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JULY 2021
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RICHELIEU RICHES

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WRECKS OF AKBAS BAY

WWI victims of British sub E11 in the Dardanelles

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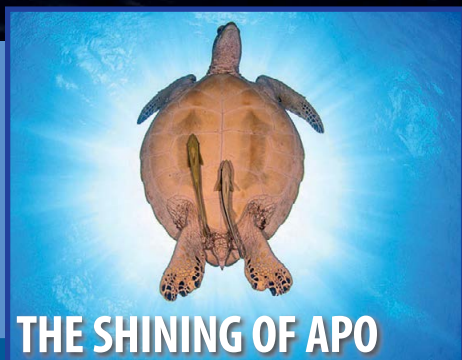
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TANKED UP



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Many Magic Mountains

A SUBMERGED RIDGE that starts only 6m beneath the surface marks the appearance of a pristine hard-coral garden. We follow a series of broad steps down to around 25m, noting on our way the reef walls clustered with exotic critters, a constant distraction for the photographers.

At the end of the ridge, where the current picks up a little, we find barracuda, whitetip reef sharks and the abundant Napoleon wrasse that come here to breed. Reef mantas join the giant oceanic rays that come in to enjoy the cleaning stations...

I haven't actually dived Magic Mountain, but I now feel as if I have. As for so many of us during this endless pandemic, my imagination has had to go into overdrive to cope with the shortfall in actual diving.

Also known as Shadow Reef, the dive-site lies off the island of Misool in Raja Ampat, Indonesia. The crew of the *Samambaia* liveboard tell us that they've grown accustomed to divers with 500-plus dives under their belts surfacing to declare: "That is the best dive I have ever done!"

My description above is compounded from several in this month's *DIVER World Liveaboards Guide*, for which we asked boat-operators to share with us their guests' favourite sites – the ones they always insist on diving. Enough of those in South-east Asia plumped for Magic Mountain to convince me that it should be high on my must-dive list.

We decided to produce the guide following the success of our extended *Local Intelligence* features, of which we've done three to date. These ask resort-based dive-pros to describe their favourite dive-sites, and to make their case as being worthy of your attention.

This approach has proved popular, but by its nature it tends to focus on sites close to, or at least easily accessible from, shore resorts. So we've turned to the players among the dive-liveboard operators to include the cream of those places out of reach of day-boats.

AT THE SAME TIME, we decided to take the opportunity to provide a handy at-a-glance guide to the vessels involved – of which there are 95.

This four-page chart offers all the basic information you need on construction, dimensions, decks, cabins, crewing, tenders, itineraries and so on, highlighting the possibilities you should explore for the part of the world that interests you – it's colour-coded by region. And every liveboard is pictured in the following section about top dives.

A key column is the one showing each operator's website, because it's there that you'll find the refinements, pricing and the all-important safety features that I hardly need to tell you should be considered when deciding where to place your trust while afloat.

I'm dreaming of Magic Mountain, and for all of you who haven't had the chance of such spectacular warmwater diving for well over a year: keep the faith, browse our guide and consider booking ahead while there are berths to be had. Imagine how good that first dive will feel!

FIRST IN



STEVE WEINMAN, EDITOR

Dive Malta Gozo Comino

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Published monthly by Eaton Publications Ltd,
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DIVER is distributed by Seymour Distribution Ltd,
2 East Poultry Avenue, London EC1A 9PT
and printed by Pensord Press Ltd,
Tram Road, Pontllanfraith, Blackwood, NP12 2YA.

the magazine that's straight down the line...

CONTENTS

FEATURES

18

On the Rock.....
Thailand's outstanding site? Fishy Richelieu Rock



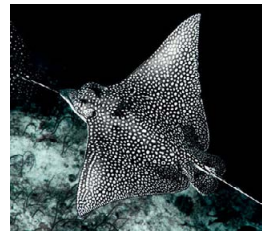
23

Coral Reefs' Deepest South
Mind-blowing exotic fish-hunt on Lord Howe Is



29

World Liveaboards Guide 2021...
Part One: 95 leading vessels at a glance...



34

World Liveaboards Guide 2021...
Part Two: The guests' most magical dive-sites!



50

Relics of the Great Adventure.....
Diving WW1 sub HMS *E11*'s victims in Akbas Bay



55

Tanked Up
Dive-boat adventures with Ben Thompson

60

The Story of Apo.....
Model island in the Philippines – we need more



COVER IMAGE: *Conte Max*
liveaboard in the Maldives.

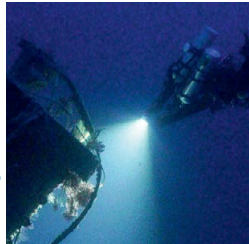
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CONTENTS

REGULARS

- 2** **First In**
Editor's view
- 6** **News**.....
Major wreck ID dives in Malta and Sweden
- 17** **Beachcomber**.....
Meet the Scuba Magician!
- 59** **Trewavas**
Louise has been diving in Devon
- 64** **Review**.....
Cave-diver Rick Stanton's new book *Aquanaut*
- 66** **Diver Tests**
Extended appraisal of the Garmin Descent Mk2i
- 71** **Just Surfaced**.....
New but untested products
- 78** **Deep Breath**
"I got chills, they're multiplying" – beating the cold



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PLUS

- 74** **Classified Ads**
- 76** **Dive Holiday Directory**
- 77** **Dive Centre Directory**
- 77** **Advertisers' Index**



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The wreck of HMS *Urge*.

TIMMY GAMBIN / UNIVERSITY OF MALTA / HERITAGE MALTA

TECHNICAL DIVERS have proved conclusively that a WW2 submarine wreck discovered 108m deep off Malta in 2019 is HMS *Urge*.

Hi-res photo and video footage taken close-up has revealed the vessel's name embossed on its conning tower.

Two dives with 20-minute bottom times were carried out by a team of six in a collaboration between the University of Malta, Heritage Malta and the Superintendence of Cultural Heritage.

Aside from the name, a detailed 3D digital scan of the hull proved to match *Urge's* dimensions exactly.

The wreck had been found 18 months ago by marine archaeologists using an AUV. The find was reported in **DIVER** in 2019, but the follow-up visit by scuba-divers had been delayed by the Covid pandemic.

Earlier in 2019, **DIVER** had also reported on the discovery near Sicily of Italian light cruiser the *Giovanni Delle Bande Nere*. Torpedoed by *Urge* in April 1942, she was one of many of the submarine's mainly Italian victims, also including the battleship *Vittorio Veneto*.

HMS *Urge* was part of the Royal Navy's 10th flotilla, based in Malta while the island was under intense siege from German and Italian forces.

Three weeks after she had sunk the cruiser, *Urge* was among the many vessels ordered to transfer to Egypt.

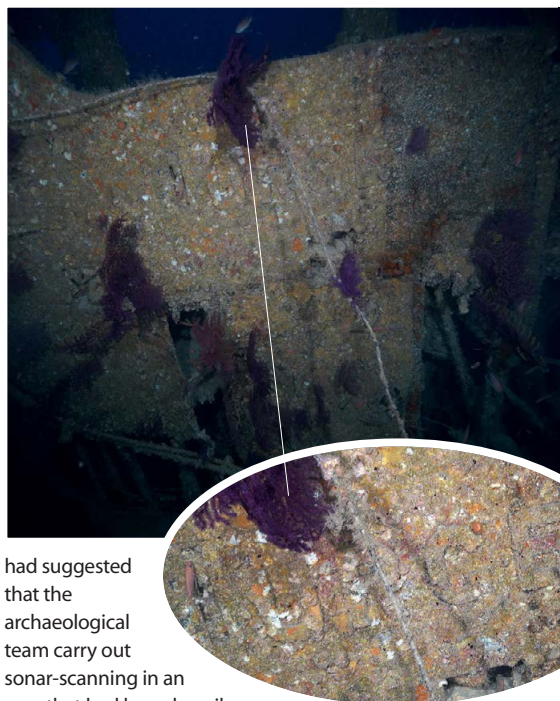
She left Valletta on 27 April with 32 crew, 11 other naval personnel and a war correspondent aboard, but was declared missing 10 days later, having failed to arrive in Alexandria.

She was believed to have struck a mine off Malta.

The wreck was found six miles east of the island during the Project *Urge* survey, conducted by the University of Malta and RPM Nautical Foundation.

