



Edited by Nick Bostic

Cold weather means more time for marketing

Text by Nick Bostic

Feeling a bit too cold to stay underwater as long as usual? Use the winter months to prepare your business for a hot, profitable spring.

With travel agents being put out of business by online travel brokers and security requirements at airports increasing daily, consumers are doing more research online for their vacation travel plans. If your online presence is dated, incomplete or completely nonexistent, you are potentially missing out on a significant amount of business.

Online marketing may appear to be a daunting task for many small business owners, but some basic, free tools can help increase your exposure in very little time.

Online social networking

An excellent place to start your research is at IBM's Many Eyes data visualization site (bit.ly/6syRE7). Looking at their December 2009 global map of the primary online social networking site by country, it appears as though Facebook (www.facebook.com) is the dominant online social network throughout North America,

much of Europe and most of Australasia. It is important, however, to identify the tools your customers are using and focus your energies there.

It is important to read the terms of service and privacy policies of any social networks you intend to join. As examples, Facebook does not allow "direct commercial activity" in personal profiles, but does on business pages. Vimeo will not allow commercial video, but Viddler will.

Web site versus social networks

Online social networking is only one aspect of a successful internet marketing program. To be very successful, it must be combined with an excellent web site.

Your web site is your home and an opportunity to be unique. Social networks are a tool to help you connect with potential consumers. All social network activity should be designed to eventually drive customers back to your web site where you are able to effectively convert an online shopper into a buyer.

I strongly encourage all members of the dive industry to consider using a Content Management System (CMS) as their web

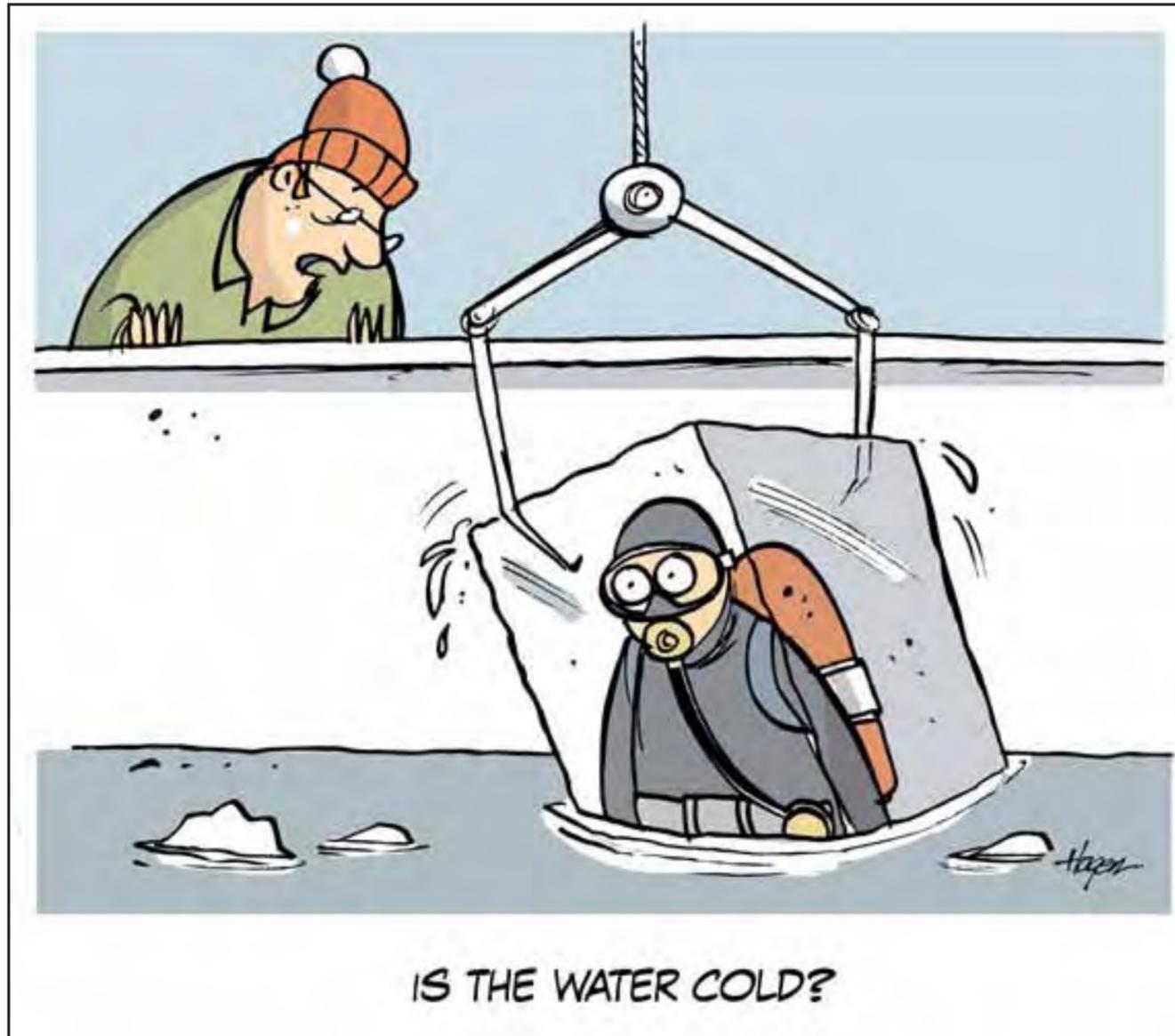
site. A CMS will allow any member of your team, with minimal training, to be able to provide input and edit content as needed. Examples of popular CMS systems include Wordpress, Joomla and Drupal.

