The system is shipped with a battery charger that works with 100- to 240-volt input with a universal switch allowing it to be used anywhere in the world with the appropriate adapter. Charging time is five to seven hours. The rugged machined aluminum system is depth rated to 500 feet and the lamps have a life of 100,000 hours. **www.deepoutdoors.com**

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Turbo charge your kick

ScubaMax has updated its fin design in the FN-320 Mach II Turbo fin. The fin's main design nuance is a trap door near the foot pocket that directs water along the top and bottom of the end of the fin with each kick stroke. This design is said by the manufacturer to more efficiently direct the water along the fin to the tip of the blade instead of allowing it to roll off the sides of the fin, where it simply creates turbulence and drag. The fin is molded from neoprene rubber for flexibility, which can be adjusted to personal preference in stiffness by snipping up to three power tabs between the trap door and the fin blade. The more tabs that are snipped, the more flexible with a caveat: once snipped they cannot be restored to provide additional stiffness. Fins are available in three sizes: small, for men's shoe 6 to 8 sizes; medium, 8 to 10 shoes; and large, 10 to 12 shoes. Straps are attached with quick release connections to ease removal to climb boat ladders or to walk through the surf zone at the end of a dive. The fins are negatively buoyant and available only in black. **www.ScubaMax.us**

Cressi Crystal

A new version of the Piuma, made using new, extraordinary Crystal Clear silicone. This material offers a level of transparency that has never been seen before in the production of scuba diving masks. Although it still maintains the hypo-allergenic characteristics of the silicones used previously, Crystal Clear is so transparent that it is virtually invisible once the mask has been put on. In addition to the extraordinary transparency, this silicone boasts exceptional resistance to ageing and yellowing over time that is far greater than that of traditional silicones. Even the tendency to mist up is lower than with traditional silicone materials. The seal on the skirt has an original angle and offers comfort that has been unheard of up until now on a scuba diving mask, even after prolonged use. **www.cressi.it**