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New Georgia
Solomon Islands

Wrecks
Frankenwald

Indonesia
Bunaken

Profile
Doug Allan

UWPhoto
Fluorescence

CUBA
Gardens of the Queen

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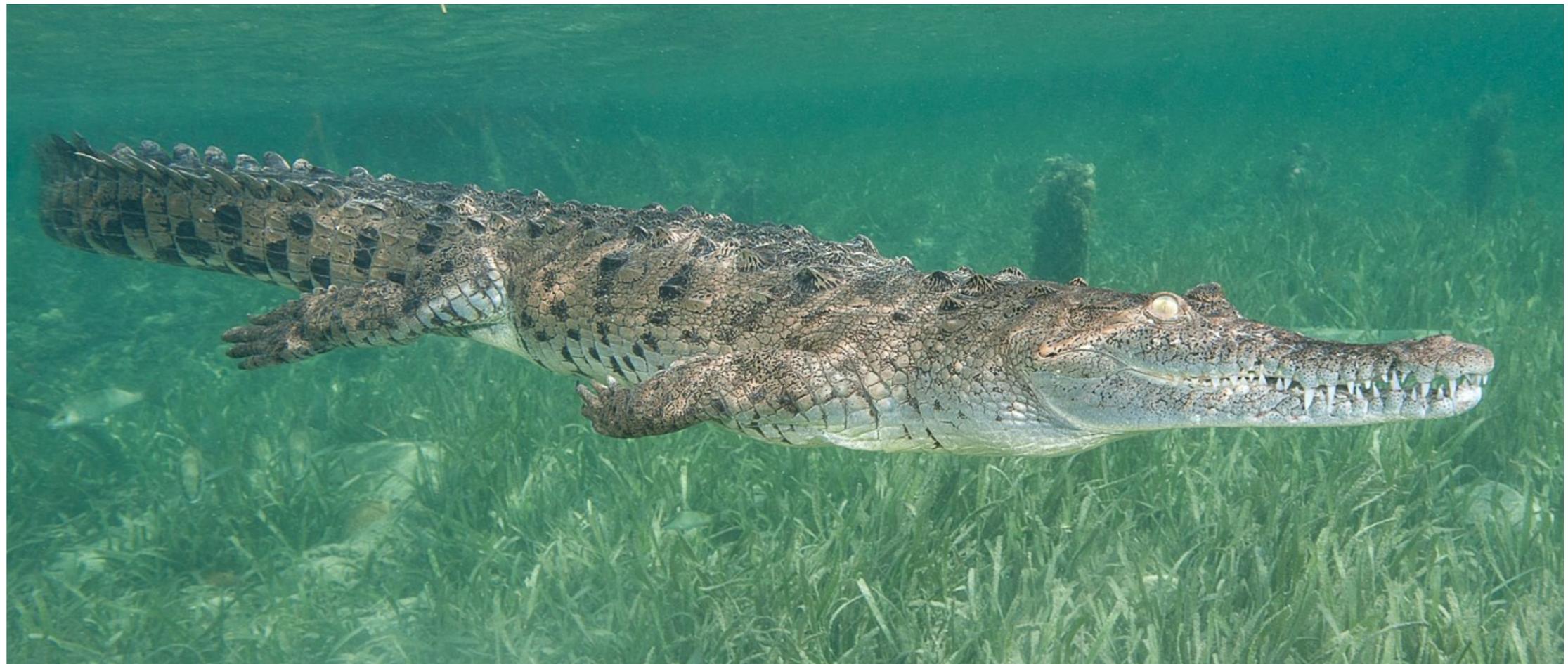
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COVER PHOTO: School of Manta Rays, Su Su Hitu, Solomon Islands
Photo by Don Silcock

American crocodile, Gardens of the Queen marine park, Cuba. Photo by Matthew Meier



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Respect the signs

It is late Sunday night—the 29th of December, 2013, if you want me to be precise—and I am writing this editorial with my head and heart full of mixed emotions. I keep on thinking back to a dive that took place a mere four days ago. It was not a special or significant dive. It was not carried out by a leading explorer nor a diving personality. No one found a new species of fish or discovered a wreck, yet this dive has made international headlines. It has been discussed around the world on many newspaper and diving forums. Leading members of our community have spoken out and commented about it, just because of the outcome of this dive.

On Christmas morning a 35-year-old man took his 15-year-old son for a dive. They were trying out new scuba equipment excitedly unwrapped earlier that day. It all sounded quite normal until you added in the fact that the father was not an instructor, the son had no scuba training, and neither of them had cave diving training. Why do I mention this? The site chosen was Eagles Nest.

Eagle's Nest is a deep, 94m (310ft) sink cave based in Florida, USA. The NACD (National Association for Cave Diving) and the NSS-CDS (National Speleological Society Cave Diving Section) clearly state that this is a very advanced dive, and the minimum qualification to dive this site is a 'Full Cave' certification, a Trimix ticket and

the diver should have appropriate experience with deep cave dives. Neither diver met these key criteria.

It was a 'Silent Night'. The two bodies were recovered before midnight on Christmas Day. This day will never ever be the same for the family, the officials who attended this scene and the cave divers who were called out to do the body recovery.

The cave and diving community is currently suffering two conflicting emotions—huge anger and deep sorrow. These were two needless and unnecessary deaths. They should not have happened. Eagles Nest has a number of signs above and below water graphically warning of the dangers of diving the site without proper training, equipment and experience. Unfortunately, it seems that certain individuals go through life believing that the rules just do not apply to them. Now the family is commenting that the site should be closed to prevent further deaths.

I can understand the family's grief, but this knee-jerk reaction will not make one jot of difference to safety. It will merely restrict access to a quality cave diving site that took a long time to gain. Cave divers in the main are responsible and disciplined. They take their sport very seriously and respect site access. They plan, they are properly equipped, and they are trained. Closing Eagles Nest will not make

it safer, because the people likely to break into this site to dive it will be the ones who think the rules don't count. They will probably be ill-equipped, have little or no relevant training and also end up in a body bag. If people truly want to make a positive difference to stop unnecessary deaths, perhaps they could campaign to remind divers of the dangers of diving beyond their training and experience.

A little good has already come about as a result of these deaths. In 1997, the cave community wrote and filmed a short documentary called *A Deceptively Easy Way To Die*. Because of the Eagles Nest fatalities, this film is once again being watched. Please Google it up; you will soon find it.

I hope that the double fatality will make open water divers tempted to 'check out kit', or 'just see what is down there', think twice before entering a cave for which they are not equipped—that they will read and respect the signs saying 'there is nothing in this cave worth dying for'. So pass the message on into the New Year. Please watch *A Deceptively Easy Way To Die*, then share it, and talk about it with new divers and remind them that we are not setting rules to ruin their fun, but to keep them safe so they can enjoy many more Christmas Days.

— Rosemary E Lunn



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News edited
by Peter Symes

from the deep NEWS



Reef off Fiji. Forest protection can prevent changes in amount and composition of river runoff impacting reefs

In Fiji, coral reef health is linked to management of terrestrial ecosystems

Downstream ecosystems such as coral reefs can be hugely affected by land-based activities that cause increases in runoff and associated sediments, nutrients and chemicals.

In 2008, a national Protected Area Committee was created by the Fiji government in part to achieve the goals of protecting

20 percent of the country's land and 30 percent of its coastal waters by the year 2020.

In a study conducted by the

Wildlife Conservation Society and the University of Queensland evaluating the effects of terrestrial protected area de-

signs on Fiji's coral reefs, it turns out that what's best for land ecosystems is also best for coastal corals.

Multiple benefits

When achieving terrestrial conservation goals was the primary objective, the potential benefits to coral reef condition were 7.7–10.4 percent greater than benefits from the existing network of protected areas.

When benefiting reefs was the primary objective, benefits to coral reefs were 1.1–2.8 times greater per unit area than networks designed to only achieve terrestrial conservation goals, but 31–44 percent of the terrestrial conservation goals were not achieved.

Results put to use

These results are already

When designing terrestrial protected areas, the key is to consider not only how much they benefit terrestrial biodiversity but also how much they benefit coral reef ecosystems.

being used by Fiji's Protected Area Committee to modify the boundaries

of existing priority places to deliver outcomes that better meet terrestrial conservation goals while offering greater benefits to coral reef condition through prevention of run-off.