Francis Dickinson, grandson of *Urge's* captain Lt-Cdr EP Tomkinson,

Dives on *Urge* sub in Malta torpedo conspiracy theory



Pictured: Diver off the conning tower.

Left: The conning tower – the inset shows the letters *URGE* just below a gorgonian.

had suggested that the archaeological team carry out sonar-scanning in an area that had been heavily mined by German forces.

The AUV footage had revealed a large section missing from the bow, suggesting that a violent explosion had occurred at the surface.

The rest of the submarine was intact, upright on the seabed oriented towards Egypt and with its deck-gun facing forward.

Britain's Ministry of Defence had confirmed the wreck as that of HMS *Urge* and that it should be treated as a war grave, though a memorial ceremony planned for April 2020 was later postponed to April 2022 to coincide with the 80th anniversary of the sinking.

The recent dives end speculation

that HMS *Urge* had been sunk by Italian aircraft in Libyan waters while on a secret mission.

Belgian wreck-diver Jean-Pierre Misson had claimed in 2015 to have found the wreck off Tobruk, saying that there had been a conspiracy to cover up the operation.

This had upset descendants of the 44 men who died aboard *Urge*, including Dickinson, because it implied that the orders to proceed to Egypt had been disobeyed.

"We already knew this was the wreck of *Urge* but to see the letters so clearly gives important further clarity," Dickinson told the *Times of Malta*.

"The commitment of the University

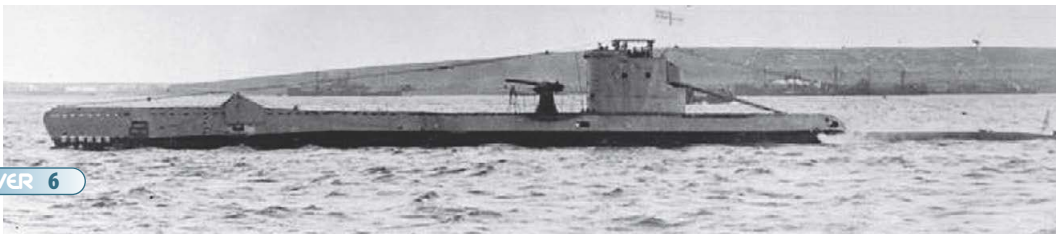
of Malta team to this work means a lot to the families of those lost on HMS *Urge*."

Marine archaeologist Prof Timmy Gambin, who led the dives, told the paper that the mine damage could be seen, as expected, on the starboard waterline. "The blast penetrated both layers of the submarine, which means water went inside," he said.

"This means that any organic material – like fabric and human remains – would have been preserved only if covered in silt."

He added that he and the other divers had been within metres of the wreck but operated on a strict look-don't-touch basis.

The *Urge* name on the conning tower had been partially obscured by a gorgonian that could not be disturbed because it was legally protected. ■



TIMMY GAMBIN / UNIVERSITY OF MALTA / HERITAGE MALTA

Diver landmark Darwin's Arch collapses

THE ICONIC WRECK

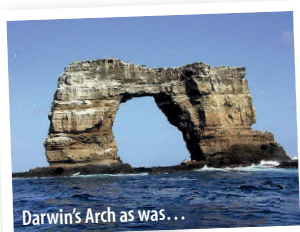
formation Darwin's Arch in Galapagos, a landmark for visiting scuba-divers over the years, has collapsed through natural erosion.

Ecuador's Ministry of Environment & Water confirmed the demise of the natural structure on 17 May.

The arch lay 1km south-east of uninhabited Darwin, the northernmost island in the Galapagos archipelago, and would at one time have been connected to it.

Remote Darwin is "considered one of the best places on the planet to dive and observe schools of sharks and other species", said the Ministry.

The feature was named after Charles Darwin, who studied Galapagos wildlife from his vessel the *Beagle* while forming his theory of evolution. It is situated in an area of



Darwin's Arch as was...



...more Darwin's Pillars now.

MINISTRY OF ENVIRONMENT

notable seismic activity that could have stressed the structure.

Although the lintel of the arch has fallen into the sea, what were the two supporting columns remain.

One side of the site includes an 18m-deep viewing platform.

Diver Jason Borkland of Fins Attached Marine Research & Conservation, who was aboard the research vessel *Sharkwater* the day before the collapse, posted pictures of

the then-intact arch, describing them as "probably the last photos of an iconic symbol".

"Darwin's Arch is likely the most famous dive-site in Galapagos, and is the one that guests look forward to," write the dive-team of the *Galapagos Master* this month in the 2021 **DIVER World Liveaboard Guide** (page 29). ■

NOW UK'S SHARK-FIN TRADERS ARE CUT OFF

A LEGAL LOOPHOLE that before Brexit had allowed shark-fin traders to operate with impunity in the UK is set to be closed. New law will require all imported and exported fins to remain attached to the shark's body and be traded as a whole commodity.

The anticipated government announcement will effectively end the UK's long, prominent participation in the global shark-fin trade.

Describing that involvement as "dead in the water", the charity Bite-Back Shark & Marine Conservation welcomed the news.

Complying with EU legislation, the UK had allowed anyone to carry up to 20kg of dried shark fins into and across European borders as part of their personal import allowance.

Long exploited by traders, the loophole was exposed by Bite-Back six years ago, and its campaign No Fin To Declare called for the law to be changed after Brexit.

The government was said to have decided to act following a series of meetings between Bite-Back and environment minister Zac Goldsmith.

"This news puts the UK at the forefront of shark conservation and represents a further blow to a global industry that is forcing sharks closer to the brink of extinction," said Bite-Back campaign director Graham Buckingham.

"We applaud the government for using Brexit to side-step this archaic EU legislation and instead lead the



world in the conservation of sharks and the oceans. We hope and believe this announcement will encourage other European countries to impose similar constraints."

Global fisheries kill 73 million sharks a year, says Bite-Back. One in four species is now classified as either Endangered or Threatened, with populations of species including great white, hammerhead, oceanic whitetip and thresher sharks reduced to a fraction of numbers 50 years ago.

The escalating price of shark fins, consumed mainly in soup in Asia, has created what Bite-Back describes as a "marine gold rush" in recent years, with fins often cut from living sharks that are then thrown back to die.

The until-now legal 20kg individual import allowance is worth around £3600 on the black market and makes

more than 700 bowls of shark-fin soup, according to Bite-Back.

It says that for years the UK has exported around 25 tonnes of shark fins – about £90 million-worth on that scale – to Spain for processing and export to the Far East. It features with Spain, France and Portugal among the world's top 20 shark-fishing nations.

Wildlife TV presenter and Bite-Back supporter Steve Backshall described the news as "a fantastic outcome for shark conservation and the culmination of years of campaigning from Bite-Back. The government's decision to effectively ban the trade in shark fins will be significant in helping to restore the balance of the oceans.

"At the same time it sends a clear message to the world that shark-fin soup belongs in the history books and not on the menu." ■

Mammoth bone find delights Florida dive-pair

IT'S NOT UNUSUAL for scuba-divers to come across prehistoric animal remains, particularly in parts of the USA and Russia. But a woolly mammoth bone, especially of the size found by a buddy-pair in Florida in late April, is a rare discovery.

Henry Sadler and Derek Demeter regularly search for such remains in the state's inland waters, and were diving the Peace River near the town of Arcadia.

Though murky and populated by alligators, the river is popular with fossil-hunting divers.

It was Sadler who found the 1.2m leg bone of a Columbian mammoth (*Mammuthus columbi*), a creature that became extinct more than 10,000 years ago.

The distant relative of the modern elephant roamed prehistoric savannah grasslands for more than 2 million years, and the divers speculate that their find could be 100,000 years old.

"Amazingly, it is almost completely undamaged and very well mineralised," said Sadler of the bone, which was a humerus from the upper part of a mammoth's front leg and weighed in at 23kg.

Mammoths could weigh up to 9 tonnes and stand 4m high. The two amateur paleontologists had only ever found the animals' teeth in the river before.

The day they found the leg-bone was not over, however – the divers went on to make another find that, although incomplete, they described as the "holy grail" of Florida fossils – the top third of the tooth of a sabretooth tiger. ■



Henry Sadler with the mammoth bone.

DIVERS IDENTIFY 17TH-CENTURY BALTIC WRECKS

TWO WELL-PRESERVED 17th-century wrecks found 18 months ago at Vaxholm in Sweden's Stockholm Archipelago have now been positively identified – and they are not the ships they were first thought to be.