According to a May 2009 poll on ProBlogger.net, 56 percent of respondents use Wordpress in one form or another (www.problogger.net/archives/2009/05/31/what-blogging-platforms-do-we-use-poll-results/). Google's head of Webspam, Matt Cutts, says if you want to do better in Google "Wordpress takes care of 80-90% of the mechanics of search engine optimization" (www.matcutts.com/blog/seo-for-bloggers/, Slide 12). I personally use Wordpress, X-RAY

MAG has chosen Drupal.

Online social networking and a professional, interactive web site are two of the most critical tools to attracting customers locally and abroad. When used effectively, they can take a minor amount of time to maintain yet provide incredible results in online business.

Nick Bostic is the founder of New SCUBA Marketing. He has been helping small business owners market their business online for over 15 years. He has also been a SCUBA instructor for over ten years and has experience working for dive centers, liveaboards and running large college programs. Visit his blog at: j.mp/73aYKT ■



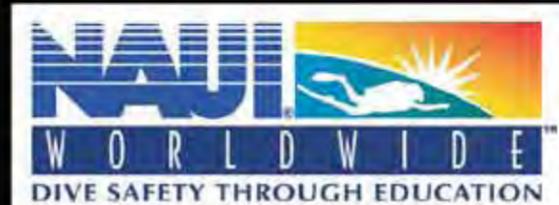
This dive cartoon by Ralph Hagen was created especially for X-RAY MAG and is available on organic t-shirts at www.cafepress.com/xraymag. A percent of all sales goes to ocean conservation!

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



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Poster of a haenyeo, a woman diver of Jeju. It hangs in the Haenyeo Museum in Jeju



제주해녀의 삶

Women Divers of Jeju

The Mermaids called *Haenyeo*

Text and photos by Bonnie McKenna

The island of Jeju, Korea, is an island of myths, gods and goddesses. It is also the birthplace of the women divers of Jeju. Although the women divers of Jeju are not the goddesses of myths, they are real alive mermaid goddesses.

The women divers of Jeju have been diving—diving without breathing equipment for centuries. It is not exactly known when the first women divers appeared, but ancient shrines honoring women divers indicate that they began gathering food from the sea prior to the Common

Era. Historical documents from the Three Kingdoms period, which lasted between the 4th and 7th century, mention the women divers of Jeju.

The name for these women divers, in Korean, is *haenyeo*. It literally means 'women of the sea'. Traditionally, the women wore only a simple home-sewn white linen combination of pants and a top with lead weighted vests where they tucked the specialized tools of their trade.

Precise rituals ensure the women's survival as they free dive in all kinds of weather searching for shell fish and special seaweeds. The divers stay submerged for two to three minutes at depths of 10 to 30 meters with only a

float, or *taewak*, to mark their position. A bag, or *mangsiri*, that attaches to the float holds the day's catch. Although the diving tradition continues today, the women now take advantage of modern wetsuits, fins and goggles.

When the divers surface, they make a unique shrill, high-pitched whistling sound that is their way of expelling carbon dioxide from their lungs and breathing in the fresh air.

The women divers usually work in groups. During breaks and at the end of the day, they retire to their *bulteok*. Although the word means 'bonfire' in Korean, a *bulteok* serves as much more than that. It is a term which signifies an open-air dressing room. It also serves as a place where the women meet to exchange information, opinions and foster the diving profession.

Diving is still an excellent source of income, and as a consequence, the women divers enjoy more freedom, independence and self-respect than other Korean women.

There is a special ranking among the women divers. Group A are the most able divers. Groups B and C are divided based on experience, character and capability. The groups determine who dives from shore, from boats (to 15 meters) and those who specialize in deep diving (more than 20 meters).

As the women gather around the bonfire, their seating position in the *bulteok* reflects their position within their group. When a diver is upgraded, her seating

position is changed.

Although the working environment of the women divers has not changed appreciably over time, the *bulteok* has changed. Along with improved diving gear, they have updated their dressing rooms to permanent structures with modern heating. However, the hierarchy of the *bulteok* is still in practice.

When a diver loses her life, the women stop diving for a while. If they find the body, they have a funeral, but if they fail to find the body, a shaman is invited to soothe the soul of the body and send it to heaven. The shaman also performs an exorcism to prevent evil spirits from preventing further disasters.



Painting of the haenyeos coming from the sea. Painting hangs in the Haenyeo Museum in Jeju





Mermaids

LEFT TO RIGHT:
An historical photograph illustrating the different dress styles of the women divers; Teawaks made of gourds and polystyrene carved into balls. This represents the evolution of the symbol of the women divers; Display of spear guns

1500 women divers went to Japan every year. Instead of using the traditional taewak, they used a *dampu*, which is similar to a drum with a small net pocket, or they



DIVING TOOLS

EYES

The goggles worn by the women divers are called 'eyes' in Jeju dialect and have gone by that name since the 19th century. There are two types of goggles: 'small eyes' akin to swimmers goggles and 'big eyes' masks with one large lens. The women could choose between *guet* eyes, a fragile frame with a wide lens that stood up better in deep dives, and the smaller *umjang-e* eyes. The frames were made of metal before the widespread use of rubber.

TAEWAK

The taewak is a symbol of the women divers. The taewak used to be made from a gourd, but today they are polystyrene. The taewak is used as a floatation device while swimming, and from it is hung the mangsiri, a large net. The divers also use the taewak as a guide to the surface when diving deep.

MANGSIRI

The mangsiri is a loosely woven bag that attaches to the taewak to store the diver's catch. The mangsiri is a round net approximately 40-50cm in diameter at the top and 7cm in length. The lower section is wider at the bottom. Modern mangsiri are made of nylon.