"When designing terrestrial protected areas, the key is to consider not only how much they benefit terrestrial biodiversity but also how much they benefit coral reef ecosystems," said lead author Dr Carissa Klein. "Thinking about the connections between the land and sea is rarely done when designing protected areas—Fiji is leading the way globally." ■

SOURCES: WILDLIFE CONSERVATION SOCIETY, SCIENCE DAILY AND MARINE POLICY (JOURNAL)

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Partners did not simply follow the attacker but deviated around coral formation to block the prey's escape routes.

Reef fish live and hunt in teams

Goatfish work together to catch their dinner.

When an individual chases its prey around a coral formation, others gather around to block escape routes. The unusual co-ordinated behaviour was observed by scientists in the Red Sea, off the coast of Egypt.

Solitary or in groups

Adults in the study area lived either solitarily or in relatively stable groups formed of similar sized and most likely unrelated individuals. The solitary life style was associated with searching for hidden immobile prey on sandy areas while group living was associ-

ated with collaborative hunting of mobile prey in corals. Any member of a group could initiate a hunt by rapid acceleration. Partners did not simply follow the attacker but deviated around coral formation to block the prey's escape routes. Prey that escaped into a coral crevice was typically encircled with maximal inter-individual distance and pried on by insertion of the barbels into the crevices.

Size not family

The fish are known to live in groups that are based on their size rather

than family relationships, with similarly sized fish forming groups. Scientists have suggested that this strategy might improve co-ordination for shoals of fish, making them more streamlined and better synchronised.

Similar behaviour has only been identified in a handful of species—primarily mammals including chimpanzees, orcas, lions and dolphins, but also birds. Very few fish have been seen to "work together". In some species, each individual carries out the same role during each hunt, but, the goatfish had a flexible approach. ■

Young parrot fish roam, older ones stay put

Researchers in Australia mapped the movements of individual parrotfish from very young juveniles to mature adults. They found that small parrotfish quickly expanded their range as soon as they settled on a reef.

This expansion stopped when the fish matured, and their final home range was unrelated to adult body size.

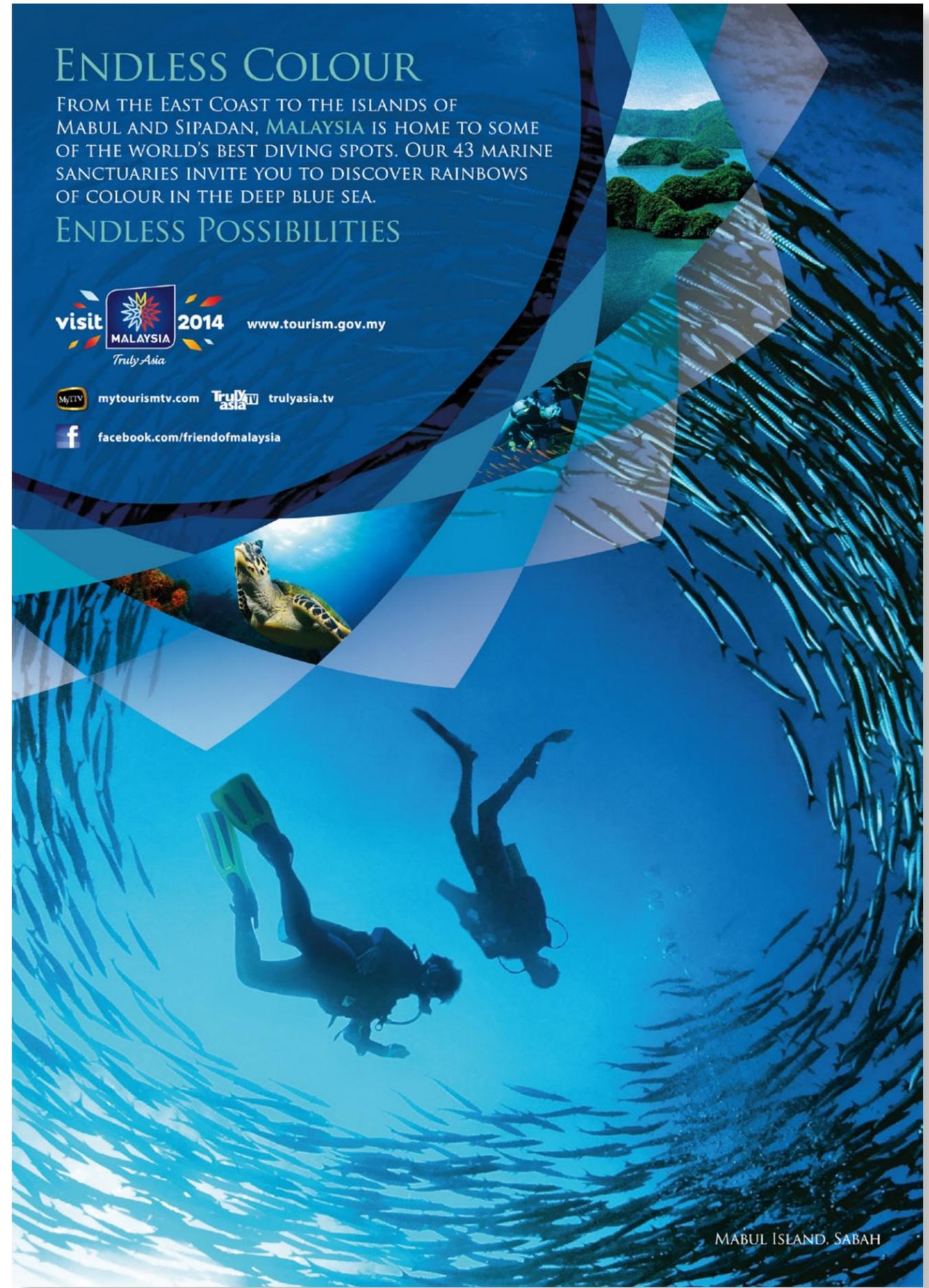
Juvenile parrotfishes displayed rapid home range growth until reaching approximately 100–150mm length.

Thereafter, the relationship between home range and body mass broke down. This shift reflected changes in colour patterns, social status and reproductive behaviour associated with the transition to adult stages. ■

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ENDLESS POSSIBILITIES



MABUL ISLAND, SABAH

THIS PAGE: Scenes from the relief effort in the Philippines after Super Typhoon Haiyan hit the region in early November 2013, killing over 6,000 people in this country alone
SOURCE: AFP

Philippine relief effort

Text and photos courtesy of Anne Paylor

In the wake of the devastation left by the passage of Super Typhoon Haiyan through the central Philippines, liveaboard dive boat operator Worldwide Dive and Sail (WWDAS) was quick to weigh into the relief effort, ferrying supplies to remote communities inaccessible by land.

The first 'mercy mission' was to the island of Malapascua, a dive location renowned for interac-

tion with thresher sharks, which took a direct hit from the storm. Local dive centre operators Sun & Fun and Sea Explorers requested the Siren Fleet's help in getting supplies to the island, and sponsored the trip, working closely with global charity Medecins Sans Frontieres (MSF).

One of WWDAS' 40-metre wooden phinis (traditional Indonesian two-masted sailing ships) duly left Mactan on Thursday evening, arriving off Malapascua early the following morning carrying 15 tonnes of food, 16 tonnes of fresh water, blankets and clothing. The trip was undertaken while awaiting official approval for a more substantial mission to Leyte Island at the behest of MSF.

WWDAS' new boat—SY *Philippine Siren 2*—which just arrived from the boat yard in Indonesia where it was built, was enlisted to help with the relief effort. WWDAS representative Paul Collins accompanied the expedition and said: "Malapascua was severely damaged by the storm, but amazingly, the people we met there were in good spirits

and already working hard to restore their homes and businesses. Local banca (outrigger boats) and dive centre boats came to help us unload the supplies and water into an assortment of containers."

Philippine Siren 2 then returned to Cebu in preparation for the more extensive relief mission to Leyte Island in conjunction with MSF. She arrived in Guiuan on the southeastern coast of Leyte Island, carrying medical supplies, a small generator, gasoline and diesel supplies, and propane gas tanks as well as food and water to support the MSF operation there. In addition, the boat is equipped with two water desalination units capable of supplying some 12 tonnes of fresh water a day.

Tourists wanted

WWDAS Director Frank van der Linde said: "What the Philippines needs right now is tourism! Tourist dollars are an economic mainstay for this country and crucial for the maintenance of its infrastructure. Much of the country was not damaged

by the typhoon and remains open for business as usual. As the devastated areas of the Philippines start the slow process of recovery, the whole country needs tourist dollars more than ever and we urge people not to put off planned visits to the country."

