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X-RAY MAG is published by Aquascope Media Aps
Frederiksberg, Denmark
www.xray-mag.com
The dive community needs you...

Let’s face it and call a spade a spade.

The dive industry is not faring so well, and the patient has been unwell for quite some time.

Since the glory days of the 1990s when every successive year saw a steady growth in reported certifications, the 21st century has been pretty much seen as one long, protracted contraction of business.

Industry bodies and trade organisations have long since recognised this worrisome trend, analysed its causes and attempted to come up with remedies—some more successful than others.

This is, however, not the place to go into detailed macro- or micro-economic analysis or reflections on how the industry should get back on an even keel while facing the ever-mounting competition for attention from other leisure activities.

The matter at hand is what to do about it right here and now and get going.

Running any dive operation is quite capital and labour intensive and often comes with a meagre return on investment. One needs a premises, inventory, compressor, classroom, equipment, access to a pool, zodiac or boat, vehicles, perhaps a trailer and a minibus, etc—all of which need to be financed. Aside from setting up shop and trade wares, one would also have to organise classes and training and often also trips. And even when it is a labour of love, as is often the case, passion only goes so far. The bottom line is without enough customers coming in through that door, the economic realities soon put an end to any enterprise.

And this is where the dive industry now needs you.

We need to recruit more new divers, so bring a friend. Diving has now been made easy to learn, and it is a great social activity for friends and families alike where you can share experiences, and once in a while, great life-changing adventures and mind-broadening encounters with underwater wildlife unequalled to what one can experience on dry land.

To that affect, DEMA created the Be a Diver campaign, which you can find on www.beadiver.com

So please spread the word

And let’s make diving attractive and fashionable again.

—The X-RAY MAG Team
How Coral Islands Form

Charles Darwin got it almost right when he, in 1842, hypothesized that coral atolls develop as coral grow settle in top of sand and lava from islands and grow upwards while the island itself ages and subsides creating first a fringing reef, then a lagoon-bounding reef and finally an atoll. But a team of researchers from Duke University and the University of Padova in Italy has found intertidal marsh plants in Italy’s famed Venetian lagoon were able to subtly tune, or adjust, their elevations by producing different amounts of organic soil, and trapping and accumulating different amounts of inorganic sediments as part of a complex interplay with the environment. Each plant species strives to build up the elevation of its substrate to within a favourable range for its survival in very much the same manner corals do. The finding may help scientists better predict marsh ecosystems’ resilience to climatic changes such as sea level rise. The differences in substrate-building capabilities between species are often minute, but they allow each species to stabilize the soil within different stable states, or layers, in the marsh. Some species prefer elevations at or below mean sea level; others prefer higher elevations that are less often inundated. “Obviously, this is not a conscious choice on the part of the plants,” said Marco Marani, professor of ecohydrology at Duke. “It’s a natural mechanism—how marshes work. We just didn’t understand it in such detail until now.” For the new study, the team used an electronic theodolite, which is able to measure elevations accurately to within less than one millimeter. SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

Plants actively shape marsh landscapes to benefit themselves

Scientists have long believed that the distribution of plants within a marsh is a passive adaptation in which species grow at different elevations because that’s where conditions like soil aeration and salinity best meet their needs. But a team of scientists from Duke University and the University of Padova in Italy has found intertidal marsh plants in Italy’s famed Venetian lagoon were able to subtly tune, or adjust, their elevations by producing different amounts of organic soil, and trapping and accumulating different amounts of inorganic sediments as part of a complex interplay with the environment. Each plant species strives to build up the elevation of its substrate to within a favourable range for its survival in very much the same manner corals do. The finding may help scientists better predict marsh ecosystems’ resilience to climatic changes such as sea level rise. The differences in substrate-building capabilities between species are often minute, but they allow each species to stabilize the soil within different stable states, or layers, in the marsh. Some species prefer elevations at or below mean sea level; others prefer higher elevations that are less often inundated. “Obviously, this is not a conscious choice on the part of the plants,” said Marco Marani, professor of ecohydrology at Duke. “It’s a natural mechanism—how marshes work. We just didn’t understand it in such detail until now.” For the new study, the team used an electronic theodolite, which is able to measure elevations accurately to within less than one millimeter. SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

News edited by Peter Symes

From the deep
NEWS

How Coral Islands Form

Charles Darwin got it almost right when he, in 1842, hypothesized that coral atolls develop as coral grow settle in top of sand and lava from islands and grow upwards while the island itself ages and subsides creating first a fringing reef, then a lagoon-bounding reef and finally an atoll. But a team of researchers from the U.S. Massachusetts Institute of Technology (MIT) has found. Darwin did his research in the Society Islands in the South Pacific, where the sinking of islands and rising sea level create perfect atolls. However, Darwin’s theory could not explain the wide variety of reef formations, which is where the new research comes in. It turns out that many islands do not follow this classic sequence, and reefs are shaped by many other factors than just reef subsidence. Rather, reef morphology is down to the combined effects of island subsidence, coral growth and glacial sea level cycles, a new model of the reef evolution demonstrates. The model shows that different combinations of reef accretion and island subsidence only produce results resembling the observed distribution of modern reefs if the model is coupled with sea level oscillations driven by ice age cycles. While most of his contemporaries thought atolls were only thin sheaths of coral, Darwin correctly believed they can grow to thousands of feet thick and got it mostly right, but he didn’t know about these glacially induced sea level cycles. It later also turned out that the Society Islands where Darwin made his observations is one of the few places in the world where sinking islands and sea level rise create perfect atolls. In cooler areas such as Hawaii, corals grow slower, and the underlying volcano is sinking quickly, and when the sea level is at its lowest, narrow fringing reef terraces form. But when a glacial melt occurs and the sea level rises fast, the combined effects are more than the corals can keep up with, drowning the reef each time. Glacial cycles are the primary driving force behind the shaping of coral islands today. SOURCE: MAY 9 GEOLOGY JOURNAL

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Scientists have long believed that the distribution of plants within a marsh is a passive adaptation in which species grow at different elevations because that’s where conditions like soil aeration and salinity best meet their needs. But a team of scientists from Duke University and the University of Padova in Italy has found intertidal marsh plants in Italy’s famed Venetian lagoon were able to subtly tune, or adjust, their elevations by producing different amounts of organic soil, and trapping and accumulating different amounts of inorganic sediments as part of a complex interplay with the environment. Each plant species strives to build up the elevation of its substrate to within a favourable range for its survival in very much the same manner corals do. The finding may help scientists better predict marsh ecosystems’ resilience to climatic changes such as sea level rise. The differences in substrate-building capabilities between species are often minute, but they allow each species to stabilize the soil within different stable states, or layers, in the marsh. Some species prefer elevations at or below mean sea level; others prefer higher elevations that are less often inundated. “Obviously, this is not a conscious choice on the part of the plants,” said Marco Marani, professor of ecohydrology at Duke. “It’s a natural mechanism—how marshes work. We just didn’t understand it in such detail until now.” For the new study, the team used an electronic theodolite, which is able to measure elevations accurately to within less than one millimeter. SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

News edited by Peter Symes
Mariana Trench not so dead after all

Anyone looking at pictures of the jagged surface of the Mariana Trench would naturally conclude that it is totally devoid of any organisms. At almost 11 kilometres deep—and as the deepest place on Earth—how on in the world could anything survive way down there?