BITCHANG

This is an iron tool 30cm in length used to pick abalone off the rocks.

JUNGGAE WEEDING HOE

The hoe, resembling a sickle, is used to cut and gather seaweed.

GONGJAEGI

A tool used to hook a *gamtae* (a sea plant) that has been pushed to the shore by the wind.

RAKE

This tool is used when the diver is gathering wide brown seaweed on a boat.

GAKJI

Similar to the weeding hoe, this tool is used to pick up shellfish and baby abalone from cracks in the rocks. ■



used a board. The Japanese often referred to the divers as *itaama* or 'board women.'

In Xingdao, China, after being introduced to brown seaweed by a Korean businessman, there was a need for the women divers. In China, the women were called 'dragon women' (dragons were a symbol of water and rain and were said to live below the earth). The women worked from May to August making good money.

A number of women went to the frigid waters of Russia to harvest kelp that was too large to harvest from the surface. Because whales often shook the ships they were working, they were asked by the person in charge to dive silently.

During the Japanese occupation of Korea from 1910 to 1945, the women divers of Jeju rose up against atrocities of the Japanese to fight for their rights. They led anti-Japanese campaigns that allowed them to boycott Japanese-run businesses and establish cooperatives to preserve marine resources after the Japanese governor ran up the price of shellfish.

Expanding business

In their determination to support their families the women divers began diving outside Jeju, according to Japanese history, it may have been before the 5th century. In many cases the women were fearful of a new experience in foreign lands, but they packed up their diving tools and set off with determination.

According to the 1937 issue of the Jeju Handbook, the business for brown seaweed increased in the late 19th

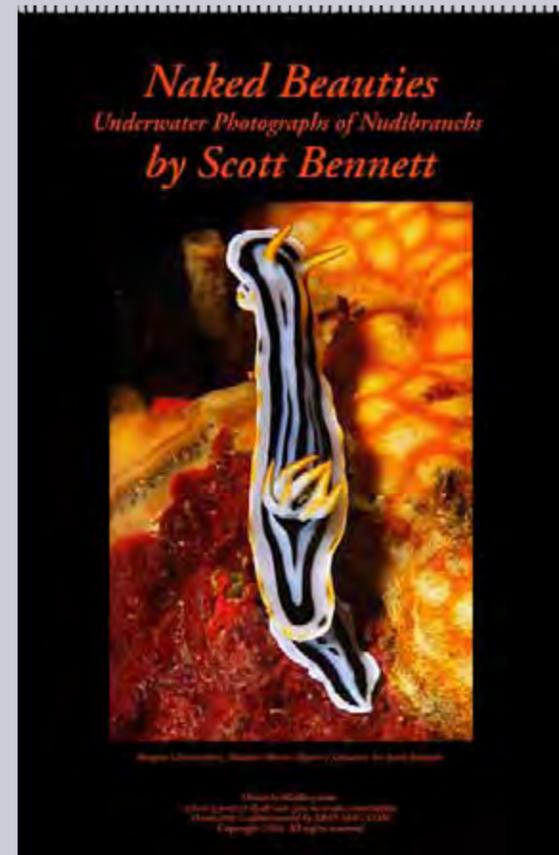
century first in the Busan area, then gradually extended to other cities and countries. The women were often exploited, but because the salary was good they had little choice; they needed the money for their families.

The Jeju women divers began diving, in earnest, in Japan in the early half of the 19th century. Approximately,



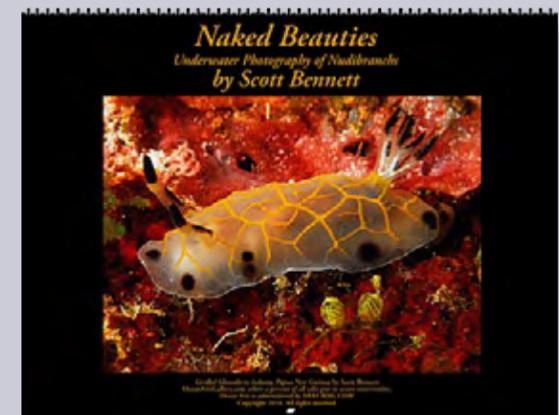
Mermaids

TOP TO BOTTOM:
Tools used by the haenyeos to harvest seaweeds and shellfish, including implements such as the Junggae (bottom left of photo) and the Gakji, bitchang, and gongjaegi (top left to right of photo); Tool used to cut brown seaweed; Haenyeo wearing a traditional diving costume



Naked Beauties 2010 Calendar

Get our new 2010 calendar of nudibranchs for yourself and your dive buddy this year. A great gift that keeps giving all year 'round. Plus, a percent of all sales goes to ocean conservation.



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accurately reflects the importance of women as the backbone of the Jeju family. Island girls start diving by the age of 10 or 15. At that time, they are ready to earn a living.

A decline in mermaids

The number of women divers has decreased dramatically in recent years. More job opportunities, education and mothers do not want their daughters to follow in their strenuous and dangerous profession. In 2006, there were only 5,406 women divers, and those over 60 years old accounted for 65.8 percent (3,557); those between 50 and 59 just over 24.6 percent (1,331); those between 30 and 49 only 9.6 percent (518); and those below age 30 number only two. In contrast, in 1970, the number of women divers over the age of 60 was only 4.6 percent.

Due to the rapid decline in the number of women divers and their aging population, the Haenyeo Museum was established in Jeju to honor the mermaids. The museum is located in the village of Hado-ri where many haenjeos have traditionally lived. The museum has many exhibits showing the haenjeo's way of life, working tools, diving dress and models of their homes. William Logan the UNESCO Chair of

Heritage and Urbanism said Jeju women divers represent a unique legacy that deserves nomination for the UNESCO Intangible Cultural Heritage.