The vessels are not sister-ships of the famed *Vasa*, the earlier 17th-century warship displayed in Stockholm, but they are warships – the *Apollo* and the *Maria*, both built in 1648 and scuttled in 1677.

The finding of the wrecks was reported in **DIVER** in 2019, with the project manager, archaeological diver Jim Hansson of the Vrak wreck museum, saying at the time: “The detective work has just begun”

The discovery remains historically significant. “The type of ship that *Apollo* and *Maria* represent has never before been archaeologically documented and they have lots of knowledge to convey,” says Hansson.

Both vessels carried troops to Poland during an invasion by the Swedish King Charles X, and saw action in the battles of Mön in 1657 and Öresund the following year.

The identification was made by dating timber samples, measuring deck beams and frames and scouring the archives. Analysis revealed that the oak used to build the ships had been felled in the winter of 1646/47, indicating that construction would have begun one or two years later.

“When we dived on the ships we got the *Vasa* feeling,” said Hansson.

“The timber was huge, so a possible trace was that these were some of *Vasa*’s sister-ships that we knew were sunk off Vaxholm.

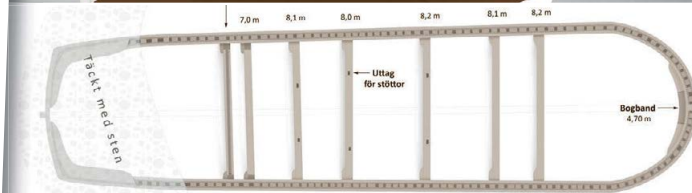


ANNELI KARLSSON / SMTM

Collecting a timber sample.



VRAK / SMTM



Above: Reconstruction of the *Apollo*, showing the section discovered.



JIM HANSSON / VRAK / SMTM

The curved timbers called ‘knees’.



JIM HANSSON / VRAK / SMTM

Jim Hansson inside *Apollo*’s hull.



PATRIK HÖGLUND / VRAK / SMTM

Jim Hansson on the *Maria*.



Patrik Höglund on *Apollo*’s starboard side.

“But the dating didn’t match. *Vasa*’s sisters *Äpplet*, *Kronan* and *Scepter* were built shortly after *Vasa*’s sinking in 1628. We wondered if the samples we had taken could possibly come from parts of the ships that were repaired, in that case in the 1640s.”

Further timber samples taken on later dives showed that the oak from one ship came from northern Germany and the other from eastern Sweden. *Apollo* had been built in Wismar in Germany, and the bigger *Maria* in Stockholm.

“We could state that one ship was 8.7m at the widest point,” said Hansson of the divers’ measurements.

“Because we had both the width and the shape of the ship, we were able to estimate the length to be about 35m... In the end, we had all the pieces of the puzzle.”

According to deputy project manager Patrik Höglund, the idea of using outsize ships such as the 69m *Vasa* had died with their champion King Gustav II Adolf in 1632. “After his death, warships of medium size were

built instead, because they could be used for many different things and were more seaworthy than those large, awkward ships.

“The ships were not very large, but very heavily built to withstand the weight of their heavy artillery.

“The ships’ firepower increased in relation to their size, of which *Apollo* and *Maria* are good examples.”

The archives indicate that further wrecks well-preserved by the Baltic’s brackish waters have yet to be found at Vaxholm, including *Vasa*’s sister-ships and captured Danish vessels.

Investigative diving is continuing in a collaborative research programme between Stockholm University and the Wreck/State Maritime & Transport History Museums and Finland’s National Board of Antiquities. ■



ANNELI KARLSSON / SMTM

Jim Hansson and Patrik Höglund.

Divers likely to be spreaders of coral-killer

TRANSMISSION OF A DEADLY hard-coral disease to isolated dive-sites in the Cayman Islands has led the Department of Environment (DoE) to suspect that scuba divers and boat-operators have been unwittingly responsible.

The highly infectious Stony Coral Tissue Loss Disease (SCTLD), originally reported in Florida in 2014, was first identified in Grand Cayman last June at a site called Penny's Arch near Rum Point.

Since then it has spread along most of the 22-mile-long north coast, and more recently there have been isolated outbreaks on reefs as much as two miles apart in the north-east and south-east of the island.

Now a new front has appeared at the isolated Anchor Reef dive-site in the south-west, making intervention to halt the spread of the infection even more challenging.

SCTLD, which first appears in the form of pale lesions, had originally been thought to transfer between reefs on currents.

Now, despite a marked reduction in

diving activities with the lack of tourists during the Covid pandemic, it seems likely that local divers' equipment is being contaminated and also that operators' boats are shifting the disease in their bilges.

Addressing a Cayman Islands Tourism Association meeting on 27 May, as reported in the *Cayman*

of it unhealthy. By April this year 57% of the site's corals had died, and the disease was still progressing.

Some hard corals, such as elkhorn and staghorn, appear to be immune to SCTLD.

Sister-islands Cayman Brac and Little Cayman have shown no signs of infection, and under new DoE

guidelines divers taking their own gear there from Grand Cayman must have it thoroughly disinfected.

Divers and operators in Grand Cayman are also being discouraged from making multi-site trips between infected and uninfected areas.

The DoE has been marshalling divers to apply antibiotic paste to infected coral reefs, the only means so far identified of containing the spread of SCTLD.

The disease has caused extensive damage to corals in Florida, and in the Caribbean has been reported in Mexico, Jamaica, Sint Maarten, St Thomas and the US Virgin Islands.

The Cayman Islands have remained closed to all scheduled international passenger flights throughout the coronavirus pandemic. ■



Signs of SCTLD on a brain coral.

Compass, DoE deputy director Tim Austin said that discovery of the disease at dive-sites unconnected to the original line of infection had led to a "real horrible inkling that this might be related to diving practices".

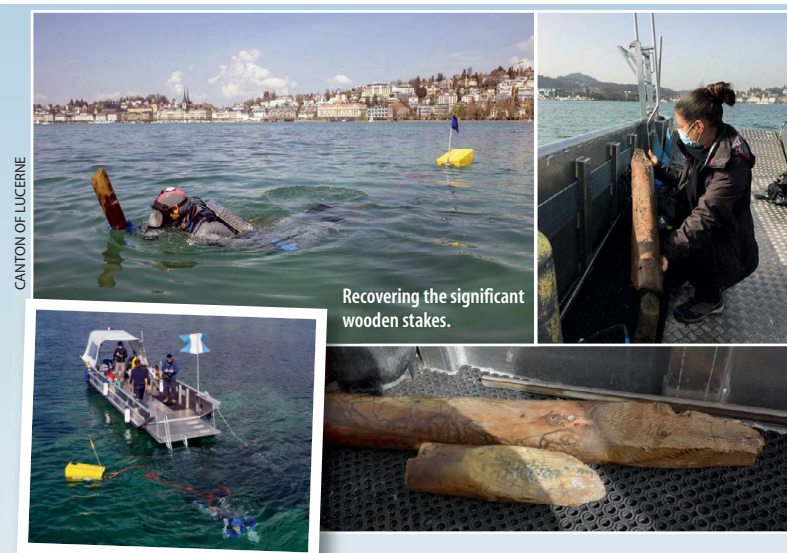
He said that when the disease had first been spotted at Penny's Arch 10% of the hard coral had died, with 35%

DIVERS COME UP WITH A STAKE IN THE PAST

WELL-PRESERVED wooden stakes recovered by scuba-divers in Switzerland have shown the city of Lucerne to be 2000 years older than had been previously thought.

Lucerne lies in the German-speaking part of central Switzerland on the lake that shares its name. Last year plans to dredge the thick lake mud to lay a water pipeline offered underwater archaeologists their first opportunity to investigate beneath the surface, and a team of divers from Zurich began work on behalf of the Canton of Lucerne in December.

Working at depths of only 3-4m the divers checked and documented the trenches through to February,



CANTON OF LUCERNE

Recovering the significant wooden stakes.

and found traces of a prehistoric settlement in the form of some 30 timber pilings and five ceramic shards that analysis showed to be from around 3000 years ago.

The evidence of the building of stilt houses means that the city, usually described as mediaeval, in fact dates back to the Bronze Age.

"The city of Lucerne was founded 800 years ago, but its history is older," says the canton. A few scattered

Stone and Roman Age finds had previously suggested that Lucerne "did not arise out of nothing" in the early Middle Ages, but the lake mud had held the secrets of its origins.