On the contrary, new research has surfaced revealing otherwise. Recently, samples collected by an unmanned submersible contained a large number of microbes, prompting scientist Dr Robert Turnewitsch to state that “the deepest parts of the deep sea are certainly not dead zones”.

In 2010, together with other scientists, Turnewitsch had sent the submersible into the depths of the Mariana Trench to retrieve samples of the murky sediment within. Then, back in their labs, examination of the oxygen levels of the samples revealed the single-celled microbes. Elaborating on this, Turnewitsch said, “These microbes, they respire as we do. And this oxygen consumption is an indirect measurement of the activity of the community.”

The extreme depths didn’t seem to bother the organisms, which were treated to an abundant supply of dead plants and animals that drifted down from the surface and become trapped within the trench’s steep walls.

“The amount of food down there and also the relative freshness of the material is surprisingly high—it seems to be surprisingly nutritious,” said Turnewitsch.

Twice as many microbes were found at the bottom of the trench than at a nearby site just six kilometres deep. The large population of microbes has given rise to the suspicion that the Mariana Trench might play a key role in the carbon cycle and in regulating the climate, by removing the carbon from the ocean and the overlying atmosphere.

Turnewitsch added that “the Hadal trenches [where the Mariana Trench sits] may play a more important role in the global marine carbon cycle than was previously thought”. ■ SOURCE: BBC

Marine animals help disperse seagrass, new study says

Seagrass is important in so many ways. Much as we know of the biodiversity of coral reefs, seagrass ecosystems are gradually becoming known as critical habitats and nurseries for many marine species as well as powerful carbon sinks. Yet, seagrass is still a mystery. How does seagrass spread its seeds? How does it colonize a new area? These questions and more were the focus of a new study published in the Marine Ecology Progress Series. The study findings showed that several marine species played a key role in dispersing seagrass. Prior to this discovery, it was assumed that seagrass was dispersed by wind and waves.

Seagrass spread its seeds? How does it colonize a new area? These questions and more were the focus of a new study published in the Marine Ecology Progress Series. The study findings showed that several marine species played a key role in dispersing seagrass. Prior to this discovery, it was assumed that seagrass was dispersed by wind and waves.

Researchers studied eelgrass (Zostera marina) found in the Chesapeake Bay, USA

The study highlights the importance of understanding seagrass ecosystems, which have come to be some of the most threatened by water pollution, dredging and coastal development. While a third of the planet’s seagrass ecosystems have disappeared, restoration in many cases is thought to be a possibility. ■ SOURCE: MONGABAY.COM
How do oysters make pearls round?

Pearls are being rotated as they grow within the pouch that holds them inside the soft mantle tissue of molluscs.

Pearls typically rotate once every 20 days or so, which creates the rotational symmetry; any differences in growth rate along the axis or rotation get copied around the entire circumference.

Pearl rotation is a self-organized phenomenon caused and sustained by physical forces from the growth fronts, Spanish and French researchers find.

**Formation**

Pearls are formed of nacre, more commonly known as mother-of-pearl. Nacre is an astonishing material. It is a composite that consists mostly (about 95 percent) of the mineral aragonite, a form of calcium carbonate (the fabric of chalk and marble), together with five percent organic material: proteins, peptides, lipids and polysaccharides.

The nacre is made of chemicals secreted by the same kind of cells responsible for making the mollusc’s shell. A crucial difference between shell and pearl nacre arises from the different geometries of the shell and the pearl: the pearl is immersed within its pearl sac and as such, unlike the shell, is free to move within it.

Several layers grow at the same time, creating terraces that can be seen on a pearl’s surface when inspected under a microscope. These terraces hold the key to the pearl’s rotation.

As new calcium and carbonate ions, or chitin or protein molecules, stick to the step of a terrace and become part of the growing crystal, they release energy, which warms up the surface. Water molecules in the surrounding fluid bounce off the step edge and impart a small force in the opposite direction.

Because the terraces make up a ratchet shape, the small kicks imparted by warmed water molecules act in the same direction causing the growing pearl to rotate. ■
Breaching the Final Frontier

A gold rush of the 21st century is in the works, and it may come as early as 2016.

However, instead of gold, the nuggets in demand are nodules of mineral-rich rocks from the seafloor. Copper, manganese, cobalt—and yes, also gold—are just some of the minerals that can be extracted from these nodules.

Although the possibility of deep-sea mining has been discussed for years, its implementation has only become more viable today with modern technological advances and the higher commodity prices.

In mid-May 2013, the United Nations published its preliminary plan describing its proposal on how the extraction of the mineral-rich nodules should be conducted.

Its International Seabed Authority (ISA)—which oversees deep-sea mining—acknowledged that “we are at the threshold of a new era of deep seabed mining”.

Seabed mining management

Established to manage seabed mining, the ISA has shifted its focus from handling bids for mineral exploration—17 licences have been issued so far—to figuring out how to license the first mining operations and how the proceeds should be shared.

Considering that actual mining operations haven’t even started, isn’t it a tad premature to be issuing licences and discussing profit distribution?

Hardly. Take, for example, the Clarion-Clipperton Zone, a five-million sq km area in the eastern Pacific. It has been estimated that more than 27 billion tonnes of nodules could be found there. With the huge profit potential, any self-respecting company would want their shovel to be first in the seabed.

This being a new industry, the ISA also faces the challenges of identifying companies with the necessary skills to mine the seabed. As it states, “Competence cannot be gained without actual mining at a commercial scale; but at the same time, mining should not be allowed without prior demonstration of competence.”

Environmental impact

The plan also mentioned the need of extending the benefits of the mining operations beyond commercial motivations, and also highlighted the fact that the mining would cause inevitable environmental damage.

Some of the mining will be conducted at underwater hydrothermal vents, which before 1977, were thought to be devoid of life. We have since learnt of the many diverse species that live at these vents, from two-metre long tubeworms, purple octopi and white crabs to snails the size of tennis balls, to name a few.

According to Professor Paul Tyler, a biologist at the National Oceanography Centre, “If you wipe out that area by mining, those animals have to do one of two things: They disperse and colonise another hydrothermal vent somewhere or they die. And what happens when they die is that the vent becomes biologically extinct.”

Cindy Van Dover, director of Duke University’s Marine Lab said, “We’re still just grappling with this reality of commercialisation of the deep sea. […] We haven’t yet studied the ecosystem services and functions of the deep sea to understand what we’d lose.”

Conservation

The deep sea being a relative unstudied ecosystem, scientists are urging more debate and study into the impact of deep-sea mining on the environment and marine life before commercial extraction commences.

Dr Jon Copley, a biologist from the University of Southampton, said, “I don’t think we own the deep ocean in the sense that we can do what we like with it. Instead, we share responsibility for its stewardship.”

He added, “We don’t have a good track record of achieving balance anywhere else—think of the buffalo and the rainforest—so the question is, can we get it right?”

■ SOURCE: BBC
**Chagos marine park ruled lawful**

On 1 April 2010, the British government designated the Chagos Archipelago as a no-take marine reserve creating what was at the time the largest marine protected area (MPA) in the world. The declaration was, however, highly controversial. Fierce opposition has come from the native islanders (Chagossians) who have been battling the British government in the U.K. courts for the right to return to the islands ever since they were expelled between 1967 and 1971 to allow the United States to establish an airbase on Diego Garcia, the largest island in the Chagos archipelago. The eviction has been described by critics as one of the most shameful episodes in modern British colonial history.