It is a sentiment echoed by the Philippines Department of Tourism (DOT). In an open letter to the European tourism industry, Venus Q. Tan, DOT Region Director Europe said: "Tourism for the Philippines continues to be one of the major contributors to the economy making up approximately 8% of the GDP. It plays a significant role in rebuilding lives and businesses in communities. The eventual business brought towards the country goes a long way in providing jobs and infrastructure support in numerous regions. Tourism is a multiplier industry. Encouraging more travel and tourism to the country now will provide much needed jobs

and livelihood for our people; and indeed put meaningful contribution to survivors of this disaster."

To that end, for sailings between now and 31 January 2014, WWDAS has committed to donate 50 percent of the trip price for all remaining berths booked on both Philippine Siren boats to MSF and the Philippine Red Cross.

Diving is still good

As far as diving is concerned, Frank said: "For the Siren Fleet the majority of our trips remain unaffected. Reports of good weather and diving conditions have been coming in from Cebu, Bohol and Negros (Dauin) as well as the all clear given for diving in Anilao and Puerto Galera. Whilst

Leyte Island has been the most affected by the typhoon, the area of Sogod Bay is far south of the main path and all trips planned from February 2014 will be going ahead as scheduled. The Tubbataha reefs were not in the path of the typhoon so we can still expect great diving there when the park opens in February. The region around Donsol and Ticao was thought to be in the direct path of Haiyan but the typhoon moved south leaving dive centres and resorts with very minor damage. And thresher sharks have been sighted around Malapascua, where many of the deeper reefs remain unaffected."



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Damaged reefs can recover

Coral reefs are damaged by natural disturbances and local and global anthropogenic stresses such as global warming and ocean acidification. As stresses intensify, so do debates about whether reefs will recover after significant damage.

From 1999 to 2012, scientists from the University of Florida studied reefs around Little Cayman Island. They wanted to see how well the reefs stood up over time under a variety of stresses that included, for example, increased sea surface temperatures. During the 13 years, warm ocean temperatures led to bleaching and infectious disease that reduced live coral cover by more than 40 percent between 1999 and 2004.

Corals rebounded

However, seven years later, the amount of live coral on the reefs, the density of young colonies critical to the reefs' future health, and the overall size of corals all had returned to the 1999 state, the study showed. ■

SOURCE: PLOS ONE



PETER SYMES

In Florida, mangroves have begun to expand further north along the Atlantic coastline, invading salt marsh habitats

Mangrove expands in Florida

Mangrove forests have been expanding northward along the Atlantic coast of Florida as cold spells are becoming rarer.

This expansion is associated with a decline in the number of days where temperature dips below -4 °C, or 25°F. That, not coincidentally, is a physiological temperature limit of mangrove survival.

"The explanation people would most probably point to is an increase in mean temperature," said co-author Assistant Professor James Kellner. But the analysis ruled out increases in mean annual or winter temperatures as well as changes in precipitation and changes in nearby urban and agricultural landcover. It also ruled out sea level rise.

In a state where mangroves enjoy environmental protections, it might

appear at first blush that more mangrove habitat could be a good thing. But researchers caution against any celebration of this apparent consequence of climate change.

"The expansion isn't happening in a vacuum," said lead author Kyle Cavanaugh, a postdoctoral researcher at Brown University and at the Smithsonian Institution. "The mangroves are expanding into and invading salt marsh, which also provides an important habitat for a variety of species."

The next question is to understand how these changes affect the lives and interactions of the species in each ecosystem. ■

SOURCE: PNAS



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wreck rap



We have a winner! Readers of Norway's dive magazine, *Dykking*, voted on Norway's best wrecks in April 2009. *Frankenwald* won with 112 votes against the wreck, *Consul Carl Fisser*, which won second place with 78 votes

Text and photos by Christian Skauge

On 6 January 1940, the German freighter *Frankenwald* was caught in a treacherous current on the Norwegian west coast. With a deafening noise, German steel met Norwegian rock, and ship and cargo was lost. All that's left now is a world-class wreck dive.



Deck of the *Frankenwald*

A World-Class Wreck Dive *Frankenwald*

Captain Alexander Moritz Otto Erich von Frankenberg is staring out the window. He is on the bridge of the 122-meter-long German freighter *Frankenwald* with his First Officer Georg Güttler and two Norwegian pilots—Lorenz Schjønning Warholm and Christian Haarvik. It is almost 6 P.M. and the winter darkness shrouds the cold, barren landscape. A south-easterly breeze is blowing, and there it is raining slightly, but visibility is still decent.

Perhaps the captain takes a moment to think about his homeland, which just a few months earlier was plunged into war. He is safe here inside the Norwegian fjords; but, in international waters just off the coast, the Royal Navy is looming.

They would not have let him pass, could they have done anything to stop him; *Frankenwald* is carrying 7,971 tons of fine-ground magnetic iron ore known as magnetite from the mines in Kiruna, which will

feed the hungry German war machine.

Treacherous passage

Frankenwald left Narvik on 31 December 1939 at around 3 P.M. The passage along the Norwegian coast was eventful, and they had to halt several times due to bad weather and heavy snow. Now the heavily loaded freighter was closing in on the treacherous passage between Brattholmen and Fengskjæret in Ytre

wreck rap



Frankenwald offers many exciting experiences both inside and outside—simple swim-throughs accessible to everyone

BELOW: Sinking below the stern truly reveals the giant proportions

Steinsund, just north of the mighty Sognefjord.

The captain orders slow speed on the engine room telegraph as they draw closer. The atmosphere

on the bridge is presumably tense, and von Frankenberg later stated that he was having doubts about the pilots after taking them on. Before making his way to the



chart room to check their position one extra time, he notes that they are in the correct sector of the lighthouse ahead.

Von Frankenberg had not wanted to pass through the narrow strait at this hour, but their intended anchorage at Larsråholmene further north was filled up with about a hundred or so fishing vessels because of bad weather during the last few days. He had no choice but to continue south and head for Bergen, running through the night.

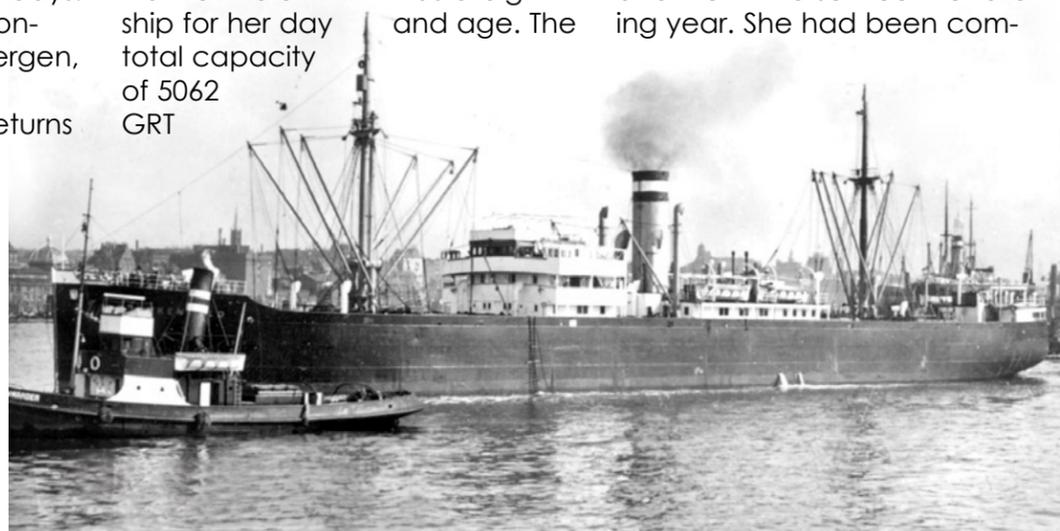
When von Frankenberg returns to the bridge, he discovers that the light from the

lighthouse has changed. The current must have pushed the freighter slightly off course to starboard, and now they are in the wrong sector. Suddenly, lights from a small vessel travelling in the same direction appear in the darkness ahead.