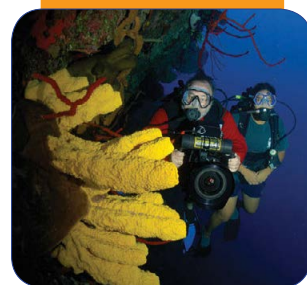
Around 1000 BC when the village was built on dry land the lake water level would have been 5m lower.

2021 is the 10th anniversary of "prehistoric pile dwellings around the Alps" being officially added to the lists of UNESCO World Heritage sites, points out the canton. ■



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Death of first Underwater Photographer of the Year

BRITISH UNDERWATER PHOTOGRAPHY pioneer Phil Smith has died after a short illness, at the age of 89.

Smith was a founder-member of one of the small number of diving clubs formed in 1955 – the inaugural year of the British Sub-Aqua Club.

Bournemouth & Poole Branch (No 6) quickly became a significant presence on the national stage, not least because of Smith's enthusiasm, say former committee-member Adrian King and Reg Vallintine of the Historical Diving Society, who provide the overview of Smith's life below.

They describe him as "an inspirational figure in the early stages of the British sport-diving scene – BSAC can be rightly proud of him as a founder-member."

A professional photographer, Phil Smith started scuba-diving when he was 24. He sat on the organising committee of the early BSAC Diving Officers' Conferences, which were aimed at standardising working practices and promoting sports-diving safety.

Branch-members initially focused on spearfishing, and Smith wrote a series of technique articles for the club magazine.

For a number of years he managed the British spearfishing team,

including taking it to Brazil at a time when international recreational travel was unusual. He and former BSAC Chairman Kendall MacDonald co-authored the book *Spearfishing in Britain*, published in 1962.

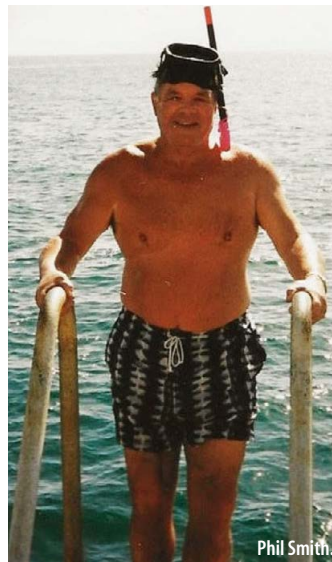
Fascinated by the new field of underwater photography, in 1965 Smith won all the British categories at the first International Festival of Underwater Film, and became British Underwater Photographer of the Year.

He collected many more awards for his underwater photography and film-making during the 1960s, often based on his diving in Mediterranean and other overseas waters.

A pioneer of underwater cine film, he produced *Down on the Durleys*, featuring a rocky section of Poole Bay.

He was also principal photographer for the 1965 GLAUCUS underwater habitat project, in which two members of his branch lived for a week 10m down in Plymouth Sound.

Smith was elected onto the BSAC National Committee in 1966 and would become a judge for a series of underwater photography competitions. That same year he co-founded *Underwater World* magazine, the first British diving monthly with a full-colour cover. He also contributed regularly to *Triton*, which would later become **DIVER** magazine.



Phil Smith.

In 1969 Smith and his wife Annie were involved in a road accident, the effects of which would limit his diving activities. Despite this, and being confined to a wheelchair following a stroke in 2013, "he remained cheerful, with a fund of stories of the old days."

Annie Smith, who had also been a major contributor to Bournemouth & Poole Branch activities, had died only months before her husband, after contracting Covid-19.

Phil Smith is survived by his son Steve and daughter Melanie. ■

Ex-intelligence chief dies on 40m Dahab dive

A FORMER HEAD of Ukraine's foreign intelligence service has died in a diving incident in Dahab in Egypt.

Viktor Hvozdz, 62, was reported to have been a keen diver. He was at first stated to have been on holiday at the northern Red Sea resort, but later he was described as a long-term resident.

The fatal incident occurred on 28 May. Hvozdz was diving with a Ukrainian friend, who said he had tried but failed to stop his buddy making a fast ascent from 40m.

When the friend reached the surface he found Hvozdz still alive. He and an Egyptian instructor managed to get him ashore, where CPR was administered, but he was declared dead on his way to hospital.

A *post mortem* was being carried out and the public prosecutor's office ordered an investigation, questioning the friend, the instructor and the owner of the dive-centre that had provided the equipment, which was being examined by the Chamber of Diving & Watersports (CDWS).

Hvozdz was said to hold "an international licence that allowed him to dive at a depth of 100m".

Reaching the rank of Lt General, Hvozdz was a military intelligence officer from 1981. From 1995 he worked for Ukraine's Ministry of Defence, heading its main intelligence directorate from 2008 to 2010.

He served in the SBU security service, which spawned the SZR, the foreign intelligence service that he headed from 2014 to 2016.

He also started and later became president of geopolitical studies centre Borysfen Intel, and achieved a PhD in military sciences in 2019. ■



Hvozdz celebrates his birthday a few days before his death.

John Coe and Aquarius venture down south

TWO ORCAS WERE spotted off west Cornwall in early May – the first time any of the UK's only resident population, linked to Scotland's west coast, has been confirmed as visiting English waters.

The sighting was made near the Minack Theatre at Porthcurno near Land's End, according to Cornwall Wildlife Trust (CWT)'s Seaquest Southwest marine team.

The orcas were identified as known individuals "John Coe" and "Aquarius" by the shape and notches in their dorsal fins, and patches of colour located near

their eyes and on their backs.

They belong to the "West Coast Community" pod of eight killer whales, some of which have not



The orca John Coe.

been seen in recent years.

No calves have been observed since orca monitoring began in the 1990s, and it is feared that the pod is at risk of extinction through factors including exposure to banned PCB chemicals, which can render them infertile.

"This is the first official orca record in our databases with associated photos in over a decade, and further proof of the value of our coastal seas in supporting these magnificent creatures," said CWT marine conservation officer Abby Crosby. ■



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RED SEA HOLIDAYS FOR TWO MORE COVID DIVER HEROES

EMPEROR DIVERS has named two more in its series of Covid Diver Heroes, both of whom win free Red Sea liveaboard holidays when they are in a position to take them.

The sixth winner was not only the youngest but also the first not to be a medical professional. For the community spirit she had shown during the coronavirus pandemic, 13-year-old diver Lily Lancaster was nominated by uncle Martin Lancaster:

"Throughout the year Lily does random acts of kindness by giving out chocolates, flowers and gifts to random people to make them smile," he wrote. "During these trying times Lily has gone above and beyond to give our community high spirits by making key-rings with kind messages on them and leaving them out for people to find.

"Over Halloween, as children could not go trick-or-treating, Lily dressed up and bought sweets out of her own money and handed out over 500 bags to the local children!

"Lily also brought selection boxes for children to hand out throughout December. Santa was unable to do his



usual rounds, so Lily arranged for him to join her in handing these out.

"This year Lily handed out almost 400 Easter eggs to the local children. These are only a few things that Lily does; we all have great admiration for someone so young to have such empathy and a heart of gold.

"Lily has made thousands of people smile during these difficult times and continues to do so." She will be accompanied by a paying adult when she takes her prize holiday.

The seventh and penultimate Covid Diver Hero was Susana Garcia from Madrid. Jaime Callejon Bejarano nominated her "as the heroine of each and every one of the patients and families who have passed through her hands during 20 years, not only during this pandemic".

He said that for the intensive care unit nurse there could be no greater reward than "to enjoy with the Emperor Team one of her great passions... diving, and diving in the Red Sea!"

"In the early moments of the pandemic, without enough protective equipment, all her unit risked their

lives to give medical and humane treatment to the patients, reorganising their unit to attend all the critical patients, working as a great team," wrote Callejon Bejarano in nominating Garcia.

"They were taking care of critical patients, going home after their work afraid of being infected themselves, afraid of seeing their families... but they never missed their work shift, their patients, working to find possible treatments, all together.

"Not only doing their job but giving affection to the patients, helping them to communicate with their families by video calls, even in the worst cases holding the patients' hands in their last breath, so they did not leave this world alone.

"All these patients' families, unable to see their loved ones because of isolation, never stop appreciating: thank you for not leaving them alone."

Applications are now closed for the final Covid Diver Hero, who will win an Emperor Maldives holiday, and the winner was due to be announced on 14 June. ■

Big ghostnet haul in Sussex

ALMOST 200KG of lost fishing net was recovered from a Sussex shipwreck in May by volunteer-divers from Ghost Fishing UK, working with Sussex Wildlife Trust.