Now, the U.K. high court has upheld the government’s decision to create the controversial marine park. The Chagossians say the move, involving a ban on commercial fishing, was unlawfully aimed at preventing them from resettling their former “paradise” homeland. The marine park was created by British diplomat Colin Roberts in his role as commissioner for the British Indian Ocean Territory on the instructions of the then foreign secretary David Miliband in April 2010.

Chagossian lawyers said the move followed British consultations with the United States during which the Americans were assured that the use of their base on Diego Garcia would not be adversely affected by the MPA. BBC reports. Roberts denied under cross-examination at the high court that the marine park was created for the “improper purpose” of keeping the Chagossians out, as the United States wanted, and said it was for environmental and conservation purposes. ■

**Century-old ship aids ocean and climate change research**

Surprising results were found in a recent study by U.S. and Australian researchers who combined data collected by HMS Challenger, which carried out the world’s first scientific survey of ocean life 135 years ago, with modern day climate science models. Findings of the study suggest that we are under-estimating the impact of global warming in a significant way. “Our research revealed warming of the planet can be clearly detected since 1873 and that our oceans continue to absorb the great majority of this heat,” said the study’s lead author Dr Will Hobbs, who is a researcher at the University of Tasmania’s Institute for Marine and Antarctic Studies. “Currently scientists estimate the oceans absorb more than 90 percent of the heat trapped by greenhouse gases, and we attribute the global warming to anthropogenic causes.”

Using data collected by Challenger as a base-line, researchers found that 40 percent of sea level rise is the result of expansion of sea water due to warming, further confirming the role of human-produced global warming in the past century. “The key to this research was to determine the range of uncertainty for the measurements taken by the crew of the Challenger,” said study co-author Josh Willis, who is a climate scientist at NASA’s Jet Propulsion Laboratory. “After we had taken all these uncertainties into account, it became apparent that the rate of warming we saw across the oceans far exceeded the degree of uncertainty around the measurements. So, while the uncertainty was large, the warming signal detected was far greater.”

In the study, researchers were also able to demonstrate the amount of thermal expansion in sea level rise in the ocean prior to the 1950s. Climate models were the only way to estimate this change before this study. “This research adds yet another suite of compelling data that shows human activity continues to have a dramatic influence on the Earth’s climate,” said Hobbs. ■
On 6 June 1944, the largest invasion fleet ever assembled went into action off the coast of France, leaving a legacy that makes this area a wreck diver’s paradise.

It’s no easy feat to reach the descent line in even this mild current. With twin tanks and a stage cylinder adding to my considerable camera clutter, I may as well have been wearing a parachute. Nonetheless, this is only a minor challenge when compared to what faced the men gathered in this bay on 6 June 1944. Not only did they each carry a huge weight of equipment as they stormed the soft sandy beaches, but they also had to contend with the hail of bullets pouring down on them from the German machine gun emplacements.

Feeling somewhat humbled by this knowledge, I pulled myself down the descent line with renewed determination toward the wreck of the USS Susan B Anthony.

USS Susan B Anthony

Hand over hand we descended, being careful not to let go of the line until we reached the wreck. The dive boat captain’s skill in placing the shot line became evident 60 feet down when I saw a large barrel appear out of the gloom—a heavy anti-aircraft deck gun still pointing defiantly at the surface. My dive partner, Paul, illuminated the weapon’s intact gearings with his torch before we descended further into the mass of wreckage below. Visibility was a clear 35 feet enabling us to appreciate the vast size of this former cargo ship. Weighing in at over 8,000 tons, she crept into the Baie de Seine in the early hours of June 7, carrying 2,288 troops, part of the “Force B” landing group. She struck a mine and despite attempts to save her, she dis-

Diver at the wreck of the USS Susan B Anthony

Text and photos by Steve Jones

D-Day Wrecks

Normandy, France

D-Day Wrecks

Normandy, France
We now headed aft, and I noted that fish were not the only animals in abundance here. Every hole seemed to hold a lobster, crab or conger eel, a result of the French government’s strict “no take” policy on the wrecks. Neither marine life nor any other artefact can be taken from them, and the authorities have been known to impound and heavily fine dive vessels that do not comply. This may be bad news for souvenir hunters, but great news for those of us who want to see these wrecks as they were when they went down.

The wreck’s superstructure started to open up as we approached the area of mine damage, allowing emerald shafts of light to stream into the remains of the holds—a positively surreal scene. Intact wreck eventually gave way to twisted, torn metal interspersed with deck machinery. The seabed below us was strewn with live 20mm anti-aircraft shells.

We were now just over an hour into the dive and had not even begun to explore the stern section of the ship. However, the current was really starting to pick up again, and we knew that if we stayed much longer, we’d be swept off the wreck or worse, into it. The stern would have to wait until another time.

We launched our delayed buoys and jumped off, watching the wreck disappear into the distance, as we were carried away by the increasing flow of water. At this rate, we would have drifted some distance by the time we reached the surface, even
though our rich decompression mixes would have cut down our hang times considerably.

Interval
As with most of the English Channel, diving in this area can only be done at slack water, the window when the waters slow as the tides change. The currents are too strong to dive at any other time, so two dives a day would be the most we could achieve.

With our next diving window around five hours away, we began gas blending, using oxygen that we had brought from England since there were no facilities to buy nitrox nearby. The small on-board compressor made heavy work of the whole job, and the rebreather divers in our group did not miss the opportunity for some laughter at our expense. We whittled away the hours with a fine selection of French cuisine to help us on our way.

Landing Ship Tank 523
Gas mixing all finished, we found ourselves on station over the wreck of the LST 523. We’d be seeing the legendary Sherman tank on this dive, a full compliment of which went down when this heavy landing craft hit a mine. It was late afternoon now, and the light faded rapidly as we made our way down the 100 feet of shot line. Visibility was distinctly poorer than during our morning diving dive, and our powerful HID torches were needed to illuminate the wreck.

More than ten minutes in and there was no sign of a tank. Were we on the wrong wreck? Impatiently, I signalled my frustration to Paul who delighted in pointing out the upturned Sherman right below me. With my eyes more accustomed to identifying critters, I had completely missed it.

I took note of the distinctive wheel cogs, an easily recognisable feature of this tank. Thereafter, we seemed to run into tank wrecks constantly, intertwined with the mangled wreckage of the craft that carried them. Pollock and large sea bass looked on cautiously, unaccustomed to divers in this rarely dived area.

Empire Broadsword
The following day, we turned our attention to another giant, the 7,000-ton Empire Broadsword. This infantry land-wreck

D-Day Wrecks
The wrecks of the Baie de Seine
At 5.34 AM on 6 June 1944, 56 minutes before the D-Day landings would begin, a 5-inch shell was fired from a German gun emplacement near the pretty village of Saint-Vaast La Hougue. Seconds later, it tore through the engine room of U.S. Navy Patrol Craft PC1261. With the loss of 14 men, she became the first allied ship to be sunk on D-Day.

Many other small craft succumbed to enemy fire, mines and beach obstacles during the landings yet luckily only two large warships were lost on D-Day itself. Nonetheless, over the days that followed, mines and German counter attacks would take their toll on this fleet, as it continued to support the ground assault.