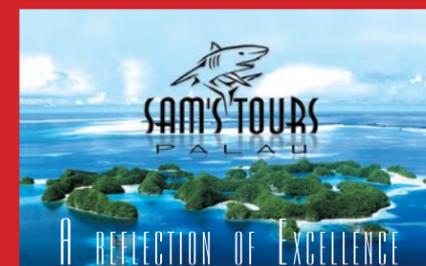
The Wald class

Measuring almost 400 feet, *Frankenwald* was a big ship for her day and age. The total capacity of 5062 GRT

Frankenwald was a proud ship, and the wreck is in such good condition that one can easily recognize virtually every detail that can be seen in historical pictures of the ship, even after nearly 70 years on the seabed. No wonder it's a favorite top pick!



Historical photograph of the *Frankenwald*



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missioned by the German shipping company HAPAG (Hamburg Amerikanische Paketfahrt Aktiengesellschaft, or Hamburg-America-Linie) in 1918. They had a very close relationship with the shipyard, being one of the investors along with the engine manufacturers Gutehoffnungshütte and AEG.

From 1921 to 1923, Deutsche Werft built no less than ten freighters in what was to become known within HAPAG as the Wald class. The shipyard was remarkably efficient, and during WWII, they turned out a total of 113 Type IX and XXIII U-boats for the German

Kriegsmarine.

Apart from *Frankenwald* the Wald class consisted of the ships *Niederwald*, *Steigerwald*, *Westerwald*, *Wasgenwald*, *Idarwald*, *Kellerwald*, *Schwarzwald*, *Spreewald* and *Odenwald*. They were all similar in construction and tonnage, even though only two of them were actual sister ships. HAPAG also incorporated two ships they had bought abroad in the Wald class—*Sachsenwald* and *Grünwald*.

Only two of the Wald class ships were to survive WWII. *Odenwald* and *Schwarzwald* were scrapped in

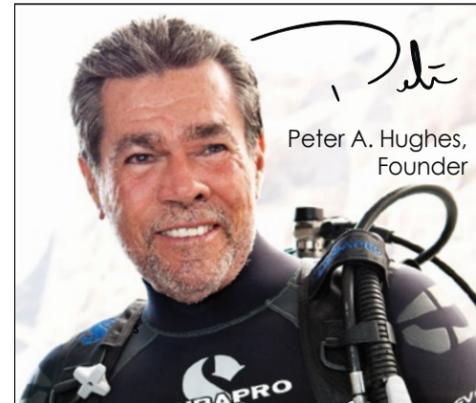
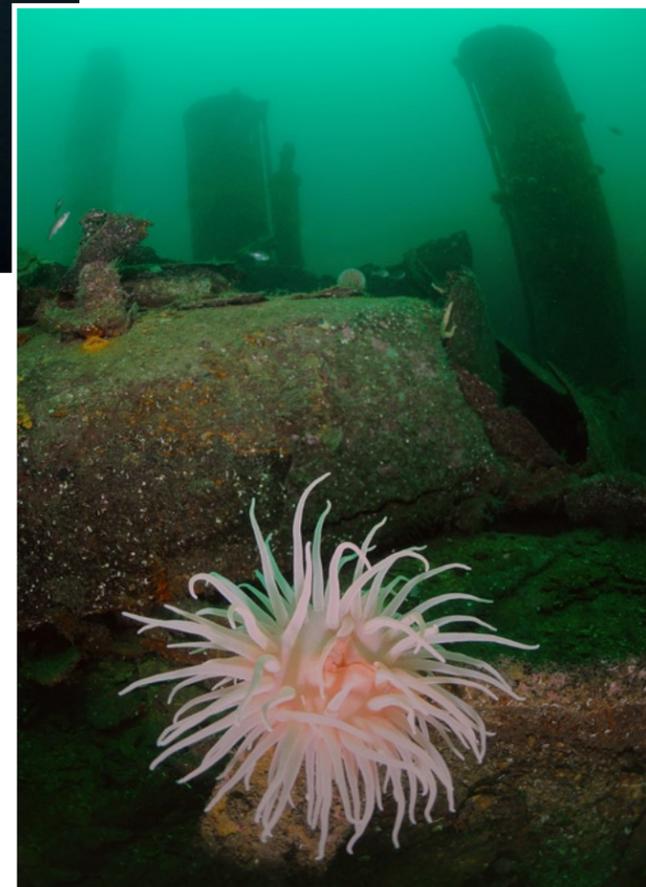
Seen from above, the huge dimensions of *Frankenwald* dwarf the divers. On deck, there are a number of interesting details to be found all over the wreck, including some big, pink anemones (below)

1949 and 1963. The others fell victim to submarine attacks or mines.

Seconds from disaster

Back in Steinsundet, Captain von Frankenberg, the First Officer and the two pilots are intensely focused. On a northern approach the narrow strait makes a sharp turn to port, and *Frankenwald* needs the entire shipping lane to make it safely through. Not wanting to overtake the smaller vessel in front of them—a fishing boat—at the narrowest point, half speed is ordered. Not only does the presence of another vessel limit *Frankenwald's* room to maneuver, but the heavily loaded freighter is also more exposed to wind and current at low speed.

The pilots and officers had anticipated a northerly current through the strait, but



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Swimming through the galleries on the stern is exciting, and there are plenty of things to see. There are good opportunities for wreck penetration, but there's a lot of silt inside. Be careful and remember your bottom time

instead it was pushing hard to the west. Captain von Frankenberg suggests to the pilot that they should turn ten degrees port, surprised they have not already done so. He is worried about the turning radius and the heavy cargo, which gives *Frankenwald* an average draft of eight meters. Only then does the pilot react and calls out the order—port rudder.

For a few seconds nothing happens. The ship does not come around! Von Frankenberg assumes command, and ignoring the pilots, he orders full port rudder. The command is repeated correctly by the 53-year-old helmsman, Emil Förster, but again nothing happens. Pushed further by the current, they are getting dangerously close to Brattholmen on the starboard side. Von Frankenberg realizes what is

about to happen and orders full speed ahead in an attempt to regain control of the ship. It is too late.

German steel meets Norwegian rock

Frankenwald runs aground on Brattholmen, and her belly is torn up, not far behind the bridge. She is slowly starting to come around, but then she hits bedrock for a second time. It is severe, and the freighter is doomed. The sound of German steel crashing into Norwegian rock must have been deafening, and the entire ship shakes violently.

The engine room immediately reports that water is flooding in. A wireless SOS signal is transmitted and picked up by Bergen Radio about 50 miles (78 km) further

south; the torpedo boat *Brand* is dispatched to the stricken freighter.

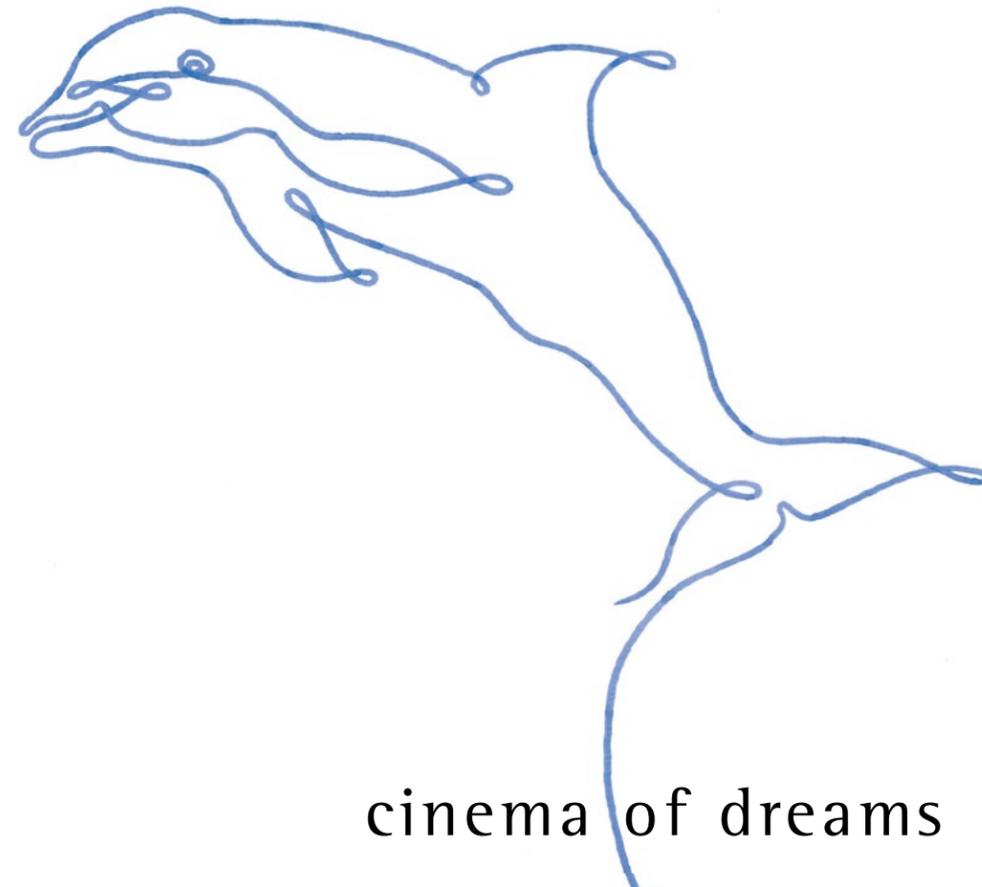
About ten minutes later, the lights goes out. Fearing the boilers might explode, Captain von Frankenberg sounds the alarm—one long and three short bursts. Three of the four lifeboats are lowered (one has been damaged in a collision earlier), and the crew of 48 leaves *Frankenwald*. They are picked up by nearby fishing boats.