Logan said, "The point of the intangible cultural heritage is to draw attention of the international community to the threats to this particular heritage around the world and support Korea in finding ways to maintain these skills from donors and educators."

Today, most of the women divers are over the age of 60, some are widowed, and some are still the sole economic source for their families. The haenyeo divers continue to survive through their wits and the strength of their communities. They are incredibly strong and remain healthy, fit and beautiful.

Dutch sailor Hendrick Hammel, a survivor of the 1653 shipwreck on Jeju, recorded in his logbook that "real mermaids" existed on Jeju.

Bonnie McKenna is an internationally known fine art photographer specializing in the beauty of life under the sea and the nature of the great outdoors. She is a PADI certified Master Scuba Diver Trainer. She has written for several publications including *D-Log—an interactive dive log for the islands of Palau—Houston Community Newspapers and The*

Tribune News-papers as a travel writer after a long career with Continental Airlines. She is currently a reporter for the Houston Chronicle. ■



Girls over boys

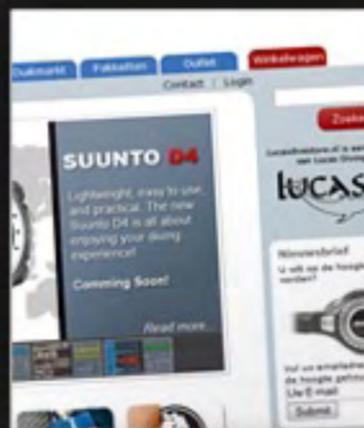
Most Koreans aspire to have baby boys, but on Jeju it is different; the birth of a baby girl is valued. There is an old saying in Jeju, "When you have a baby girl, butcher a pig and have a party. If it is a boy, just kick him in the butt." The saying





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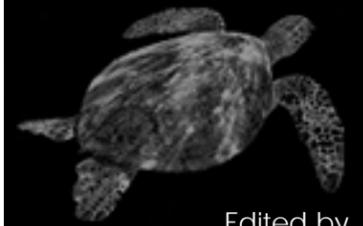
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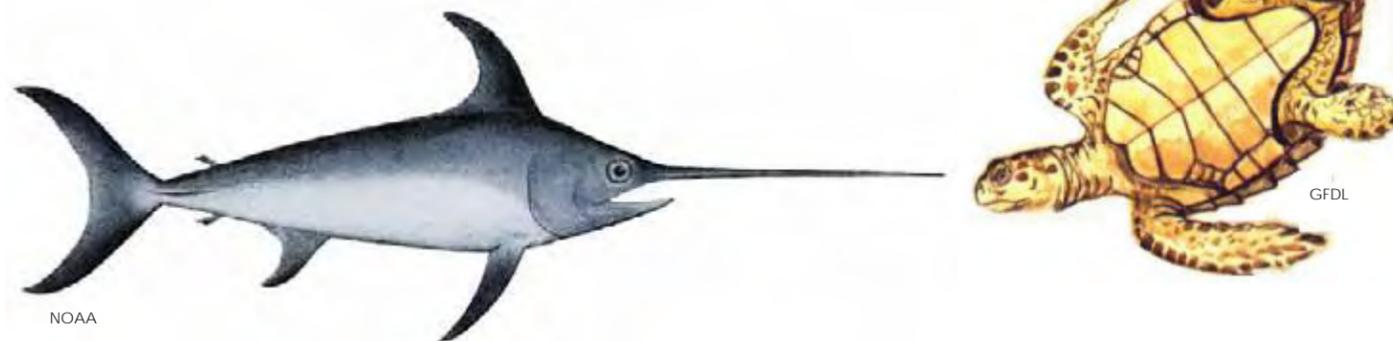


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turtle tales



Edited by
Bonnie McKenna



NOAA

GFDL

Loggerheads hatched on Zakynthos

Laganas Bay on the Ionian island of Zakynthos became once again the starting point for thousands of endangered *Caretta caretta* (Loggerhead) turtles.

Approximately 60,000 sea turtle eggs hatched in 763 of the 857 nests made in the 2009 nesting season despite adverse weather conditions characterized by unseasonable low temperatures in the mating period.

Laganas Bay is one of the last remaining natural habitats of the Loggerhead turtle in the Mediterranean. In the summer, about 2000 turtles lay their eggs on the sand beaches. ■

Hawaii swordfish fishery expansion jeopardizes turtle survival

Three conservation groups are taking the National Marine Fisheries Service to federal court in Honolulu to challenge a new rule removing all limits on fishing effort in the Hawaii-based longline swordfish fishery. The group contends that the new rule allows the longline fleet to catch nearly three times as many endangered sea turtles as previously permitted.

The current law requires the Fisheries Service to minimize harm to sea turtles and prohibits harm to albatross, both of which are being driven to extinction mainly because of irresponsible fishing practices.

The new rule, unless the courts intervene, is due to take effect 11 January 2010. The Hawaii

longline fleet may not hook or entangle more than 46 loggerhead turtles or 16 leatherback turtles each year. The Fisheries Service say the populations of Pacific sea turtles will not be jeopardized under this action.

The Fisheries Service has admitted that the loggerhead and leatherback sea turtles in the Pacific face a significant risk of extinction unless the number of sea turtles killed is reduced.