The sheer number of wrecks that lie on the seabed in the Baie de Seine is testament to the destructiveness of this period in history and the variety is huge: large troop carriers, cargo vessels, landing craft and destroyers accompany oddities such as the temporary Mulberry Harbours—it’s simply a mecca for wreck divers.
ing ship survived the June 6 landings, successfully deploying 18 landing craft to Sword beach. However, on July 2, the ship hit two mines causing such huge explosions that they blew several landing craft off the ship and inflicting heavy casualties.

We were now given a taster of the changing visibility in this bay. Long gone was the 35 feet of visibility we enjoyed yesterday. We could now barely see ten feet in front of us, with the plankton so thick I could see it between my mask and camera.

We dropped to the stern at 90 feet amongst a load of live ammunition, something I was getting used to very quickly here. My initial disappointment at the water clarity soon disappeared, as I soaked up the atmosphere of this dive. The mine damage opened the ship up considerably, so reeling off, we explored the catacomb-like bridge sections. Gradually, we made our way up the ship, and as the current started to flow, we found ourselves sheltered behind the huge mass. We finished the dive at the bow of the ship, in only 30 feet of water since this wreck stood 60 feet off the seabed.

**Beyond D-Day wrecks**
The ships that sank in support of D-Day are not the only wrecks of interest in this bay. Throughout the war, ships were lost in this area, and as a busy shipping region, a fair few casualties occurred in peacetime also. As the week progressed, we turned our attention to the deeper wrecks, many of which have been hardly dived at all.

**HMS Computator** was an armed tug that went down in January 1945 and rests upright on the seabed in 115 feet of water, the deck machinery and a gun all still in place. The Turquoise was an armed coaster that was torpedoed in 1942 and now lies intact in 140 feet of water, shrouded in fish life. Both wrecks stand 25 feet from the seabed and although much smaller than the large troop carriers, they are excellent dives.

During our week, we managed to explore 12 wrecks in the Baie de Seine, leaving over a hundred remaining for future visits. Before I came on this trip, my vision of D-Day centered on the thousands of troops trying to gain a foothold on the beaches, and in cases like that of Omaha, meeting fearsome resistance. I'd rarely spared a thought for the brave crews of the ships that took the troops to the beaches, those that faced the mines, fast attack boats and bombers whilst supporting the Normandy campaign. This trip changed that. The success of D-Day relied as much on the brave sailors who manned the ships as it did on the heroic troops who assaulted the beaches. Their combined sacrifice helped bring an end to one of the darkest periods in human history.
What it takes

The variety of wrecks in the Baie de Seine offers something for experienced recreational divers through to technical divers. The shallower wrecks can be comfortably tackled with well-honed recreational diving skills, although you should be at ease in occasional low visibility and be adept at dealing with the currents, which may be encountered at the beginning and end of your dive. Use of nitrox will ensure you get the most out of the two diving windows each day.

The deeper wrecks are more challenging and therefore rarely dived. This is prime Advanced nitrox territory where decompression skills, twin tanks of back gas and stages full of rich deco mix were needed for us to get the most out of our dives.

All divers needed to be skilled in deploying delayed surface marker buoys from depth since fixed ascent lines are not used in these waters due to the currents. Drysuits were essential for us to stave off the cold during long run times. Finally, gas blending skills proved a huge bonus since nitrox was hard to find in this area.

Five photography tips

1. Go wide
   Visibility is often poor in the bay, so you need to get as close as possible to your subject. Fisheye lenses perform best in these conditions, enabling you to get close to your subject while getting as much of the wreck in as possible.

2. Shoot with natural light
   High sediment levels in the water make strobe lighting a challenge in these waters—backscatter is almost unavoidable. Try leaving your strobes on the boat, and instead, focus on the form and contrast of the wreck. This technique lends itself to black and white photography, but with some thought on your subject choices, you’ll also get great results in color. Without those strobes, you’ll also keep your clutter levels under control.

3. High ISO’s
   Cameras with excellent high ISO performance, such as Nikon’s D700, are in their element in these conditions. On these wrecks, you’ll want to be shooting at ISO 3200 or higher in order to get your shutter speed high enough to avoid camera shake. Even so, you will still need to keep...
4. Use models
Do you want to shoot color images without strobes? Then let your dive partner light the wreck for you, picking out key features with their dive lamps. Focusing on your dive partner's lamp will also greatly aid autofocus, which can struggle down there in the dark and murky conditions. This technique requires practice. Medium-powered dive lamps are more suitable since high-powered HID and LED lamps can blow the highlights out completely from your image unless aimed properly.

5. Monopod and tripods
Even with high ISO’s and shooting at F2.8, the deepest wrecks will still only give you shutter speeds of around 1/10th of a second. Monopods and tripods come into their own here and will increase your hit rate, but you will need to think carefully about whether you want that level of equipment clutter on a deep dive.

Ideal Equipment. SEACAM Silver housing for Nikon D700 with SD Superdome—this top quality aluminum housing is more than tough enough for a challenging life in the hands of a technical diver, and the optical glass dome is among the best available. The excellent ergonomics of the housing make it easy and intuitive to operate even with gloved hands.

Steve Jones is a widely-published underwater photographer and journalist based in the United Kingdom. For more information, visit: Millionfish.com

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The Normandy American Cemetery and Memorial sits on a cliff overlooking Omaha Beach (left and below)

Diver on unknown wreck number 137 [below]; Diver on wreck of Corncastle [lower right]

The cameras aperture wide open, often needing to shoot at F2.8, so a big dome port (8 inches or bigger) is also desirable, as these perform best at such wide apertures.

When to Go
May through September offers the best diving and weather conditions. The water may be subject to increased plankton levels in early and late summer. The bay is exposed and diving is at the mercy of local weather conditions, although there is plenty to do topside if the weather prevents diving on any day.

Dive Conditions: Diving can only be done in the windows when the tide changes, so only two dives a day are possible. Visibility can vary greatly from 5-18m/15-60ft and water temperatures range from below 10°C/50°F in early spring to a maximum of 17°C/62°F by September.

Operators: The best way to dive the D-Day wrecks is via one of the British vessels that cross the Channel. We used Steve Johnson’s excellent outfit, Channel Diver (www.channeldiver.co.uk), and based ourselves in the fishing village of Saint-Vaast la Hougue.

Price Tag: Boat hire for six days diving is approximately US$700 each based on ten divers. Accommodation is approximately $550 for a twin room based on two people sharing for the week. Hire of tanks and weights is extra.

Topside Must-see: Be sure to visit the U.S. cemetery overlooking Omaha beach; it is an incredibly moving experience. Pointe du Hoc, where U.S. Rangers scaled the cliffs to knock out German artillery emplacements, is also thoroughly worth the visit, and the 30ft-deep craters will leave you wondering how any German troops managed to survive the preceding aerial bombardment. They did, and the subsequent fighting was fierce. Coupled with the historical interest, the Normandy countryside is beautiful, and French cuisine is world-renowned. Just make sure you include enough days to take it all in.
German WWII bomber raised from English Channel

The Dornier Do-17 aircraft was shot down off the Kent coast more than 70 years ago during the Battle of Britain.

Designed in the early 1930s, it was one of the three main Luftwaffe bomber types used in the first three years of the war. The Dornier Do-17, sometimes referred to as the “flying pencil”, was a World War II German light bomber produced by Dornier Flugzeugwerke.

On 3 September 2010, the Royal Air Force Museum London announced the discovery of a Dornier Do-17 buried in the Goodwin Sands off the coast of Kent, England.