The charity had responded to reports from Brighton divers about ghostnets snagged on the *Pentrych*, a cargo steamship torpedoed in 1918.

Working at 18m in good visibility, the team freed and brought the net up to the dive-boat *Channel Diver*. It was taken back to Brighton marina to be stored ready for recycling.

"Despite Covid-19 restrictions, the team underwent daily testing and diligent hygiene in order to carry out the mission," said Ghost Fishing UK.

Ghost Fishing UK can call on 70 diver-members, and it was the team's second Sussex mission this year, following "plentiful" reports from divers of nets on wrecks endangering both marine life and themselves.



Sussex Wildlife Trust set up its Wild Coast Sussex project to inspire communities to protect their coast and sea. "It was great to have them on the boat so that they could see what goes on at the sharp end of our charity," said Ghost Fishing UK trustee Christine Grosart.

"Removing this net is so important because, if left, it can trap precious marine wildlife and add to plastic in the sea," said Wild Coast Sussex project manager Nikki Hills.

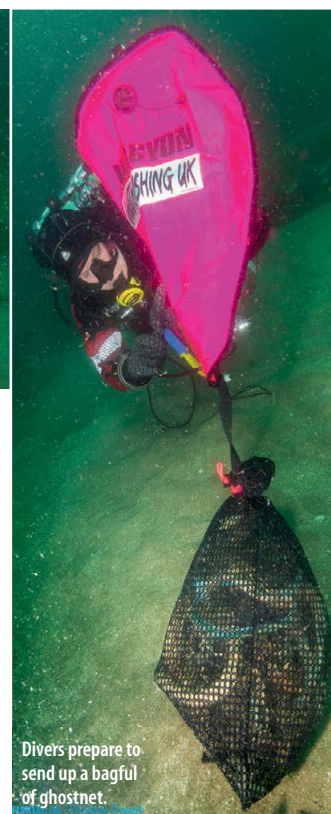
"We are very grateful for the reports from divers about these nets,"

said Grosart. "We are also very keen to work with the fishing industry to get these unfortunate losses, which are not deliberate, back out of the sea.

"We would urge fishermen to tell us if they have lost any pots or nets so that we can see if it is possible for us to remove and then recycle them, or in some cases return them, keeping them out of the ocean forever.

"We are soon launching a reporting system dedicated for fishermen so that they can report losses to us in confidence."

Learn more at ghostfishing.co.uk ■



Divers prepare to send up a bagful of ghostnet.

CHRISTINE GROSART / GHOST FISHING UK

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\$12m lawsuit follows suit-squeeze death of diver new to cold water

THE DEATH OF a teenage diver in a US mountain lake last November, in an incident partly captured on video by a fellow-trainee, has led to a \$12 million negligence lawsuit against the dive-school owners and instructors, as well as training agency PADI.

The diver's parents and two other divers have filed the suit with Missoula District Court, and its contents were summarised by the *Missoula Current* in early May.

The action cites Gull Dive of Missoula, its owners David & Jeannine Olson, instructors Debbie Snow and Seth Liston and PADI Worldwide, which is accused of being negligent in its oversight of a member-business.

Eighteen-year-old Linnea Mills had been on the second dive of a PADI Advanced Open Water Diver course in Lake MacDonald in Glacier National Park, north of her home city of Missoula, Montana.

Mills had started diving for marine-biology projects with the University of North Carolina. She was a PADI Open Water Diver and had dived on Australia's Great Barrier Reef in 2018, but had no previous coldwater-diving experience.

She had hired dive-gear and a wetsuit from Gull Dive for her first AOWD dive in Lake Seeley but had been given no pre-dive briefing, claims the suit.

Air temperatures at the mountain lake had been sub-zero, and another trainee had lent Mills her wetsuit to boost her thermal protection.

Gull Dive had advised Mills to buy a drysuit for her second dive a few days later, and she had purchased a secondhand custom-made suit that had come without an inflator.

She was unaware that she needed one, and the instructors had failed to check her gear before



Linnea Mills, who died on her first drysuit dive.

setting out with her for Lake MacDonald.

The course was to be taught by Liston, described as having "hardly more experience" than his student, and newly certified instructor Snow, said to be unqualified to teach diving with a drysuit or at altitude, where reduced buoyancy can be an issue. Lake MacDonald has an elevation of 960m.

At the dive-site they were joined by two other trainees, Bob Gentry and a 14-year-old referred to as EG. Both had recently completed drysuit training.

When the instructors realised that Mills' air supply could not be connected to her drysuit, she was told to use her BC for buoyancy control.

Twenty kilograms of lead was placed in Mills' drysuit and BC pockets rather than on a releasable weight-belt. It's alleged that no briefings were given.

Entering the water at 5pm in failing light, Snow took Mills and EG to 5m for about five minutes. Snow brought EG back up because he felt uncomfortable, failing to notice how much air had already been squeezed out of Mills' drysuit. She returned and, with Liston, took Mills, Gentry and another student to 18m.

Gentry's chest-mounted GoPro footage is said to show Mills standing on a ledge struggling to breathe but too overweighted to ascend. Unable to attract her instructor Snow's attention, she signalled to Gentry for help, but as he swam over she overbalanced and started sinking rapidly.

Gentry caught up with her at 26m. She was showing signs of being crushed by her suit and he spent half a minute trying unsuccessfully to locate and release her weights to halt her descent, after which she lost her second stage. He tried to share his air but, in danger of running out, was forced to leave her at 32m and made a rapid ascent

to the surface in less than a minute.

There was no surface cover but when Snow eventually surfaced she dived briefly to look for Mills, failing to find her. On a later second dive, Mills' body was found at 39m and brought up.

The lawsuit alleges that Jeannine Olsen told the coroner that a dive-buddy had witnessed Mills panicking before falling passively to the lakebed, but having shown no sign of difficulties at 12m.

It also states that she had told Gentry, who has since become a friend of the Mills family, to say that he had been responsible for the fatality – also that the medical examiner had failed to note bruising caused by the drysuit squeeze.

The *Missoula Current* reports that the National Park Service had investigated because Gull Dive had not been authorised to conduct business in the park.

It also states that an earlier legal action into another fatality in 2019 is ongoing against Gull Dive, but because the dive-school had failed to report the incident to PADI, Mills and her family would have been unaware of this. ■

SECURITY PLANS FOR WRECK-MINDER DIVERS

UNDERWATER WRECK-SITES are too often out of sight, out of mind, according to maritime archaeological group the Protected Wreck Association – but now the PWA is deploying a new weapon to deter theft or vandalism of wreck artefacts, in the form of Site Security Plans.

Sites of historic, artistic and archaeological importance designated under the Protection of Wrecks Act 1973 are managed by Historic England (HE) on behalf of the UK government with the help of a team of licensees.

If not for licensees and their teams of volunteer divers "many of the sites would still be unknown and we would have very little knowledge of many of the existing sites," says the PWA.

"Their presence on the sites acts

as a deterrent to anyone thinking of accessing the sites illegally and their monitoring ensures that the sites are understood and enjoyed by many people."

Site Security Plans for protected wreck-sites have been developed as a partnership project between the PWA and contractor MSDS Marine, funded by HE.

Each plan results from an individual assessment of a site's security. The site is then given its own Site Security Champion and allocated a police Heritage Crime Officer.

Risk level is assessed to help target resources, and risk-reduction tactics considered. Licensees must follow a protocol when accessing the site, with a high-vis vest issued to identify the Site Security Champion, along

with cards containing guidance on reporting heritage crimes.

The project team says it will support licensees in completing Site Security Plans and risk assessments for each site, with forms available at protectedwrecks.org.uk.

"I spent 10 years working at Historic England managing England's protected wreck-sites, and at times was incredibly frustrated by being unable to 'police' the sites," said MSDS Marine project manager Alison James.

"The model we have developed is based on the highly successful model developed by SWMAG [the Salcombe Cannon and Moor Sands sites licensee], which has been shown to work on a number of occasions.

"We hope this will make a real difference to the sites and the teams



that work on them."

"We are delighted and grateful that HE has funded this project," said PWA chair Prof Mike Williams.

"It will enable us to undertake valuable work to support our members, who are dedicated volunteers protecting our maritime heritage." ■

Stirling Castle wreck brought to life



ANOTHER VIRTUAL UK wreck-dive trail has joined the growing list with the launch by Historic England (HE) of its *Stirling Castle* tour.