"Unfortunately, rather than take action to better protect sea turtles, the agency is proposing measures that would actually increase the number of turtles killed," said Andrea Treece, an attorney with the Center for Biological Diversity in San Francisco. ■



Loggerhead sea turtle, *Caretta caretta*

Turtle's journey tracked by scientists

The journey's of two leatherback turtles is available to view online thanks to a new research project by the University of Exeter.

Noelle and Darwinia are two adult leatherback females that nest in Gabon, Western Central Africa.

The two turtles are members of the world's largest nesting population of leatherback turtles, but their environment is threatened. The waters around Gabon are increasingly subject to industrial fishing and oil exploration.

The scope of the research is to determine where the turtles go after they leave the nesting beach. By understanding their migration patterns and their use of the nearshore habitat around their nesting beaches is a key component to the turtle's survival. The progress of Noelle and Darwinia can be viewed online at: www.seaturtle.org/tracking. ■

Leatherback turtles are right-flipped

According to a study in the journal of *Behavioral Brain Research*, a species of turtle has been found to prefer one limb over another.

Across a population studied by scientists, more turtles preferred to use their right rear flipper rather than the left flipper when laying eggs. Such preference is known as 'lateralized functional behavior', and it usually indicates that an animal's brain functions are also lateralized.

The Drexel University team investigated whether such a similar preference occurs across a large wild population of leatherback turtles. The scientists observed 361 females laying eggs at the Playa Grande rookery in Costa Rica. Over five years, they watched females laying eggs on 1,889 occasions. Overall, the turtles preferred to use their right flipper 54 percent of the time.

Although the preference is subtle it is statistically significant, revealing a bias in flipper use. ■



GFDL

Remotely Operated Vehicles (ROVs) and satellite tags aid turtle studies

Researchers from Woods Hole in Massachusetts are using ROVs and satellite tags to learn more about turtle behavior in commercial fishing areas and develop new ways to avoid catching turtles in fishing gear. This is the first study to use ROVs to follow turtles in the wild to learn about their behavior and how they interact within their habitat.

Two juvenile loggerheads have been followed since their capture in August. The tags continually record water temperature, depth, location and time of day.

The current project is being funded by NOAA and the Atlantic scallop fishing industry. The results of the study will develop new technologies to reduce the number of turtles caught in scallop dredges.

Approximately 50 turtles have been located and followed with the ROVs. Researchers are studying their behavior, including their feeding, swimming and interaction with the ocean bottom and each other. ■



Sea turtle washed up on Stinson Beach in California

A rare and endangered Olive Ridley sea turtle washed up on SeaDrift Beach in Stinson Beach. Stinson Beach is north of San Francisco, USA.

The turtle was a sub-adult female weighing approximately 60 pounds and its carapace measured about two feet.

She was cold-stunned when found and transported to the Marine Mammal Center in Marin County where she was stabilized with fluids, vitamins and antibiotics.

This turtle was only the third time live Olive Ridley turtles have been found so far north of their normal range in Mexico.

Researchers brave Cape Cod storms to rescue endangered turtles

During the last week of November frigid waves tossed 35 sea turtles ashore in the Cape Cod area of Massachusetts; more came ashore through the first week of December.

Four were green turtles and the others Kemp's ridley turtles. Fortunately, the turtles were not alone; nearly 40 volunteers from the Mass Audubon's Wellfleet Bay Wildlife Sanctuary's beach patrol.

The turtles get caught in the relatively warm water of Cape Cod Bay, and if they do not slip through the Cape Cod Canal or swim around the Provincetown tip, the cold-blooded turtles get cold-stunned and wash helplessly ashore. ■



GFDL: BERNARD GAGNON

Olive Ridley sea turtle (*Lepidochelys olivacea*)

Silver Anniversary

The Caribbean Conservation Corporation celebrates 50 years of successful sea turtle conservation

Fifty years ago, Dr Archie Carr stood on a remote Caribbean shore awaiting the arrival of the legendary fleets of green turtles that he was told return every year to nest at Tortuguero, Costa Rica. Large numbers of green turtles nested, but the numbers were dwindling fast at the hands of turtle hunters who took nearly every turtle that arrived on the beach that night.

Carr wrote about his finding in a book titled *The Windward Road*, which alerted the world to the plight of sea turtles. The

book inspired the formation of the Caribbean Conservation Corporation (CCC) in 1959.

The CCC has maintained the longest continuous data base for sea turtles in the world, trained generations of sea turtle biologists and conservationists.

At Chiriqui Beach in Panama, CCC collects nesting data and works to reduce threats to sea turtles. In just a few years, leatherback and hawksbill nesting has increased, nest survivorship has improved and illegal turtle fishing had declined.

The CCC remains actively engaged in the most critical issues affecting sea turtles. Educational programs are creative, fun and inspire people to learn and care about sea turtles.