Attempts by the RAF Museum to raise the relic over the last few weeks have been hit by strong winds but the aircraft was successfully raised from the seabed on 10 June 2013.

Property of King Hans
The Royal Yacht Gribshunden

Identification of the wreck is a global sensation, according to Swedish researchers.

Over 30 years after divers stumbled upon a centuries-old shipwreck, Swedish researchers have revealed that the wreck is the Danish Royal Yacht Gribshunden, (Griffen), which sank in 1495, according to a report in Swedish media.

The wreck of the vessel, which was discovered back in the 1970s, is located near the Swedish town of Ronneby, about 180km northeast of Malmö.

Professor of marine archaeology Johan Rönny is the man behind the revelation. He said it was a once-in-a-lifetime find.

“For all who are interested in ships and marine archaeology, this is a worldwide sensation,” he told the Swedish newspaper Expressen.

“Simply put, it is a Columbus ship. It’s “A Columbus ship”
the ship is unique, as it is one of the first Scandinavian wooden ships that was built using a technique in which boards were stacked edge to edge—the so-called carvel built style. Incidentally, it is the same type of ship that Christopher Columbus used when he discovered America in 1492.

“It’s almost as if, as a researcher, one might feel guilty that we had not understood it sooner.”

A conservation group in the United Kingdom is creating what will be one of the largest underwater tourist trails in the world. By 2018, divers will be able to enjoy a well-signed trail of shipwrecks from the 17th to mid-20th centuries.

Currently, there are three sites to explore including the Georgian warship HMS Colusus, sunk in 1798 off the Isles of Scilly; the Coronation, built in 1685 and lost in 1691 off Penlee Point near Plymouth; and the Resolution, which sank off East Sussex during the great storm of 1703. Soon a fourth site will be added—Britain’s first submarine, the HMS A1, which sank in 1911 and was rediscovered in 1989 at Bracklesham Bay.

New underwater historic wreck trail being developed off southern coast of England

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More attractions will be added to the trail in the future, as there are over 61 sites designated under the Protection of Wrecks Act 1973—which is only a small fraction of what is believed to be the total of wrecks around Britain.

A license from English Heritage is required before divers can visit the sites, as unlicensed visits to any of the sites are illegal.
Panoramic shot of Charles Brown wreck marks tenth anniversary of Caribbean artificial reef

A decade ago, the Caribbean island of Sint Eustatius bought the Charles Brown for a buck. While a symbolic exchange, it was a bargain at one cent per meter of steel. However, the board and specifically AT&T wanted to go further and make the vessel an artificial reef.

Almost everyone on the island helped clean and prepare the vessel for sinking, which took place on 25 July 2003. It was a prime example of how a little island could accomplish big things.

At 100m (327ft) in length, the Charles Brown is one of the largest and most awe-inspiring wrecks in the Caribbean. Ten years later, the wreck has been overgrown with reef life, attracting not only divers but large schools of horse-eye jacks, sea turtles and a huge resident barracuda named Charlie. Over the years, thousands of divers have explored the wreck and observed the transformation of the naked white steel ship into a living reef, according to local operators.

"Like a good bottle of wine, it’s getting better and better every day,” said local underwater photographer, Mike Harterink, in a press release. Harterink, who is a PADI Course Director and DAN Instructor Trainer at the Scubaqua Dive Center on Sint Eustatius, has compiled a panoramic image of the Charles Brown to mark its tenth anniversary as an artificial reef.

"To get this photo, I was hanging on my SMB at ten meters below the surface, pushing the shutter about every ten meters while swimming over the wreck," stated Harterink.

"Stitching the photo’s together afterwards took a whole lot longer.”

For more information: Scubaqua.com

NOAA identifies 36 wrecks as possible oil pollution threats

There are over 20,000 shipwrecks in U.S. waters. Some of them are leaking oil, according to a new report submitted by the National Oceanic and Atmospheric Administration (NOAA) to the U.S. Coast Guard.

In a press release, resource protection coordinator for NOAA’s Office of National Marine Sanctuaries Lisa Symons said, “This report is the most comprehensive assessment to date of the potential oil pollution threats from shipwrecks in U.S. waters.” Symons added, “Now that we have analyzed this data, the Coast Guard will be able to evaluate NOAA’s recommendations and determine the most appropriate response to potential threats.”

In the report, NOAA found 36 sunken vessels resting on the U.S. seafloor that may pose an oil pollution threat, risking the health of the nation’s coastal marine ecosystems. Seventeen of these wrecks were recommended for further assessment and possible removal of oil and oil cargo.

Over a hundred years of U.S. commerce and war history are represented in the wrecks of the sunken vessels. Some were lost at sea in rough storms or in collisions and explosions. Others were lost during WWII, most of them off the east coast in the Atlantic Ocean and south in Gulf of Mexico.

NOAA’s report will help oil response planning efforts, as well as resolve some mystery spills in which the source of the oil was not identified.

"The Coast Guard is pleased to receive these risk assessments from our partner agency NOAA and looks forward to our continued coordination on the matter of potential pollution associated with sunken vessels in U.S. waters,” stated Captain John Caplis, the Coast Guard’s chief of marine environmental response, in a press release. “Coast Guard federal on-scene coordinators receiving the risk assessments will carefully review the data and incorporate it into their area contingency plans.”

So, who pays for the clean up? If the particular wreck still has an identifiable owner, that owner is responsible for the clean up. If there is no owner, then the Oil Spill Liability Trust Fund will most likely be tapped, according to the U.S. Coast Guard, who are charged with not only protecting those at sea and the sea itself but also responding to maritime oil spills and the release of hazardous substances.
The Oldest Wreck in the World

Uluburun

1300 BC—A merchant ship, laden with treasures from seven different cultures and commodities of Cypriot origin was traveling on a 1,700-mile trade route when it sank for unknown reasons at Cape Uluburun (near Kas on the south coast of the Antalya region of Turkey). Much knowledge about prehistoric trade and nautical navigation during the late Bronze Age, including secrets that could rewrite the whole story, began a sleep on the sea floor—a 3,300-year-long sleep.

1982 AD—A Turkish sponge diver discovered the remains of the wreck. This triggered euphoria among archaeologists around the world, and the later recovery and analysis of the findings definitively established underwater archeology as a serious science. Science was able to answer 1000-year-old questions, driving traditional analysts into desperation and changing the existing historic world view substantially.

Named after the place where it was discovered (Cape Uluburun), the Uluburun is the oldest known shipwreck in the world and a finding of superlatives. She brought answers to many questions, but she also introduced many new mysteries.
that science has yet to explain, even today.

The Bronze Age
The Uluburun sank during the so-called Late Bronze Age. The Bronze Age—it sounds terribly old, doesn’t it? Indeed it is! It was a time when the invention of the wheel was as remarkable as the invention of social networking is today.

The Bronze Age in itself was the successor to the Stone Age and the predecessor to the Iron Age. It lasted from about 2200 to 800 BC, but did not occur everywhere at once, because different cultures experienced different stages of development in terms of bronze. We are talking here about a general and broad time window.

The namesake of this period was the metal alloy bronze, which comprises 90% copper and 10% tin. The use and processing of metals was already known to humanity, but it was limited to sterling metals (naturally occurring pure metals), such as gold, silver and copper.

The “invention” (mainly in Europe and the Middle East) of humanity’s first alloy (which was much harder than copper) triggered a worldwide change with lasting consequences.