The first officer later reported that the ship was left in "good order". A radio transmitter, a suitcase and a seaman's bag were the only things salvaged, along with the ship's log, bridge log and engine maneuver log.

Frankenwald drifts into a calm bay and sinks in deep water (40+ meters) about one and a half



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AFT AND FORE: The stern (below) is very much intact, while the bridge (right) and wheelhouse have partly collapsed over the years



hours later.

When the torpedo boat from Bergen arrived at the scene, it was all over. They returned with the *Frankenwald* crew, who shouted, "Long live the torpedo boat crew!"

when they were safe at the dock and under the care of the German consul. Captain von Frankenberg later wrote that all Norwegians they were in touch with were extremely helpful and accommodating. The

relationship between Norwegians and Germans probably was a lot better than three months later, after the German attack on Norway.

Local suspicion and rumors

A maritime inquiry was held in Hamburg on 16 January 1940, under the watchful eye of Oberlandesgerichtsrat Dr. Reinbeck and no less than five captains and an administrative assistant. In short, the pilots were blamed for the ship running aground. In the eyes of the inquiry board, they should have anticipated that the ship might be pulled off course by the current.

The captain and officers of *Frankenwald* were acquitted, and the shame remained in Norway. There was no mention in the maritime report that any of the pilots were present at the proceedings, which seemed to have been an all-German affair.

The Norwegian newspaper

Bergens Tidende reported two days after the accident that *Frankenwald* also had rudder problems earlier on her journey, and icily stated that they understood it was the same helmsman responsible at the time *Frankenwald* ran aground.

After the accident, rumors

soon started to circulate. It was speculated that *Frankenwald* was actually heading north, and that the route, ship and cargo seemed mysterious. Locally, it was said that *Frankenwald* possibly had unloaded somewhere in the Sognefjord, but no evidence to support this was produced.

When looking at the position of the wreck, it is indeed very difficult to understand how *Frankenwald* could have ended up where she is. It seems much more likely that she was heading north, but the statements made in the maritime inquiry firmly contradict this. The data given on the direction of winds and currents

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wreck rap



The stern is a magnificent sight, almost resembling the conning tower of a giant submarine

BELOW: Huge winches are found at the foot of both the masts. They were used to operate the 12 loading booms, which are still on the wreck

support the location, and there seems to be no misunderstandings or discrepancies in the captain's report.

Locally, questions were also raised regarding the cargo *Frankenwald* was carrying. Today, the holds seem mysteriously empty—in fact, divers who have been down there to investigate state that there is nothing to be found.

The salvaging company Brødrene Anda raised the steel propeller and the anchors in the 1950s, but there is no record of them salvaging any cargo. Still, this would have been entirely possible; the magnetic iron ore was fine-ground and could have been sucked up with pumps and hoses. This would not have been a high-paid job, but good enough during times of little work. It would also



explain the total lack of damage on the wreck—the booms are still in place over the open cargo holds.

Voted “Norway’s Best Wreck”

Even if the story of *Frankenwald* may be somewhat mysterious, there is no doubt as to what happened three months later; war broke loose in Norway on 9 April 1940, and both Norwegians and Germans had other

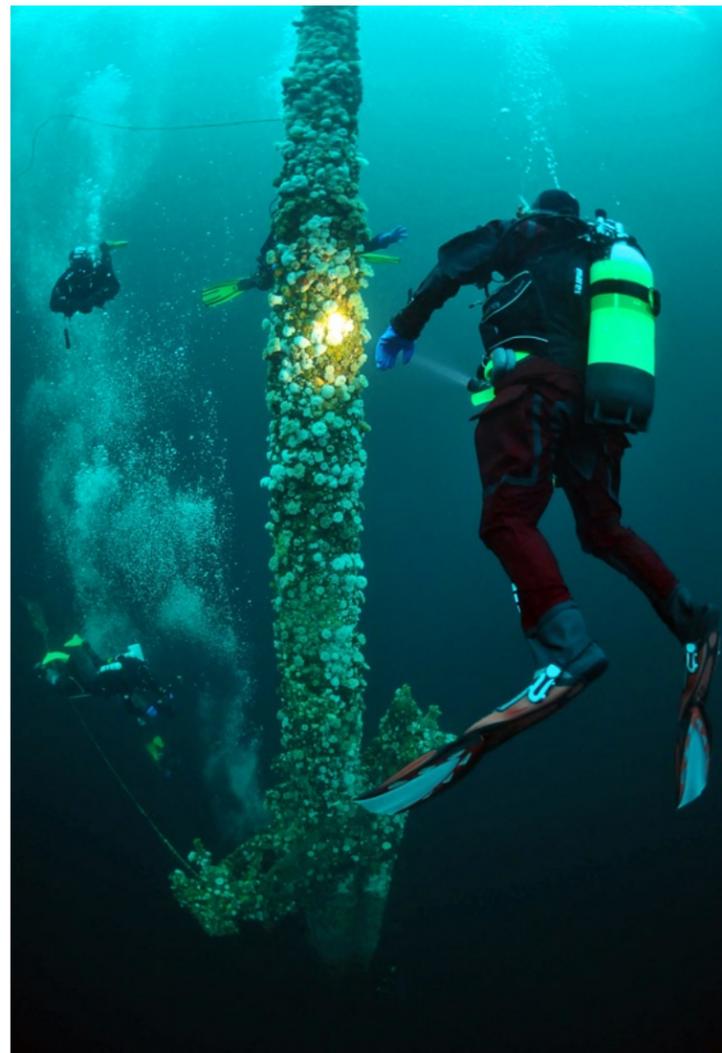
priorities. *Frankenwald* was left to her own devices in her wet grave, and with the exception of the salvage work, she was left alone until sport diving gained popularity a few decades later.

In the last 30 years or so, *Frankenwald* has been visited by thousands of divers. Some of them were souvenir hunters who unfortunately have helped themselves to some of the treasures—but there are still many interesting things to see.

The wreck is in remarkably good condition, even after 70 years on the bottom. *Frankenwald* actually looks largely intact, and even the masts are still standing. This is due to the wreck being in a very sheltered location, and the fact that she is upright on the bottom.

In 2009, *Frankenwald* was voted “Norway’s Best Wreck” by the readers of the Norwegian dive magazine, *Dykking*. Competing with wrecks all





The aft mast on *Frankenwald* is completely covered in anemones and stretches to just 7m below the surface

along the Norwegian coast, *Frankenwald* was well ahead in the vote, and many people were expressing the great experiences they had diving the wreck.

Frankenwald truly is a majestic shipwreck—some even say it is a world class dive. Having visited her several times, it is hard not to agree.

To dive the *Frankenwald*, it is necessary to have a boat and surface support. There might sometimes be strong current at the surface, but usually it's calm down on the wreck itself. The nearby Gulen Dive Resort, a PADI and BSAC center, runs regular trips to *Frankenwald*.

A world-class wreck dive

The easiest access is to descend and ascend along the aft mast, which starts just seven meters below the surface. This provides an excellent starting point to dive both the stern and midship, and you might even reach the bow—but this might cause bottom time problems unless you dive on something other than air. Although a little more challenging, it is possible to start and end the dive on the foremast.

In any case, *Frankenwald* is so big that several dives are required to explore the entire wreck. The huge dimensions that come into view when you sink down along

the mast are truly impressive—a giant shadow below you, big as a mountain.