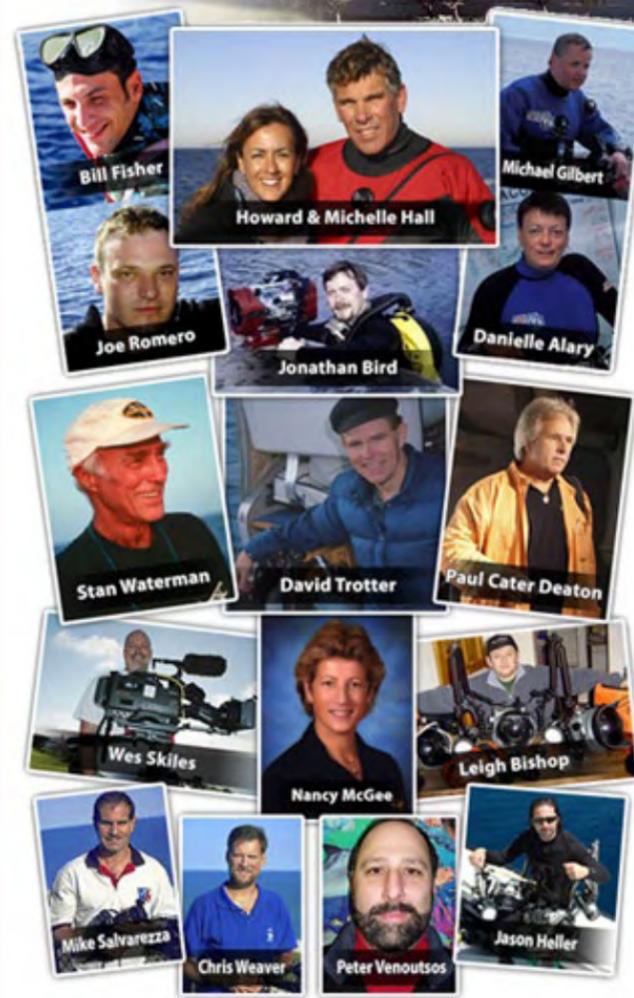
Carr said, "You cannot argue the case for saving any wilderness on the grounds of practicality alone. If this difficult saving is to be done, it will be because man is the creature who preserves things that stir him. This work will take staunch people." ■



19-21 February 2010

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Our World-Underwater is the oldest dive and travel show in North America. The show comes to Chicago every February. The event is held just a few miles from O'Hare Airport in Rosemont, Illinois. With hundreds of booths and thousands of divers, it is an event you will not want to miss. The weekend is loaded with educational workshops, and the nights full of films. Be sure to make it!



WEEK-END AT A GLANCE

Friday, February 19, 2010

In-Depth Workshops 8:00 – 5:00
Exhibition Hall 5:00 – 9:00
Film Festival 8:30 PM – 10:00

Saturday, February 20, 2010

In-Depth Workshops 8:00 – 5:00
Exhibition Hall 9:00 – 6:00
Seminars 9:00 – 5:00
Children's Program 10:00 - 4:00
Film Festival 7:00 – 9:00

Sunday, February 21, 2010

In-Depth Workshops 8:00 – 4:00
Exhibition Hall 9:00 – 4:00
Seminars 10:00 – 2:00
Children's Program 11:00 - 2:00

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Rad Equipment



LED focus

This little back-up or focus 10W LED lamp from leading German manufacturer, Kowalski, comes in different two-colour variation of anodized brushed aluminium. The spot angle is variable from 9°-35°, which is easily adjusted regardless of water pressure. Comes with a high quality desktop charger. taucherlampen.de



Zeagle Line Cutter

Mounts easily on any BC. Has a serrated stainless steel blade. Bright yellow handle for visibility and is large enough to fit two gloved fingers. www.zeagle.com



Doesn't fade

Tired of seeing the skirts of your sleek mask slowly turn unsightly yellow and opaque over time? The new Big Eyes Crystal mask from Cressi is made from a new and patent-protected version of medical silicone that will keep its transparency and colour, Cressi insiders just related to us at an recent dive expo. www.cressi.com



Apeks' Flight

Apeks Flight is lighter than any other complete regulator and has been designed for the travel diver. Flight is also suitable for diving as cold as 10°C. The area where a normal regulator freezes is protected and insulated, which reduces and this helps prevent freeflows. The insulation effect is also evident in Flight's second stage. Components in both the first and second stages are made from reinforced material specifically developed for the manufacture of technical components. The advanced composite materials are strong, not affected by water or extreme ranges of temperature, has good dimensional stability, an excellent resistance to chemicals, and does not deform. www.apeks.co.uk www.aqualung.com

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Made in Italy

FA&MI's lamp combination of lamp head T-S200 and the Multi-bat accumulator canister is a hard-hitter. The combined output of the 18 LEDs is rated at 200W, and the whole assembly is rated to a depth of 200m. It is part of a whole modular system with interchangeable components. Lamphed reflectors are available in both 12° (standard) or the optional 90° version. The illustrated assembly weighs in at 2.3 kg above water and 1 kg in water. fa-mi.com



Halo & H-75p from Halcyon



The high performance of the H-75P first stage results from a balanced freeze-resistant piston design that delivers high levels of gas under all conditions and is completely unaffected by changing tank pressure. The rotating swivel provides flexibility and super clean hose routing. It is fitted with two high pressure ports, five High Flow intermediate/low pressure ports. 300 bar DIN connector and compatible with 40% Nitrox. The Halo second stage's balanced, adjustable downstream valve provides smooth performance in all conditions providing unsurpassed performance with enhanced technology. Adjustable control knob refines

inhalation resistance. Air Control Vane utilizes vacuum power to reduce work of breathing. Compatible with 40% Nitrox.
halcyon.net



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Wicked Zeagle

The new range from Florida-based Zeagle is slated to see its first distribution through selected dealers by end of March 2010. Their Ranger Construction is available in both male and female styles and comes with tribal artwork and logo and stone washed denim type cordura fabric making for an "aged" appearance. The unique fabric is a designer-styled stone washed "denim type" nylon Cordura material. A "repair" patch has been added to the outside of the utility pocket for style. The webbing has a seasoned appearance. These features give the Wicked BC the look of "experience" and are unique in diving today. www.zeagle.com



Electric Gas Boost Pump

This new electric gas booster will work with all types of gases. Provides up to 18 SCFM flow rates and outlet pressure up to 10,000 PSI. Used in industry, fire service, mining rescue, aviation ground service, laboratory applications, etc. Optional accessories available for multiple gas cylinder refilling. Use as electric oxygen pump, electric nitrogen pump electric air pump or for electric gas boost pump. www.americanairworks.com