We could say the last trip of the Uluburun was in some way a consequence of these changes. Along with the invention of bronze, the necessity to organize a “metallurgy chain” became apparent. Production needed tin, which was rare and not available everywhere. The appropriate logistics became essential.

With bronze, it became possible to accumulate wealth that was easy to transport: Bronze ingots were a common payment currency of the time, and where there is wealth, conflicts arise. The simultaneous emergence of heavily fortified settlements and the invention of the sword shows that our ancestors experienced troubles with jealous neighbors who tried to get their “undeserved” share.

Bronze also caused a serious upheaval in the social structure. The access to, and control of, resources (such as metals, metallurgy, communications and trade routes) resulted in the emergence of an upper social class and induced differentiation among people, the consequences of which we still feel now.

Archeologists working on first excavated findings.
even today.
The geographically uneven distribution of metal deposits (particularly tin) resulted in a far-reaching and almost global trading network that also spread cultural ideas in addition to goods. Bronze was essentially pioneering the cross-border communication of knowledge between cultures. Even today, good ol’ bronze has an essential word to say in the world of digital communication: no computer works without the elements of bronze. No bronze would mean no online social networks.

While our Uluburun sailed the seas, the world-famous bust of Nefertiti was made in Egypt. Odysseus returned home from his long odyssey. The Egyptian Pharaoh Echnaton established the first monotheistic religion. Moses’ successor Joshua led the Israelites, and the Hittites dominated an area five times larger than Germany. These were turbulent times—from Haithabu to Karnak, as well as at Cape Uluburun on the southern Turkish coast, where a merchant ship with a cargo of priceless goods sank to its grave.

The Ship
The ship was built of cedar using the so-called “spigot technique,” which involves building the outer hull first and adding the underlying “skeleton” (the frames and bars) later. Even 1,000 years after the demise of the Uluburun, this technique was still used to build Roman and Greek ships.

Archaeological finds in Egypt suggest that the archetype for this ship probably came from ancient Egypt. In particular, Pharaoh Echnaton drove the development of more resilient oceangoing ships to advance trade and transport at the time. However, a fine structural difference with the Uluburun is that its pegs were not secured by wooden pins. This technique would later be called “Fenike-mortising” by the Romans. The Uluburun was certainly built for use at sea, which refutes the thesis that sailing in the Bronze Age was done exclusively within sight of the coast.

Because only about three percent of the ship’s original hull was recovered, drawings from ancient Egypt, specifically the pictorial representation of the “Fleet of Queen Hatshepsut in the land of Punt” (1500 BC), provided a significant visual reference for reconstructing the ship. After extensive research, we now know:

● The Uluburun was 15 meters long, 5 meters wide and had a draft of 1.4 meters. Her cargo is estimated to have been 20 tons. The width of the ship’s trim was 6cm, and the pegs were at a distance of 20cm.
● The ship used a triangular sail, which provided a maximum speed of two nautical miles per hour, and two rudders to maneuver.
● The Turkish research group “360” proved this ship was oceangoing in 2005. By using techniques and materials from the late Bronze Age only, the “360” group built an identical replica of Uluburun and successfully sailed the Mediterranean.

The following is the probable route of the Uluburun. From her home port on the Levantine coast, she sailed fully loaded to her (unknown) Mycenaean destination port. At night, she anchored in ports along the Turkish coast. The planned way back may have then taken her towards Marsa Matruh in northwest
Diving for sponges, he noticed an “odd structure” at a depth of 45 meters. He described it in his own words as “looking like a metal biscuit with ears”. It turned out that these “ear cookies” were oxbide ingots, which are ancient plates of raw copper with a shape reminiscent of dried ox hides. Oxbide ingots were a common way to transport metal at that time, making carrying and securing the precious resource on pack animals and ships easier.

News of this discovery brought the Turkish archaeologist Cemal Pulak M. on the scene. Cemal was at that time an assistant to George F. Bass, the founder and director of the Institute of Nautical Archaeology (INA) in Texas, USA. After checking the “biscuit with ears” description, Pulak also dived at the site to see the ingots and also noticed several amphorae and ancient stone anchors. He initiated, together with George Bass, one of archeology’s most complex excavation projects at the time.

The discovery of the Uluburun was, and still is, regarded as a major discovery of the century, and neither means nor effort has been spared to finally obtain answers to so many unanswered questions about the late Bronze Age. The archaeological significance of Uluburun is compared with the grave of Pharaoh Tutankhamen. Two years after the discovery, the excavation was initiated.

As technical capabilities and know-how in Turkey were limited at the time, George F. Bass (known as the “father of underwater archaeology”) provided extensive support and technology on behalf of INA. INA sent its own research vessel, the Virazon, to Turkey. The Virazon was equipped with a decompression chamber, side sonar, a proton-Magnometer, a compressor, an echo sounder, GPS, underwater scooters and a two-person submarine, Carolyn. It was the best that money could buy at the time.

On the rocks of Cape Uluburun, only 50 meters from the wreck’s location, a mobile village was built on stilts where the Turkish–American team of archaeologists experienced a veritable Robinson-Crusoe-style life far from civilization.

During the ten years of excavation operations (1984-1994), archaeologists lived three months every year on a windy cliff, miles from the nearest village. In this solitude, George Bass and his wife, Ann, even spent their honeymoon.

Yasar Yildiz, now director of the Underwater Archaeology Museum in Bodrum, was actively involved as an archaeological diver in Uluburun’s excavation. Yildiz found a gold medallion of Egyptian origin at about 45 meters deep. He was also present during the salvage of the very first artifact in 1982.

The wreck’s excavation comprised 22,413 dives over 6,613 diving hours at depths between 44 and 61 meters (134 to 210 feet).

Dives at the wreck were done “barefoot” (without fins) to protect the artifacts and avoid disturbing the sediment as much as possible. Trimix was already around, but at the time, it was reserved solely for military use, so all dives were made with standard air, usually with double 12- or 15-liter tanks.

The data from each dive was recorded manually, not only to monitor the recovery, but also to ensure the safety of the divers. Each diver had a limited bottom time and mandatory surface breaks. The staff responsible for dive safety had a tricky job keeping enthusiastic archaeologists safe.

After mapping the wreck and its artifacts, each diver was assigned a grid square for which he was responsible. Recovery occurred only after surveying and documenting everything. Major findings were salvaged using lifting bags, while smaller
artifacts were transported by the archaeological divers to the light of surface. A total of 18,000 artifacts were recovered, some fully preserved and others fragmented. According to INA, after three months of excavation work underwater, two years of scientific work for the restoration, preservation and determination were needed. A total of 30 months underwater work resulted in 20 years of scientific and archaeological reworking. Although the excavation was completed in 1994, the follow-up work still continues today. After 3,300 years rest on the sea floor, the Uluburun will not give up her secrets in a “short time” of just 20 years.

**Treasures of Uluburun**

The cargo of the Uluburun contained artifacts from seven different cultures: Mycenae, Kenan, Cyprus, Egypt, Kess Lent, Assyria and Nubia. This diversity of the various trade goods from different countries demonstrated how a very brisk trade took place over the sea 3,300 years ago. It is speculated that the Uluburun was a royal ship or of royal commission, but this cannot be proven.

The main cargo was ten tons of copper of Cypriot origin, divided into 354 oxhide ingots. There was also a ton of tin stored in 150 jars of Canaanite origin. Prior to this discovery, it was unknown to science how tin was transported at the time.