The 70-gun warship sank off Kent's Goodwin Sands in the Great Storm of 1703 and is a Protected Wreck, which means that a licence is required to dive the site. Built in Deptford in 1678, she was one of 20 third-rate ships ordered by Samuel Pepys to help regenerate the English navy.

Pepys described how after cutting away the *Stirling Castle's* masts the crew had been "all in the confusions of death and despair; she had neither anchor, nor cable, nor boat to help her; the sea breaking over her in a terrible manner, that sometimes she seem'd all under water; and they knew, as well as we that saw her, that they drove by the tempest directly for the Goodwin, where they could expect nothing but destruction". Only 70 of the 349 men aboard survived the sinking.

Divers from Thanet chanced on the wreck-site in 1979 after it had been exposed by the shifting sands, finding the hull and its contents in an exceptional state of preservation. It lies around 15m deep.

"The trail tells the fascinating story of the *Stirling Castle* and her crew before taking you below the waves to explore the wreck and the artefacts that have been recovered by the dedicated team over the years," says HE maritime archaeologist Terence Newman.

The tour highlights the work of former licensee Robert Peacock and the archaeologist who currently holds the licence, Douglas McElvogue.

Archival research, 2D plans, photographs, HD video, recent geophysical surveys and computer visualisation technology were employed to produce the 3D virtual tour, which HE commissioned from TrenDive, ArtasMedia and CyanSub.

The launch follows that of another British 3D dive trail, the Chesil Beach Cannon Site, produced by the Maritime Archaeology Trust (*News*, June). ■



The *Stirling Castle* wreck can now be explored virtually. Above: The Great Storm.

FREDA'S DIVER DISHES



Cairo Savoy is the name that has been given to the wreck of an unknown WW1 steamship that sank in 85m off Alderney. Various attempts have been made to discover the name of this ship, but none have been successful so far. Its name derives from the large number of plates recovered from the wreck, marked with the words "Savoy Hotel Cairo" on the back. The image shows this month's dish, mackerel pâté, presented on one of these plates.

One of the prime mackerel locations in the country is Chesil Beach, in Dorset, near our dive-boat *Sea Leopard's* home port.

Mackerel Pate

Ingredients

- 2 freshly caught mackerel;
- 200g coconut yoghurt;
- 1 tsp good-quality horse-radish;
- juice of one lemon;
- sea salt & cracked black pepper;
- 1 tsp Cajun sea spice;
- 30g olive oil or butter

Method

Get your mackerel, clean with fresh water and dry.

Make an incision just behind the pectoral fin and run the blade of the knife horizontally

next to the main central bone towards the tail of the fish to produce a fillet. Turn the mackerel over and repeat. Clean with fresh water and dry.

Line an oven tray with a sheet of baking paper. Brush some melted butter or oil on the greaseproof sheet and place the fillets on top. Brush the rest of the butter/oil over the fillets and sprinkle with Cajun sea spice. The recipe for this spice is in our *40 Dives, 40 Dishes* book (below), or you can buy it from your supermarket.

Season with salt & pepper and grill immediately for 10 to 12 minutes. There's no need to turn the fillets over, because you only need to just cook them.

Once cooled, flake the mackerel into a bowl. Place half the flaked mackerel in a food processor, together with the coconut yoghurt, lemon juice and horseradish. Whizz it up quickly and season to taste.

Scrape the mixture into the bowl with the remainder of the flaked mackerel and mix it all together carefully.

Serve in ramekins or small jam jars, then sprinkle with fresh parsley and more cracked black pepper and a tiny drop of olive oil on top. Serve with toasted bread fish. Make these by cutting fish shapes out of sliced bread and toasting them under the grill.

Top Tips

Cook a jacket potato and fill it with this delicious Cajun spiced mackerel. Using yoghurt instead of cream cheese makes this dish less heavy, more heavenly.

* Freda Wright is a diver and chef on British diving liveboard *mv Salutay*. Find more of her recipes in the book *40 Dives 40 Dishes*. It costs £16 plus £1.95 postage. £1 from every sale goes to Oceans Plastics Greenpeace, salutay.co.uk



HISTORIC ENGLAND

Rare pre-WW1 sub in Devon protected

PROTOTYPE BRITISH submarine HMS/m *D1*, the forerunner to the Royal Navy's patrol submarines of WW1, has been designated a Protected Wreck.

Scuba-divers can visit the 50m-deep site but the wreck and its contents must remain *in situ*.

D1 sits upright and largely intact one nautical mile south-east of the eastern Blackstone, off Dartmouth in Devon.

It was identified in 2018, following investigations by a team of technical divers diving from *Wey Chieftain IV*.

They had thought they were diving a U-boat wreck, for a project initiated by historian Michael Lowrey for a book he was writing about German submarines.

The main body of the wreck lay exposed, the lower conning-tower hatch open and the bow partly buried. The divers reported a combination of two forward and a single stern torpedo-tube, two propellers and a single rudder, ruling out previous U-boat identifications. Overall dimensions and the design of the conning tower, torpedo-tubes and deck-fixtures pointed instead to *D1*.

"Every diver dreams of identifying a historically important wreck," said lead diver Steve Mortimer.

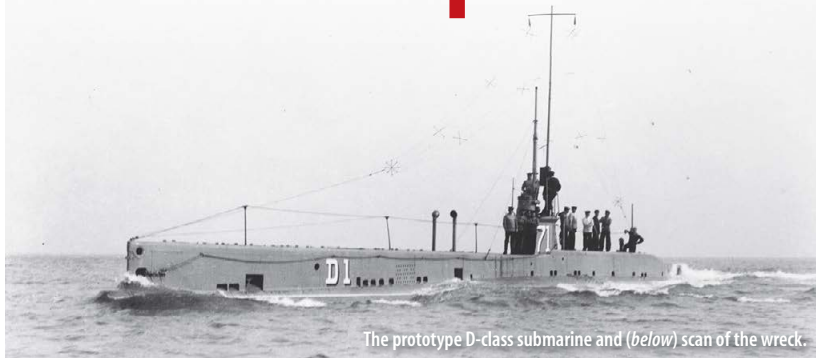
"Expecting to find the remains of a German U-boat, we were thrilled to discover a ground-breaking British submarine instead.

"It's tremendous that *D1* is now protected, but divers can still visit."

Built by Vickers at Barrow-in-Furness, *D1* was the secret prototype for the Royal Navy's first diesel-powered submarines, the D-class. Launched in 1908 and commissioned the following September, it was a significant development on the smaller, less-powerful C-class.

At the start of WW1, HMS/m *D1* patrolled to protect the Kent coast before venturing beyond English waters to monitor German shipping.

In September 1917 it joined the Portsmouth Local Defence Flotilla and a year later was relegated to training duties. Decommissioned and scuttled the following October, it was used



The prototype D-class submarine and (below) scan of the wreck.

HISTORIC ENGLAND

for target practice in naval training exercises.

Now considered vulnerable to uncontrolled salvage, more than a century later the rare example of a pre-WW1 submarine has been scheduled for protection by the Department for Digital, Culture, Media & Sport on the advice of Historic England (HE).

"The D-class submarine was superior to the C-class, with innovations that became integral parts of future Royal Navy submarines," said HE chief executive Duncan Wilson

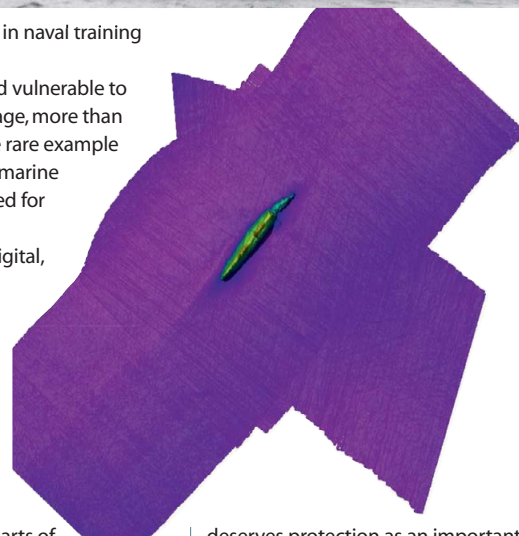
"These included diesel propulsion, twin propellers and a wireless telegraphy system, which allowed the submarine to transmit and receive signals.

"This is a fascinating survival which

deserves protection as an important part of our seafaring history."