SI Tech regulator

Swedish SI TECH, who are mostly known for their valves that sit on probably about half of the world's drysuits, are also the manufacturer of a range high-quality equipment providing innovative solutions for challenging diving conditions. True to their high standards, SI TECH's new Forever regulator is designed for the most demanding and safety-conscientious divers and is produced and tested during extreme conditions such as deep diving in icy water. It works with a low intermediate pressure to prevent freezing, and large diameter low and high pressure hoses ensure high air flow at extreme depths.

www.sitech.se



Seac Sub Boss

This sister-mask of Lena has nearly all the same technical characteristics, distinguishing itself for its particularly wide field of vision typical of single-lens masks.

www.seacsub.com



Tekwing Lite

The NEW BUDDY Tekwing Lite is a compact and lighter version of the Tekwing built to the same high specs and offering the same upgrade options on a smaller wing. The Tekwing Lite provides 18.26kg of buoyancy. The new element:

the backpack and all its advantages of comfort and fit. The harness features two welded stainless steel D-rings (more may be

added), which can be moved to the ideal position. Two further D-rings on the wings allow easy attachment of side-mounted stage cylinders, when used with BUDDY Verti-Clips, which hold the D-ring rigid at a right-angle to the jacket for simple one-handed attachment or release of dog-clips. Waist-band slots are fitted on either side of the wing to prevent 'tank-wrap' when used with a single cylinder. Two-band crotch straps are fitted to eliminate ride-up on inflation of the wing. www.apvalves.com

Nomad Weight Plate

Formed in the shape of the backplate, the new Nomad Weight Plate lies flat and isn't felt by the diver. Carrying up to 16 pounds of weight in four separate pockets, the Nomad Weight Plate attaches to the back of the Nomad using the existing grommets in the backplate. New, SuperFabric® brand material covers the outside of the plate, protecting it from abrasion, wear and tear. www.diverite.com



Click Release Pockets

A pair of integrated weight pockets can be added onto any harness. Threads onto 50mm webbing. Each pocket can hold 8kg.

Available in Black, Blue, Red, Yellow or Pink. www.bowstonediving.com





Edited by
Robert Sterner

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Dive with a personal assistant

Uemis unveiled a computer so sophisticated that the Swiss company dubbed it a Scuba Diver Assistant. The low-profile unit wraps snugly around the wrist and features a large scratch-resistant quartz crystal display with easy-to-read dive data, including the air pressure in your tank as well as your buddy's, providing your mate has a similar sensor mounted on his first stage. The wrist unit activates automatically in the water and takes temperature as well as depth into account as it projects remaining bottom time, time remaining before entering deco, and deco stops and times. Visual color-coded and audible alarms alert users who exceed depth limits, maximum operating depths, deco, ascent rates, dive times and if the remaining gas is inadequate for safe ascents. Tables are computed for up to three different mixes on the Uemis ZH-L8+ algorithm and the computer logs the data every five seconds. Stored data can be uploaded and stored on a personal computer as well as in the user's personal log at the Uemis web site, from which it can be downloaded via computer anywhere in the world. The sealed unit is virtually flood-proof and has solar cells that recharge the battery during surface intervals. Divers can customize their computers for personal conservative factors and change the face plate to match their dive duds. www.uemis.com

A little help for DCS victims

Administering pure oxygen is the best quick first aid for divers who may have decompression sickness symptoms. Although most charter boat operators keep O₂ on board, independent divers might not. The next best gas is enriched air nitrox. RescuEAN is a device to administer nitrox to accident victims, even if they've lost consciousness. Attach the outlet of a low-pressure hose to the small pod-shaped unit and connect the output of the pod to a standard face mask that fits over the victim's nose and mouth. This allows the gas mix to flow at a steady rate of either 15 or 25 liters per minute, pumping air into the victim's lungs without having to inhale. The mask and gas-delivery setup is designed to not interfere with the administration of CPR. When one tank is used up, attach pod to a new bottle of nitrox. The compact pod is made of rugged plastic and adds less than one pound of weight to the dive bag. www.rescuean.com



Light clicks with divers

Tektite has teamed up with Moray Dive Gear to market a handy dive light that also serves as an attention-getting noisemaker underwater. The Moray DCT light's single light-emitting diode bulb produces a 150-lumen six-degree beam. It also includes Moray's patented noisemaker. Need your buddy's attention? Just shake the light. Two c-cell batteries can provide a burn time of eight hours. The bulb is rated for 10,000-plus hours of operation. The light, which was introduced at the fall DEMA dive show, is available in two models. The standard version is made with ABS and Lexan, materials that resist corrosion and dive-bag abuse. The pro version is machined from a block of aircraft aluminum and looks rugged enough to drive nails. Both are supplied with a cushioned wrist lanyard and rubber glare guard. www.moraydivegear.com