The stern is at about 24 meters depth, and all the way aft, you will find the remains of the jury rudder. The railings are embellished with colorful dead men's finger soft coral, and the stern is beautifully intact, apart from the wooden deck, which is all but consumed by shipworm. This is not a disadvantage—it provides an excellent view to *Frankenwald's* innards.

The enormous steering gear can be seen below the remains of the upper deck, and the different compartments and passageways almost form a labyrinth. Several gas tanks are leaning up against one of the walls, and it is easy to

penetrate what is left of the superstructure without any great risk—there is no roof.

Swimming through the galleries on either side of the aft superstructure is a great experience. After you pass the huge bollards, you should swim through one of the openings aft and out into the water. When you turn around, you are met by what is perhaps the most stunning view of the whole wreck. The stern looks almost like the conning tower of a giant submarine, with two elongated openings at the top.

Another great way to get to this spectacular sight is to sink down along the side of the hull just in front

of the aft superstructure and swim through the opening between the hull and the rudder where the propeller used to be—all that remains is the cut-off axle. It is deep, but when you are heading back up, you get to see the majestic stern in all its beauty.

Sometimes pollock are schooling above the stern and around the aft mast. The current can sometimes be quite strong, but normally it is just a slow drift. The mast that stretches towards the light on the surface creates a fairytale-like ambience, a taste of a lost world. It is not hard to understand why some divers come back again and again. *Frankenwald* is simply magical.



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Welcome to the «Golden Dolphin», which will be held from

13 to 16 February 2014

Moscow 150 meters from Red Square.



www.goldendolphin.ru

wreck rap



Even after 74 years on the bottom of the ocean, *Frankenwald* is still largely intact. Even the railings at the stern are still standing

Huge holds, but no cargo

In front of the aft superstructure, ladders on either side of the ship lead down to the main deck where two of the four main holds are located. Huge winches are placed below the mast, which is fitted with six booms—three pointing forward and three towards the stern.

The loading booms are intact and lay over the ghostly, open holds. Looking down only reveals empty darkness, even when aided by a powerful torch. Where



FACT FILE: S/S *Frankenwald*

SUNK	6 January 1940
DIMENSIONS	122 x 17 x 8 meters (399,6 x 54,2 x 27,4 ft.)
TONNAGE	5062 GRT (4478 tons below deck, 3013 net tons)
BUILT	1922, build no. 26 from Deutsche Werft AG, Hamburg, Germany
ENGINE	3-cylinder triple expansion steam engine yielding 346 NHK (nominal horsepower) or 2.850 IHK (indicated horsepower) delivered by Gutehoffnungshütte Sterkrade AG in Oberhausen. Steel propeller, speed 11 knots. T3cy 26 3/16" & 43 3/8" & 70 15/16" stroke = 47 5/15"
CALL SIGN	RDBP, changed to DHTB in 1934, according to Lloyd's register of shipping.
OTHER	Built in steel, 2 masts with 6 booms each, 2 decks, 5 holds. The length of the fo'c'sle (forecastle) is 40ft. <i>Frankenwald</i> was equipped with Wireless DF, Sub Sig, electric lights and was fitted for oil.
DEPTH	7–44m (the deck is at 24-34m)
LEVEL	Intermediate to advanced
POSITION	By Brattholmen in Ytre Steinsund, Sognefjorden on Norway's west coast.
DIVE CENTER	Gulen Dive Resort
WEBSITE	www.divegulen.com

is the iron ore? If it was not salvaged, there could be some truth to the old rumors about the *Frankenwald* mystery.

It has to be said that iron ore is very heavy and does not fill much—and *Frankenwald* has huge holds. The 17m (54ft) width combined with an 8m (27ft) depth gives a total volume of 8,000+ cubic meters, if you assume that the four holds make up about half the length of the ship.

Iron ore weighs about two tons per cubic meter (according to online sources) which means *Frankenwald* should have had about 4,000 cubic meters of cargo—almost half her volume capacity. This means there must have been a salvage operation

at some point. If not, the rumors surrounding *Frankenwald's* cargo and direction of travel might have some truth to them.

Galleries and penetration

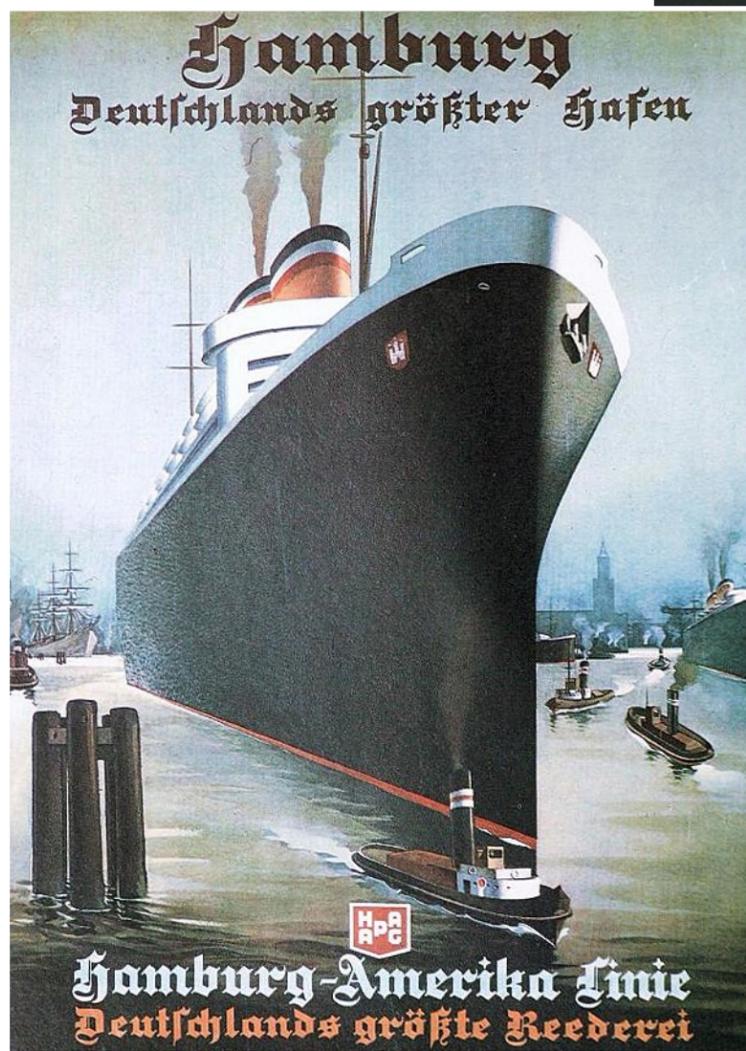
When swimming further forward on the wreck passing the second hold, the superstructure amidships soon comes into view. The ladders lead up to the second deck, and you can choose to swim above the superstructure or go through the gallery on either side along the main

deck. On the second deck, the empty davits of the lifeboats are standing as silent witnesses to the drama that was



played out here on a Saturday evening in 1940.

Most divers choose to do the deepest swim along the main deck first, and then go shallower along the second deck when they return. The superstructure can easily be penetrated, and this is where access to the boilers and engine room is found. There is a lot of silt inside the wreck, so penetration must be done with extreme caution—and naturally, only by



Historical poster featuring the *Frankenwald*



wreck rap



View from above of the bow of the *Frankenwald*

BELOW: The bow of the *Frankenwald* is also a majestic sight. It's a little deeper than the stern, giving divers less bottom time. Still, it's worth a visit!

divers with proper equipment, experience and training.

Further forward is a third, smaller hold that was used for the coal needed to keep the ship running. In front of this is the main superstructure. The bridge and wheelhouse has collapsed, and only about half of the walls remain on the upper deck. The main deck is still in good shape as well as the cabins for the crew and captain. If you penetrate one of these cabins, there is an amazing sight

waiting for you—a bathtub, a toilet and a mirror that is still hanging on the wall.

On the fo'c'sle

The forward part of *Frankenwald* is just as interesting and beautiful as the stern. In front of the wheelhouse, there are two more open holds, and the foremast

is still standing. Even here the loading booms are intact, laying over the holds as if they are just waiting to be hoisted by the deck crew. There is no sign of any cargo or salvage work here either.

On the 40ft-long fo'c'sle (forecastle) everything is intact, and it is difficult to grasp that the ship ran aground and sank; from above, everything looks perfectly all right. The bollards are ready to accept mooring lines, the hatch to the chain locker up front is open, and the windlass and powerful winches seem to be ready to spring into action.