Of the other seven D-class submarines, *D2*, *D3* and *D6* were sunk in overseas waters, while *D4*, *D7* and *D8* were sold and scrapped in 1919.

D5 off Lowestoft in Suffolk is, like *D1* now, a Protected Wreck. ■



Seas Of Time

A 180-million-year-old fossil found in a German quarry revealed a weird Jurassic death-struggle – a squid had been eating a lobster when what was likely a shark chomped the squid. The biters bit have been reanimated by Christian Klug of the Palaeontological Institute & Museum in Zurich. Brilliant!



this month
DIVER
likes...

Goddio on YouTube

Star underwater archaeologist Franck Goddio presents a series of short videos called *Discovering Underwater Archaeology*, addressing FAQs about his team's work in the sunken Egyptian cities Thonis-Heracleion & Canopus, and Alexandria harbour.

Great British Marine Animals British divers who thought Paul Naylor's masterwork was the last word in marine-life ID and info books are in for a treat – we've just seen the latest version, with lots on behaviour and hundreds of new photos. It looks awesome!

The Life Scientific Hear marine biologist Helen Scales on BBC Sounds talking about her work and the dangers of deep-sea mining.

Sea-Changers' virtual festival

IN MAY 2011 two UK divers set up a charity to raise funds for UK marine-conservation projects – and now Sea-Changers is celebrating its 10th anniversary with a "virtual festival".

Founders Helen Webb and Rachel Lopata still run the organisation on a voluntary basis, supported by a board of trustees and network of volunteers.

Their online festival covers the week from Wednesday 23-30 June.

Sea-Changers establishes fundraising partnerships with commercial bodies that serve consumers who access, enjoy or travel by sea.

Grants, each typically of up to £1200, are allocated twice a year, with more than 200 issued over the decade to help fund activities ranging from beach-cleaning and marine-species conservation to citizen-science and public-awareness projects.

"Small sums of money distributed

around the UK's seas and shores can catalyse new ideas, seed practical action and reach new audiences," say Webb and Lopata.

The festival aims to spotlight existing projects, with participants including the Shark Trust, National Lobster Hatchery, Cornwall Seal Research Group and Project Seagrass.

Personalities involved include Miranda Krestovnikoff, Helen Scales, Maya Plass and Heather Koldewey.

The programme of events can be found at eventbrite.co.uk and registration is free.

However, Sea-Changers also hopes to raise further donations at justgiving.com/campaign/seachangersfestival over the week to support its main grants fund, its Bunzl-supported Coastal Water Fountain Fund and its new Innovation Fund, supported by MRT. ■

Catfood spells hope for threatened coral reefs

WHAT IS CLAIMED to be the world's biggest coral-restoration programme is underway, as catfood brand Sheba has unveiled Hope Reef off the coast of Sulawesi in Indonesia.

The objective is to restore more than 185,000sq m of coral reefs at sites around the world by 2029.

Hope Reef is being regrown to spell the word "HOPE", as viewed on Google Earth, to "drive awareness and show how positive change can happen within our lifetime".

The project was officially unveiled on 5 May but the reef restoration began two years ago. Since then coral cover has increased from 5 to 55%, fish abundance has risen and missing species such as sharks and turtles have returned, says Sheba.

Hope Reef uses Reef Star technology, with 90cm-wide steel stars hand-made by the local community. They interlock on the seabed to create a stable base on which to regrow coral fragments.

The campaign has a YouTube channel, where advertising revenue from every viewing of its video *The Film That Grows*

Coral is donated to the Nature Conservancy to support its reef-restoration initiatives.

Sheba says this is the first time that 100% of funds raised by a YouTube channel have been directed towards sustainability efforts.

Scientists estimate that without action 90% of tropical reefs will be gone by 2043, affecting nearly 500 million people who depend on them for food, income and coastal protection.

Mars, Sheba's parent company, says that since 2008 it has invested more than \$10m in research, restoration and community engagement as part of the coral-reef programme, as well as \$1 billion for its Sustainable in a Generation plan.

"Our efforts around the world to restore and regenerate these precious ecosystems are showing exciting results and having a positive impact on local communities, which we're delighted to see," said Prof David Smith, Mars' chief marine scientist.

"We hope our efforts inspire others to join us, so we can all play our part in helping to prevent the extinction of our coral reefs." ■

SHEBA / MARS



A reef star.

Drone shot of the Sheba Hope Reef.



The Bontosua community helping to install reef stars.



Hope Reef after restoration.



Freediver working on the reef.

Rare white 'ghost' shark takes divers by surprise

SCUBA-DIVERS have encountered what they believe is the first white-coloured grey nurse shark ever seen in Western Australia – and possibly the entire continent.

Video footage of the female shark was captured by Alan Chng while on his first shark dive on 21 May, and later posted on YouTube.

Chng was on a boat-dive with a group from Fremantle dive-school Bucket List Diver. They were off Rottnest Island, a nature reserve near Perth, at a site rarely dived because of the often-challenging conditions found there.

The shark was spotted while the divers were at a depth of around 28m.

Chng said that initially it was immobile and he had thought it was dead.

He realised the significance of its colouration only later, from the excitement of the dive professionals on the boat.

The shark is believed not to be fully albino but "leucistic", or partially unpigmented.

The divers reported seeing faint spots of colour on its flanks, and its eyes had dark rather than pink pupils.

Both albinism and leucism are rare genetic conditions in wild animals. When it occurs it makes young animals stand out and become more vulnerable to predators, so they

rarely mature to adulthood. Bucket List Diver said that the shark was the smallest at the site, so they had assumed it to be a juvenile.

Experts later stated that although there had been instances of white wobbegongs and smooth rays in Western Australia, a white grey nurse shark appeared to be a first.

The shark was assigned the reference number F217 and Bucket List Diver has been canvassing help in choosing a name, with Moonshine, Casper and Ghost emerging as the leading suggestions so far.

The grey nurse shark, *Carcharias taurus*, is known elsewhere in the world as the sand tiger or spotted raggedtooth shark.

Australia has two distinct populations: on the east coast, where the sharks are listed as Critically Endangered, and on the west coast, where they are considered Vulnerable.

Although never implicated in a fatal attack on humans, grey nurse sharks are still hunted for sport or on the assumption that they are dangerous.

The divers reported seeing a number carrying hooks in their mouths and gills on the dive. ■



Leucistic grey nurse shark alongside one in regular livery.

ALAN CHNG

Emperor dumbo

A NEW SPECIES of the deep-dwelling dumbo octopus, has been described by scientists. The finned cephalopod has been named *Grimpoteuthis imperator* or Emperor dumbo, because it was discovered in the northern part of the Emperor Seamounts, an underwater ridge in the North-west Pacific.

The number of suckers, half-orange-shaped gills and details of the shell differentiate the octopus from previously described *Grimpoteuthis* species.

The study by Alexander Ziegler and Christina Sagorny of the University of Bonn in Germany was said to be the first derived from a single specimen of a large animal using a combination of digital photography, MRI and micro-CT scanning and minimally invasive gene analysis. This meant that the rare octopus could be retained virtually undamaged for future research.

Their findings are in open-access journal *BMC Biology*. ■

Deep-sub divers strike 'fish gold'

"SCIENTIFIC GOLD" was how the first live sighting by divers in a submersible of the world's deepest-dwelling fish was acclaimed by researchers.

The hadal snailfish (*Pseudoliparis swirei*) is the only known fish able to withstand the pressures and temperatures in the deepest parts of the world's oceans. It had been recorded before but only by cameras on unmanned deep-sea vehicles.

The live sighting was made by pilot Patrick Lahey, co-founder of Triton Submarines, and his passenger US businessman Larry Connor.

They were on the last of three deep dives carried out over five days in the 11km-deep Mariana Trench, in the Pacific Ocean near Guam.

They were using *Limiting Factor*, the Triton 36000/2 submersible owned by Victor Vescovo in which a number of recent depth records have been set, including deepest wreck-dive, as reported in **DIVER** in June News.

Besides capturing the snailfish on camera, Lahey and Connor brought back video footage of previously unseen areas of the seabed marked by multiple sulphur mounds, and



TRITON SUBMARINES

Larry Connor (left) and Patrick Lahey.



Hadal snailfish – this one was in fact recorded remotely.

PAUL HANCKEY

collected samples of bacterial mats and deep-sea anemones.