Part of the cargo was 175 glass ingots of various colors. Assuming that glass production had just been invented in Egypt, the glass items alone must have been priceless at the time.

Egyptian ebony, several ostrich eggs, elephant tusks, more than a dozen hippopotamus teeth and various processed turtle shells were almost certainly intended as an ensemble for early stringed instruments.

Also present were Cypriot ceramics, a huge amphora (130cm high) bearing the seal of Nefertiti, pomegranates and olive oil, gold jewelry, spices, 149 trade weights in the form of animals, cosmetic containers made of ivory in duck form, arrowheads, bronze swords and spears, oil lamps, a small bronze sculpture of the goddess Astarte (probably a lucky charm), hundreds of other ornaments (made from glass, cobalt, gold, bronze and electron), amber, pearls, and a gold scarab with the cartouche (name seal) of the Egyptian Queen Nefertiti.

In addition, there were many articles of personal use, such as fishing equipment, blades, needles for repairing fishing nets and typical boating features in the form of 24-stone anchors (two actually used as anchors, and the rest probably used as ballast).

The Uluburun carried the finest goods from the advanced civilizations of the Mediterranean. Its sinking must have hit its owner (or his client) hard financially. If we measure the value of the ship’s cargo by today’s standards, we could imagine a 200-meter freighter loaded with 250 Ferrari 612 Scaglietti, 100 Hasselblad H4D medium-format digital cameras, two or three paintings by Da Vinci, 500 Rolex Yacht Master watches, 100 bottles of Mouton Rothschild (1945) and 100 bottles of perfume No. 1—Imperial Majesty Edition by Clive Christian (which goes for $250,000 AUD per bottle). Its sinking would cost the owners 275 million Euros (about 349 million AUD) and drive them into the deepest depression.

Many artifacts found threw up a new mystery. It was assumed at the time of the Uluburun pharaoh that Nefertiti was already dead, and the new Pharaoh Haremhab had left no stone unturned to eliminate all evidence of the existence of Nefertiti and her husband Akhenaton. Nevertheless, a golden scarab and...
several sealed jars were found with her name on them. An unaccredited but persuasive argument suggests that the name of the great pharaoh, even after her death, was still a great force of protection, and therefore her name was used to protect the merchandise. Similarly, two high-quality swords and ceremonial sticks indicate the presence of at least two high-ranking passengers, possibly of Mycenaean origin, possibly a royal emissary?

Age determination

We have to distance ourselves from the romantic notion that an aging shipwreck stays stylish and decorative, or that it waits in its entirety on the ocean floor for our discovery. Looking at the Uluburun initially was to look at chaos. The structure would not be recognizable to a layman as a shipwreck, and even the copper cargo seems at first glance more like a pile of scrap metal (“metal biscuits with ears”). Only through persistent and extremely careful archaeological and scientific work could salvaged treasures and secrets be revealed.

Three percent of the original hull had been preserved, which we lay people would not even have recognized as timber. Nevertheless, these wood residues made determining the age of the wreck possible at all. For this purpose, dendrochronology—from the Greek dendron (meaning tree), chronos (time), and logos (science)—was used to assign the pattern of the annual tree-rings (based on their different widths) to a particular known growth time. This of course also works on wood already in processed form (planks). The findings sparked controversy at the end, with fluctuations of plus or minus 200 years in determining the age of the Uluburun.

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The dendrochronological analysis of the wood (the remains of the hull and extra firewood the sailors carried) showed a date of 1306 BC. It may have been two to three years later that the Uluburun sank, but the ship itself may have been even older. The generally accepted estimate is 1323 BC.

History is rewritten

“The Uluburun writes the story in a roundabout way,” said Cemal Pulak, field director of the Institute of Nautical Archaeology (INA) in Texas. “So far, we considered Greece to be the cradle of modern civilization, the glorious Bronze Age Greeks. The Mycenaeans were seen as paving the way for almost everything that our society makes: our thinking, our political actions, and even our lives. Now we have the first evidence of an overwhelming influence from the East.”

The sailors of the Uluburun were not Mycenaeans, but Canaanites, ancestors of the Phoenician Semilithenes. This little-known people developed the first long-distance trade over sea. The discovery of amber from the Baltic Sea area in the Uluburun wreck shows the extensive reach of the trading network.

“This ship is the king,” wrote the Minister of Alaschija (Cyprus) as agent of Egypt. This correspondence is known as the “Amarna letters”. In 1887, clay tablets were found showing the active exchange between the Egyptian court and foreign kings. Was the “ship of the King” meant to mean the Uluburun?

“I will bring you a gift of two hundred talents of copper,” the king wrote to the Egyptian Pharaoh of Alaschija. Was this the Uluburun’s primary mission?

Before the discovery of the Uluburun, it was unclear how much a “talent” (an ancient unit of weight) actually was. The 354 copper ingots found brought light onto the matter. Each ingot weighed 27–28kg, and the cargo of approximately ten tons of copper corresponded closely to the amount of 200 talents. It is clearly evident that 3,300 years ago, an early “DIN standard” aimed to define a talent as 28kg. Two hundred talents was enough

Golden amulet!
to equip a small army. Sufficient metal for 5,000 spearheads, 5,000 helmets, 5,000 swords, and 5,000 sets of armor. This was a truly royal gift, and the basis of the “Amarna letters” increases the likelihood of this being the mission of the Uluburun.

George Bass was in his early days often derided, because back in the 60’s, he promoted the theory that the people of Canaan were influential in terms of navigation, commerce and industry, and that they were far more influential than the Mycenaeans. With the discovery of the Uluburun and its findings, the laughter stopped. Bass said, “Fortunately, this shipwreck surfaced during my lifetime.”

This vessel contained the largest ever collection of raw materials found. Other finds in the Mediterranean area consisted mostly of already processed materials, often of Mycenaean craftsmanship. The Uluburun proves the powerful Mycenaeans of the Kanaanärn were in some way dependent on others. A far-reaching consequence was, among others, that the work of Homer, including his Iliad, had to be re-dated. He was previously thought to have lived in the Iron Age, but the events of the Iliad are now clearly Bronze Age.

The precious gifts of the Uluburun were so ostentatious that these were probably intended as additional gifts for a royal house. Also, the skills to craft ebony (which was also part of the cargo) have unfortunately not survived the thousands of years. It is believed that a battleship would take a more direct route from A to B, rather than trading goods and commodities in different ports like you would expect from a merchant ship. However, this would only apply if the Amarna letters actually referred to the Uluburun. Finally, we know it, but it seems questionable whether a direct relationship would ever prove the crux if what they have revealed so far is phenomenal! The exhibits and a full-size replica of the ship Uluburun are displayed in the Museum of Underwater Archaeology in Bodrum, Turkey.

Rico Besserdich is a widely published dive writer and underwater photographer based in Izmir, Turkey. For more information, see: Maviphoto.com

Findings from the Uluburun: Oil lamps. All images this page taken with special permission at the Museum of Underwater Archaeology, Bodrum, Turkey

were only found in royal courts. There were at least three literate dealers on board, which was proven by the discovery of a wooden diptych, a double panel of boxwood with ivory hinges. This diptych is the earliest notebook known in human history. Text was written on wax tablets, but they have unfortunately not survived the thousands of years. It is believed that a battleship would take a more direct route from A to B, rather than trading goods and commodities in different ports like you would expect from a merchant ship. However, this would only apply if the Amarna letters actually referred to the Uluburun. Finally, we know it, but it seems questionable whether a direct relationship would ever prove the crux if what they have revealed so far is phenomenal! The exhibits and a full-size replica of the ship Uluburun are displayed in the Museum of Underwater Archaeology in Bodrum, Turkey.