If you have the time and opportunity, *Frankenwald's* bow is also a majestic sight. If you sink all the way to the bottom at 45+m, she towers over you just like on those old HAPAG posters. It is not hard at all to imagine the waves foaming at the straight bow while the crew is making ready on the deck. *Frankenwald* must have been a great sight in her heyday.

It is important to mind your time when exploring the bow section. The deck lies at 34m, and bottom time passes quickly. Before you know it, you may have serious decompression commitment, especially if you took your time getting here. It is wise not to try and explore all of *Frankenwald* on one dive. You will get a much better experience by splitting it up into several dives and concentrating on smaller parts of the wreck. You can easily do four to five completely different dives on *Frankenwald*—that is how big the old lady is.

An explosion of life and color

The wreck lies just deep enough for it to have relatively little fouling. Apart from some huge, pink anemones, sea squirts and some dead men's fingers, it is relatively untainted. Bright red starfish and sea urchins have made galleries,

railings and other features their home, and the little white tubes of bristle worms are everywhere. I have even found scallops on the deck several times, and I still wonder how they get there.

When you are leaving the wreck along the aft mast, you only have to ascend a few meters

before anemones are blooming, completely covering the huge pole. It is a beautiful sight in itself, and it also creates hiding places for a multitude of little fish and other animals.

Blennies, pipefish and decorator crabs are just a few of the species divers regularly encounter on the mast, and if you are lucky, you might even come across a bright red lumpfish steadfastly protecting its orange-yellow ball of eggs. Tiny ghost shrimp fence with their claws to catch food in the current, and incredibly colorful nudibranchs also find their way up here, far above the deck.

Many underwater photographers have been agonizing over that fact that it is impossible to change lenses underwater when they discover the teeming life on the mast. But let me leave you with no doubt—*Frankenwald* is most definitely a wide-angle dive!

Christian Skauge is an award-winning underwater photographer based in Oslo, Norway. For more information, visit: Scubapixel.com



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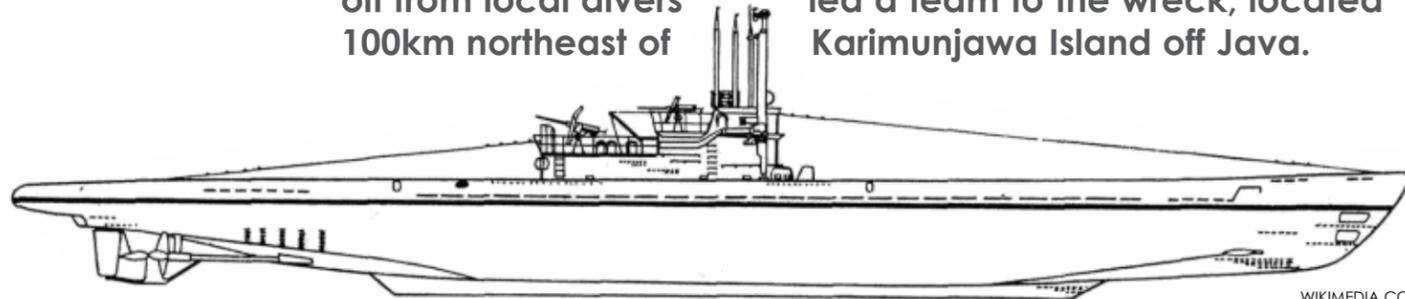
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WWII German U-boat discovered in Java Sea

Indonesian divers have discovered the wreck of a WWII German U-boat, with 17 skeletons of its crew still aboard. A tip-off from local divers led a team to the wreck, located 100km northeast of Karimunjawa Island off Java.



WIKIMEDIA COMMONS

Initial research concluded the sub to be a U-168, a hunter-killer of the German 'Kriegsmarine' that claimed several Allied vessels before being sunk by torpedoes in 1944. Numerous artifacts were also recovered including dinner

plates bearing swastikas, batteries, binoculars and a bottle of hair oil.

"This is the first time we have found a foreign submarine from the war in our waters," said

Bambang Budi Utomo, head of the research team at the National Archaeology Centre that found the vessel. "This is an extraordinary find that will certainly provide useful information about what took place in the Java Sea during World War II." However, he said it was unlikely to be raised due to its sheer size and the cost involved.

Commanded by Captain Helmuth Pich, it sunk three Allied vessels in three missions—one British, one Norwegian and one Greek freighter. Coming under fire from Dutch submarine HrMs *Zwaardvisch* on 6 October 1944, it was lost around 1:30 A.M. with 23 German submariners aboard. Captain Pich survived, along with 26 other crew hands.

The sub was a type IX C/40 launched in March 1942. Monsoon U-Boats operated out of the Dutch East Indies, Jakarta and Sabang between 1943 and 1945. The subs were utilized in the region to cut supplies from Asia to Britain by attacking allied ships along trade routes. Japan occupied Indonesia during World War II, which was then known by its colonial name of the Dutch East Indies. ■



FOURTH ELEMENT TEAM DIVER, Pete Mesley in Truk Lagoon, June 2010. Pete wears: PROTEUS wetsuit.

Last Japanese WWII mega-sub located



WIKIMEDIA COMMONS

The WWII-era Japanese submarine I-400, scuttled in 1946. The Hawaii Undersea Research Laboratory at the University of Hawaii discovered the I-400 by chance in 2,300 feet of water off the southwest coast of Oahu, according to the school

The Japanese submarine was among the largest submarines of World War II, able to carry aircraft and could travel one-and-a-half times around the world without needing to refuel.

The I-400 was one of five Japanese submarines captured by the U.S. Navy at the end of World War II and sent to Hawaii for examination. After the Americans completed their inspections, the submarine was scuttled in the waters off Kalaeloa near Oahu in Hawaii to prevent the technology from being made available to the Soviets who were demanding access to them.

The submarine was only relocated again in August 2013 by the Hawaii Undersea Research Laboratory at the University of Hawaii, but the laboratory did not notify the public until after informing the U.S. State Department and the Japanese government, the university said.

UW aircraft carriers
The Sen Toku I-400-class Imperial Japanese Navy submarines

were submarine aircraft carriers able to carry three Aichi M6A Seiran bomb-carrying aircraft underwater to their destinations. The submarines were designed to surface, launch their planes, then quickly dive again before they were discovered. They also carried torpedoes for close-range combat. The I-400-class was designed with the range to travel anywhere in the world and return. ■

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Edited by
Scott Bennett

Archaeological diving parks to open in Greece

Both parks located near Pylos in the southwestern Peloponnese. Wrecks date from Roman, Byzantine and medieval periods.



After a joint decision between the Ministries of Culture and Mercantile Marine, Greece has announced the creation of its first two diving parks. Located near Pylos in the southwestern Peloponnese, both will enable visitors the opportunity to explore ancient shipwrecks and underwater archaeology.

The first park is located at the islet of Sapienza, where archaeologists discovered the remains of ancient trading vessels dating to the Roman, Byzantine and Medieval periods. Although the ships' hulls have long since disintegrated, their cargo remains scattered across the seabed, including granite pillars from the Middle East, amphorae and stone sarcophagi.

The other is situated to the north in the Bay of Navarino and features a number of 19th century shipwrecks. These include the remains of three Turkish ships sunk by allied British, Russian and French forces during the Battle of Navarino in 1827. The battle was a vital engagement in the Greek War of Independence and the last major naval engagement to be fought entirely with sailing ships. In addition, the tanker *Irene Serenade* sunk here in 1980 and is one of largest shipwrecks in the world accessible to visitors.

According to Marketing Greece, a representative for the Greek tourism industry, the parks are due to be open by the summer of 2014. ■

Now you may also use your electronics during take-off and landing

The U.S. Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) have both recommended that most devices should be allowed as long as they are in airplane mode.

The European Aviation Safety Agency (EASA) approval of the use of electronic devices during take-off and landing follows United States' Federal Aviation Administration's ruling in October that personal electronic devices such as e-book readers, tablet computers and portable games consoles could be used "during all phases of flight". Mobile phones will also be allowed, as long as their cellular radios are disabled or they are put into "airplane mode".

Larger electronic devices, such as laptop computers, will need to be stowed during taxiing, take-off and landing due to their bulk.

The devices will have to remain in 'Flight Mode' or 'Airplane Mode' and transmitting capabilities will have to be disabled. It will be to the discretion of each airline to use this guidance and change its policy. In this case, the airline will have to inform the aviation authority of the country in which it is registered.