Look for sites on a budget

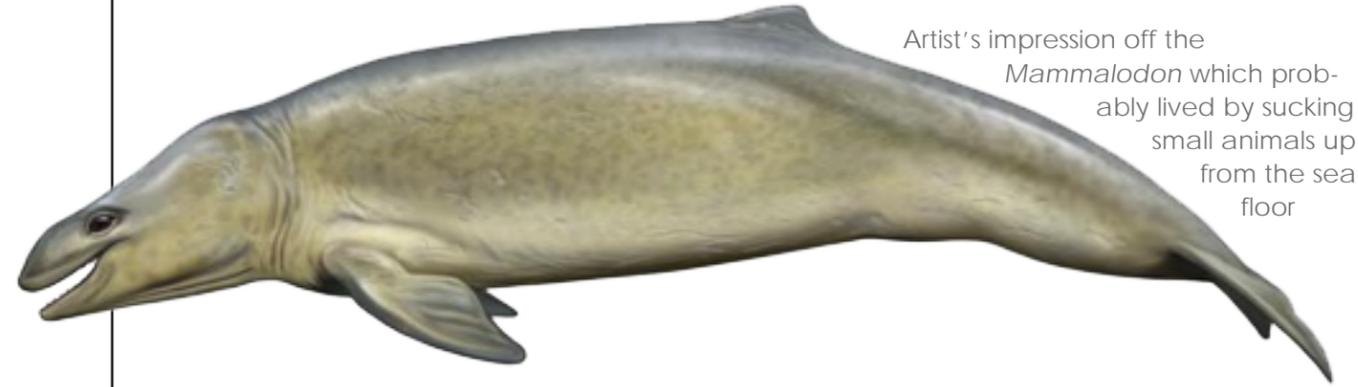
Side-scan sonar just took a giant step toward affordability for divers du jour with the 450F model from StarFish Seabed Imaging Systems. The system includes a 4.5-pound towfish with 65 feet of cable, allowing the sensing head to be towed at depths to about 25 feet. Data is sent to a top box, which provides power to the towfish and sends the side-scan images to the user's personal laptop computer for storage and to view in real time. The transducer has a 60-degree vertical beam and a 1.7-degree horizontal beam that collects images over a maximum of 656 square feet. The cable used to tow the fish has a breaking strength of 330.7 pounds. StarFish also markets a hull-mounted transducer for those who aim to scan shallow waters without fear of losing a towfish. These units are designed to help recreational and public safety dive teams scan the bottom for wrecks and underwater structures that would be interesting dive sites, using the same compressed high-intensity radar pulse technology incorporated in military and top-line commercial sonar systems. www.starfishsonar.com





sea mammals

Edited by Peter Symes



Artist's impression of the *Mammalodon* which probably lived by sucking small animals up from the seafloor

MUSEUM VICTORIA PRESS RELEASE

Ancient pygmy sea cow discovered on Madagascar

The discovery of a near complete skull from a hitherto unknown species of extinct pygmy sea cow dating from the Middle Eocene (48.6-37.2 million years ago) is one of the first fossil mammal species found from this era in Madagascar illuminating a virtually unknown period in Madagascar fossil history.

This primitive "dugong" is among the world's first fully-aquatic sea cows, having evolved from terrestrial herbivores that began exploiting coastal waters.

Within this ancient genus, the newly discovered species is unusual as it is the first species known from the southern hemisphere (its closest relatives are from Egypt and India), and is extremely primitive in its skull morphology and dental adaptations.

"The fossils of this ancient sea cow are unique in that it has a full set of relatively unspecialized teeth whereas modern sea cows have a reduced dentition specialized for eating sea grass, and

most fossil species already show some degree of reduction. It may also be the first fully aquatic sea cow; confirmation will depend on recovering more of the skeleton, especially its limbs," says McGill University professor, Karen Samonds, who found the skull.

The research was published in the *Journal of Vertebrate Paleontology* on December 12. ■

Early whales sucked

Australian fossil unlocks secrets to the origin of whales

Based on a 25-million-year old fossil found near Torquay in Victoria Museum, Victoria, palaeobiologist Dr Erich Fitzgerald hypothesise that *Mammalodon* was a bottom-feeding mud-sucker that may have used its tongue and short, blunt snout to suck small prey from sand and mud on the

seafloor. "This indicates early and varied experimentation in the evolution of baleen whales," explained Fitzgerald.

Fitzgerald's conclusions support Charles Darwin's speculation in *The Origin of Species* that some of the earliest baleen whales may have been suction feeders, and that their mud grubbing served as a precursor to the filter feeding of today's giants of the deep. ■

Amazon manatee mystery solved

The Amazonian manatee (*Trichechus inunguis*) is an elusive large plant-eating mammal that lives in freshwater. The species is only found in the Amazon River basin from the river mouth to the upper reaches of tributaries of Brazil, Colombia, Ecuador, Guyana and Peru.

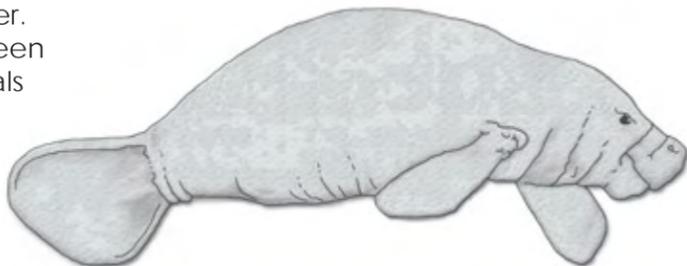
Migration

Only in recent years did scientists discover that the secretive aquatic mammal migrates from shallow to deep water. During the low-water season, between October and November, the animals start to migrate as the water level drops. Their journey to deeper water takes them through long narrow lakes called rias, which are submerged river valleys.

But why?

The question is why the manatees undertook such a perilous journey during the low-water season. They do this because it becomes too dangerous to remain in shallow water, the scientists say.

If the manatees do not move, they become stranded and exposed to hunters such as caimans, jaguars and humans who stalk the water margins. ■



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"Manatees are in greater danger than previously thought because every year they are probably migrating through narrow channels where they are exposed to hunters."

Dr Eduardo Moraes Arraut — National Institute for Space Research, Sao Paulo, Brazil

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