Our only consolation is this: After our freighter with our beloved (and expensive) Mouton Rothschild 1954 wine bottles has sunk, we inform our insurance company quickly by e-mail from our computers, with bronze (the bringer of all evil or all joy—who knows?) ensuring a clean data transmission.

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Uluburun

Skull decorated with gold; Jewellery from the Uluburun (top right)
Hollis Gear and NAUI team up on new Prism rebreather training

A new rebreather certification course has been announced by Hollis Gear and NAUI. The Prism 2 CCR Diver and Instructor certification course is now available for divers and instructors. “I have been diving a Prism CCR since 1997,” said Director of NAUI Technical Training Division Tim O’Leary in a statement. “We think that the Prism 2 will be a great addition to the training programs that NAUI has to offer.”

John Conway, Training Director of Hollis said, “We are very excited to have NAUI professionals offering training on the Prism 2. NAUI professionals are known for their dedication to training around the globe.”

For more information, visit NAUI.org and Hollis.com. Interested dealers can contact their regional managers for additional information on becoming Hollis Prism 2 dealers or call Hollis Gear at 888-383-DIVE.

DEMAs and Dan offer diver awareness poster

In order to keep divers safe this season, DEMAs and Dan have joined together to offer a Dive Flag Awareness poster as well as a 15- and 30-second public service announcement, with assistance from the National Safe Boating Council and the United States Coast Guard. The spot educates divers and boaters of the correct way to use a dive flag to warn boaters that divers are in the water and should keep a safe distance.

“Our goal in sharing this important message is to remind both divers and boaters that they often share the same waters and in order to ensure an enjoyable experience, all must adhere to necessary safety precautions,” said Executive Director of DEMA, Tom Ingram. “By increasing the awareness of the divers-down flag we hope to keep diving and the waterways safe for everyone this summer.”

You can download the Dive Flag Awareness poster and get more information at: DEMA.org.

New SSI/Poseidon professional program marks big change in recreational scuba diver training

Scuba Schools International (SSI) and Poseidon have joined forces to improve bottom time for divers by developing the Mark VI rebreather partnership. Once the domain of highly technical, analytical divers, the new rebreather technology is making waves in the dive industry as easy-to-master rebreather units are swiftly replacing standard open water scuba.

“The Mark VI unit is designed with the recreational scuba diver in mind,” said Steve Newman, SSI International Technical Training Director. “There is a revolutionary change happening in the scuba marketplace and the Mark VI rebreather is at the forefront of these changes.”

Newman recently conducted the first 80-hour “Full Immersion” Mark VI training program in Grand Cayman in which a group of elite SSI training professionals came together to learn how to “migrate” from being standard open-circuit scuba instructors to full Mark VI Open Water Rebreather Instructors. The program included 12 dives and over 20 hours bottom time with the new SSI/Poseidon training materials.

“The first part of the recreational rebreather revolution is helping the instructors to ‘re-think’ the entire training process,” said Newman. “Rebreather divers speak their own language and this ‘immersion’ program is the first step in transforming the process.”

The Mark VI is lightweight and designed especially for recreational divers so that new divers can actually start their journey into the underwater world as rebreather divers and not as scuba divers—a concept that is revolutionary in the dive industry. “In the past, rebreather divers needed to be open-circuit, open water certified recreational divers first. Then, they would learn about the many elements of becoming a rebreather diver,” said Newman. “This unit and the cooperative training between SSI and Poseidon means new divers can start with rebreathers if they choose to.”

For more information visit: www.divessi.com.
Airlines get shark-friendly

As the anti-shark-finning campaign in the Asia Pacific region gains momentum, more and more airlines are jumping onto the bandwagon. First, it was Cathay Pacific, then it was Air New Zealand that decided to stop flying shipments of shark fins to Hong Kong, the world’s largest market for shark fins. Now, we see Fiji’s national carrier and Korea’s top two airlines join the fray. We suspended shipments of shark fins on our cargo flights from March,” said Korean Air spokesperson Cho Hyun-mook to Korea Real time. “Asiana Airlines also would follow suit, hopefully stemming the import of shark fins to the country. According to the Korea Customs Service, 76 tons of shark fins were imported last year alone, worth US$820,000.

In Fiji, spokesperson for Air Pacific Aubrey Swift said in a statement: “We believe a ban on the shipment of unsustainable sourced shark fins is the right thing to do, and have implemented this policy effective immediately.”

In New Zealand, exposure in the local press got the ball rolling, as the New Zealand Shark Alliance reported that the Air New Zealand was making shipments of shark fin. The airline’s spokesperson Andrew Aitken told CNN: “Air New Zealand has taken the decision to suspend the carriage of shark fins while we undertake a review of the issue.”

Changing attitudes

While shark fin soup, considered a delicacy in many parts of Asia, is still offered by many establishments in Asia, some of Hong Kong’s hotels and restaurants are capturing each year for their fins, which are removed by the dumping of the live shark back into the sea to drown a slow and horrible death. Conservationists praise the airlines’ decision. Claire Garner, director of Hong Kong Shark Foundation, told CNN: “We were delighted to hear that Air New Zealand is following suit of the anti-shark finning campaign and is considering the long-term sustainability.”

Doug Woodring of the Ocean Recovery Alliance in Hong Kong said, “Decisions [like Air New Zealand’s] can have a big impact on reducing consumption in Hong Kong.”

Sources: Wall Street Journal, CNN, Science & Technology, Education, Profiles, Photo & Video, Portfolio

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FCC to improve in-flight Wi-Fi

Tired of paying a stout fee for sluggish in-flight Wi-Fi? Well, there’s good news—the U.S. Federal Communications Commission (FCC) wants to increase Internet speed for airline passengers. Their new proposal would free up 500 megahertz of airwaves for use in air-to-ground broadband—a vast improvement from, say, Gogo Inflight Internet’s current utilization of just 3 Mhz—a vast improvement for 3G data service connection, further slowed by being spread across hundreds of in-flight Wi-Fi users.

Julius Genachowski, the FCC’s outgoing chairman, said in a statement: “The FCC plans to request public comment on current systems to improve the quality of their in-flight services.”

The proposal is fully backed by Qualcomm, the telecom giant that developed much of the current in-flight Wi-Fi technology. In fact, the company has been pushing for the freeing up of airwaves for this purpose for years. Qualcomm’s senior vice president of government affairs, Dean Brenner, said in a statement: “The FCC’s proposal for a next generation air-to-ground broadband service ... would greatly expand in-flight high speed broadband connectivity for airline passengers.”

In the FCC’s proposal, one or two companies will be awarded the 500 MHz in a license auction. The only obstacle that may arise is that the spectrum is currently being used for satellite communications. Rather than pushing satellite uplinks off the frequency, the new proposal would find inactive spectrum blocks and set them aside for air-to-ground mobile broadband service. However, opponents of the FCC plan from the Satellite Industry Association complain that the new proposal would lower quality of service thereby costing satellite companies $1 billion in lost revenue.

Source: CNN Money

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