Next – Bluetooth, wi-fi, mobile phones

EU Transport Commissioner Siim Kallas has asked the EU's Aviation Safety Agency (EASA) to accelerate the review of the safe use of transmitting devices on board -

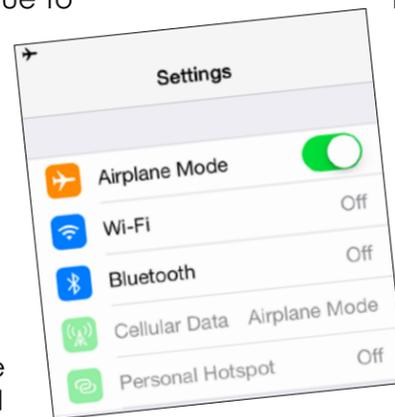
with new guidance to be published in the coming months.

In general, airlines do not currently allow phone or Wi-Fi connection from the time the aircraft doors have closed until the aircraft has arrived at the gate, and the doors are open again.

Connecting to the network is, today, only possible in specially equipped aircraft that are able to connect you with a network (this can be permitted at cruising altitude). In those cases, a passenger does not connect to the ground

network, but to a safety certified on-board system. There are only few aircraft equipped at the moment, but we may expect this to expand in

the coming years. Where aircraft are equipped to provide this service, the Commission has recently taken telecoms decisions to enable the provision of 3G and 4G to provide better connections for transmitting devices. ■



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Donsol whale sharks make comeback

Philippines tourist town reports rise in shark interactions. Area renowned as one of world's whale shark hotspots.



The World Wide Fun Nature (WWF)-Philippines has reported a marked rise in interactions with the giant fish in Donsol in the final quarter of 2013, resulting in increasing tourist numbers.

"For two years now, whale shark sightings in Donsol have been scant during the normal December to May season. In October 2012, however, we noticed they came early. This November, we have been posting more and more interactions," said Donsol boat association president, Lambert Avisado. "It seems that our Butandings have returned, but that they have changed their schedules," he added.

"We saw this drop in numbers once before, about 12 or 13 years ago," according to Butanding Interaction Officer (BIO) association president, Joel Briones. "Since there were few whale sharks that year, tourist numbers plummeted. Since early November, however, we have recorded almost daily

sightings. Word is getting around. Tourists are starting to arrive," he added. Fluctuations in shark numbers have dictated the success and failure of local tourism. Historically, Donsol's whale shark season has coincided with planktonic blooms.

"Whale sharks congregate in Donsol because of all the food," said WWF-Philippines Project Manager Raul Burce. "Plankton blooms occur when nutrients are discharged by Donsol's rivers. To ensure that the Bay remains healthy, we must protect Donsol's rivers," he added.

Three hundred eighty whale sharks have been identified in five years of WWF research in the area. For years, Donsol has been renowned as a whale shark hotspot, hosting one of the world's largest whale shark aggregations. Under normal circumstances, peak season tours promise from four to six assured interactions per trip. ■

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India's first live-aboard to do volcanic diving

The *Infiniti*, India's first liveaboard yacht, has been launched, opening up avenues for scuba divers to explore the waters of the Andaman Islands. A part of India, the Andaman Islands are one of the world's newest diving destinations. After a 50-year period of virtual isolation, the Indian government has decided to allow limited, environmentally conscious tourism development in the islands. Situated 200 kilometres away from the nearest Asian mainland, only 26 of the 576 islands are inhabited.

Constructed in Thailand under the close supervision of the Royal Institution of Naval Architects (RINA) from Italy, the 40m vessel features luxuriously appointed guest rooms with ensuite bathrooms, an indoor dining room, kitchen, a diving platform and multiple relaxation areas including a large sun deck and lounge.



The *Infiniti* liveaboard is India's first

Diver numbers will be limited, offering a more intimate experience.

Included in the itinerary is Narcondam Island in the Andaman Sea. An extinct volcano, the island was immortalized by diving pioneer Jacques Cousteau, who was the first to dive in these waters. Now a wildlife sanctuary, its extreme remote-

ness and number of endemic species has long captured the imagination of travellers and explorers. With fringing reefs, steeply sloping walls, coral pinacles, plus the unusual jet-black volcanic walls of Barren Island, the Andamans has something for every diver. ■

For more information, visit: infinitleiveboard.com



Irish Underwater Trail

Planned Blueway Trail will allow participants to snorkel in safe, controlled environments.

Mention snorkeling and Ireland isn't a destination that exactly leaps to mind. Despite possessing some 4,000 miles of coastline, the perception of Irish water as being cold and murky isn't exactly encouraging for snorkellers. However, the Irish Underwater Council hopes to dispel that notion with its planned Blueway Trail. Featuring a network of 'free water trails' at individual sites, people will be able to participate in activities such as snorkelling and

kayaking in a safe, controlled environment.

80 clubs

With a total of 80 diving clubs around Ireland, the council is seeking to increase the number of snorkellers nationwide. "We have really looked at snorkelling as next adventure sport," said Louise Gilligan, a full-time administrator and diver with the Underwater Council. "It's

fun and family friendly. You could learn snorkelling with your children," she added.

The Blueway now has Fáilte Ireland, the Ireland Canoe Union and three rural development companies on board, as well as the National Trails Office. A total of five sites, five canoe trails and snorkel trails were chosen on the Mayo-Galway coastline, with an official launch

planned for early in 2014.

Risk assessments have been conducted on the sites and signage is currently being worked on. It is hoped local guides will be utilized to bring people on guided snorkels. During a trial on Achill island during the summer, 350 people paid for guided snorkel trails over a two-month period, confirming interest in the sport. ■

Get your tickets now for the TEK Party of the Year!

Plans continue apace for May's TEK DiveUSA 2014. On Friday night (May 16) there is going to be a big party and BBQ at the Courtyard Miami Aventura Mall (the official TEK DiveUSA hotel).

"I am really excited about this," stated Rosemary E Lunn, event co-organiser. "The EUROTEK and OZTEK parties always go down a storm. Where else do you get the chance to hang out with global leading explorers, divers and speakers?"

At US\$29.95, tickets are selling fast via www.tekdiveusa.com, and everyone who is coming to this advanced and technical diving conference has already booked their BBQ tickets. It promises to be a not-to-be-missed awesome evening.

Rumour has it that Light Monkey has

challenged Lust4Rust to a cook-off.

All the speakers and exhibitors are staying onsite at the Courtyard Miami Aventura Mall. If you want to join them, simply book your room via the TEK DiveUSA website. You will benefit from a great rate of US\$139 per night for one or two guests. This rate also includes a continental breakfast, parking and Internet access. Please note that you can *only* get this price via the TEK DiveUSA website.

There will be something for every hungry diver wanting to know more at TEK DiveUSA 2014. If you want to hear about adventures from today's foremost explorers and expand your diving horizons, secure your weekend pass for US\$129.95 now via www.tekdiveusa.com. ■

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Join Rod Roddenberry, the Roddenberry Dive Team, and X-Ray Mag for an eight-night tropical escape to Volivoli Beach Resort: April 28 — May 8, 2014.

Join Rod Roddenberry, the Roddenberry Dive Team, and X-Ray Mag for an eight-night tropical escape to Volivoli Beach Resort. We will explore some of Fiji's most famous and exhilarating dive sites in Fiji's Bligh Waters and the famous Vatu-I-Ra Passage. Divers will see first hand why Fiji is known as the "soft coral capital" of the world!

Professional photographer and X-Ray Mag's contributing photographer and editor Matthew Meier will also be on hand offering underwater photo workshops and image

critiques to help improve your underwater photographs.

Divers will have the option of adding a day trip to Beqa Lagoon for their world famous shark dive (at an additional cost).

This wonderfully relaxed and remote beach resort is located in a truly unspoiled and spectacular corner of Fiji. The white sandy beaches, turquoise water, mangroves and coral reefs are just waiting to be explored. Divers and non-divers will enjoy this coastal escape with the perfect blend of relaxation, water sports,

cultural activities, village tours, spa appointments and sun-bathing on the beach and by the pool.

The trip is escorted by Jennifer Black of the Roddenberry Dive Team and Matthew Meier of X-Ray Mag.

For full trip details, please visit the RDT Events page at: <http://roddenberrydiveteam.com/events/events.html&emode=M&E=159&2771>

Contact RDT at: diveteam@roddenberry.com



THIS PAGE: Scenes from Fiji's lush coral reefs; Rod Roddenberry of RDT (upper right inset)