Their first two dives were in Challenger Deep and Sirena Deep but it was on a shallower descent, to an extinct volcano at around 7.6km, that the snailfish was spotted.

Connor described the fish as luminescent, swimming with a snake-like motion and 20-23cm long.

The sighting was an unexpected bonus. "Capturing the Mariana snailfish on video is scientific gold," said the expedition's chief scientist

Dr Alan Jamieson. "Larry and Patrick are the first humans to spot this fish alive in its habitat.

"They also brought back hours of astonishing footage and samples that will help us better understand the geologic and biologic makeup of the hadal zone."

Connor, founder and CEO of property business the Connor Group, is set to pilot the first private mission to the International Space Station next year.

The deep dives fulfilled the first

part of his objective to be the first person to achieve both the greatest depth and highest altitude in the space of a year.

The expedition was carried out by the research vessel *Pressure Drop* and led by Rob McCallum of EYOS Expeditions.

"To successfully complete three dives in just five days into the darkest, most inhospitable and unknown parts of Earth is an endeavour I was honoured to be a part of," said Connor. ■

110 CHINESE MERMAIDS TANK UP FOR GUINNESS WORLD RECORD

DIVING HAS BEEN catching on in China, a country whose people not long ago had a reputation for being water-shy. Part of the credit for this is given to an unusual entry route adopted by many – mermaiding.

International training agency PADI realised the potential in a sport that had been growing steadily in recent years, and since late 2020 has been running mermaiding courses in the country.

And now 110 PADI Mermaid Divers and the South China Sea resort of Atlantis Sanya have claimed a Guinness World Record (GWR) for "Largest Underwater Mermaid Show."

The women and men, 90% of whom were PADI Mermaid Instructors, assembled on 28 April with dozens of professional safety divers from all over the country to complete the challenge.

It was said to have been months in the planning, involving intensive underwater training, joint rehearsals and exercises, says PADI.

The challenge was held in the resort's Ambassador Lagoon, an aquarium holding a variety of marine life in 12,250 tonnes of sea

water that is viewed through a 16m x 8m acrylic wall.

The mermaids did more than simply assemble, and gave a choreographed underwater performance.

The record was able to be ratified on the spot because the first Chinese GWR certification officer Wu Xiaohong

was in attendance.

There are more than 600 PADI Mermaid Instructors and more than PADI Mermaid Centres in China. "It took off like wildfire," said president of PADI China Yan Lou. "Within four short months after the official release of the new PADI Mermaid program in China,

mermaid now accounts for 30% of local PADI certifications."

PADI runs four levels of courses – Discover Mermaid, Basic Mermaid, Mermaid and Advanced Mermaid – and the hope is that qualifications will lead to extended interest in standard freediving and scuba. ■



PADI

The cream of China's mermaids go for a world record.

AND FOR MY NEXT TRICK...

Falling firmly into the “skill-sets we didn’t realise we needed” category must surely be Scuba Magician.

For professional conjuror and Master Scuba Diver Trainer Chef Anton, it all seems to have started as a way of keeping his dive-buddies entertained and to pass the time on deco stops.

Chef (a name to conjure with, I presume, rather than an additional job description – he was originally Anthony Rinesi) is based at Canyon Lake, a town in southern California. He is now sharing his sleight of hand on his Scuba Magician course, which has been recognised as a PADI distinctive speciality. He devised it to equip his students to amaze their buddies by being able to perform 15 tricks under water.

“Now you, too, can add magic to all of your scuba adventures and make every dive magical,” promises the self-styled World’s Most Versatile Entertainer.

And it isn’t just tricks for hangs. Chef says he uses magic while training his students “as a way of keeping the learning process fun and memorable.”

Among his many roles – there’s a lot of motivational work in his repertoire – Chef is available as a private guide for diving Pacific Ocean sites, promising tricks



galore along the way. I have to say, I like the sound of it, and I’m sure it’s not at all distracting.

Wild pondlife

I must admit to being a bit disappointed in Jonathan Van-Tam. England’s deputy chief medical officer has earned widespread respect for his masterful appearances at Covid-19 press conferences, partly for his straight talking (something of a novelty at such podium events) and partly for his colourful metaphors.



But I didn’t expect him to descend to tired old tropes about shark-bites, albeit tropes with a twist.

Discussing differences in infection levels in various potential holiday destinations, JVT observed that “when you go abroad, jumping into a pond with one shark in it or jumping into a pond with 100 sharks in it – it changes the likelihood that you’re going to get bitten.”

I suppose joining 100 or just one shark in a pond would be a pretty frantic experience, though I don’t think you could blame the sharks if an accident occurred.

I’d simply wait a while before entering – I don’t think they’d last long in there.

Deaf, blind, fake

Employers are expected to double-check their employees’ qualifications, and a truly shocking case in Singapore has highlighted

the grim consequences of failing to do so.

Mohd Zalkarnain Mohd Salleh was only a few months into his job as diving superintendent for hull-cleaning contractor Mola Subsea Services.

Then he decided to endorse a corner-cutting plan by diving supervisor Raden Roslan Mohd, and allowed two divers to clean a ship’s stern and its propeller at the same time, instead of leaving one of them on standby as a safety diver.

Raden then turned down his audio link with the stern-cleaner, Seet Choon Heng, so that he could hear the prop diver.

Zalkarnain turned his own back on Seet’s video link – for six minutes. This meant that when Seet’s comms line got in a tangle, preventing him from ascending, his increasingly desperate pleas for help could neither be heard nor seen.

Seet eventually had no choice but to remove his helmet and try to swim up to safety. When Zalkarnain finally realised that something was amiss he sent the prop diver to find his colleague – but it would be two days before Seet’s body was found.

The real kicker: it turns out that Zalkarnain had forged his credentials to secure his responsible job. He was a phoney, and it cost a diver his life.

Some might feel that the judge was in a mellow mood when he handed down a two-year jail sentence.

Ring-bearer

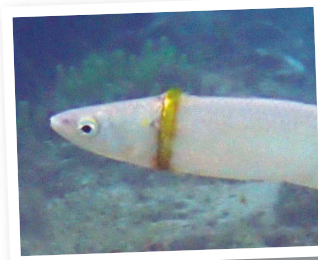
This fish is wearing a gold ring, but I doubt if it’s the envy of its school-mates around Norfolk Island, off Australia’s east coast. Most of them don’t wear rings, though

some do sport plastic collars.

Apparently the islanders are generally environmentally aware, but it isn’t uncommon for sand mullet, which dredge the sandy seabed looking for tidbits, to be seen weighed down by the plastic bands found around the necks of bottles. These will kill them, and not in a nice way.

It was snorkeller Susan Prior who noticed the shiny band of gold below, and remembered that a couple visiting from the distant mainland had lost a wedding ring while swimming a few weeks before.

She connected with them via social



media. Now all she or one of the other islanders, including scuba-divers, has to do is spot that mullet again and net it before it outgrows its unwanted weight-belt.

Never mind the couple: “I’m just worried about the poor little fish,” said Susie.

Tough love

Rolling Stone recently related the very possibly apocryphal story of a businessman who while diving somewhere in the North Atlantic (big place) surfaced alone to find the dive-boat gone.

After hours of drifting, eventually he was spotted and picked up by another boat (not sure what sort). Our diver was pulled aboard, cold and presumably somewhat traumatised – only to be ordered by the captain to get straight back into the water.

He seems to have meekly done so and “after five minutes of scuba-diving” was allowed back onto the boat.

Presumably he still had his weights and the rest of his kit on, then, but because the story was relayed at third hand I can’t be sure all the details are accurate.

So what sort of sick sadist was this captain? He wasn’t, the diver said later – that skipper had done him a massive favour.

He reckoned it was the start of an “emotional healing” process, and by being forced to face up to the challenging situation he had just experienced, he had been saved from developing a life-long scuba phobia.

Perhaps the skipper was taking time out from his day-job as a therapist or life-coach, but if I was the diver I think I’d have settled for a towel and a mug of cocoa and said thanks, but I’ll worry about my mental health later. What do you think? ✎



You are being watched

We keep hearing about how Greece’s authorities have relaxed their previous stranglehold on wreck-diving.

If their regulations used to seem a bit paranoid, seeing what has happened in other parts of the world perhaps makes their stance understandable.

The initiative has been a bit sidelined by Covid, but if you get to have a break in the Greek islands you can now try to book a dive on the ancient Peristera shipwreck, 28m down near Alonnisos.

But remember, the new freedoms are based on technology designed to keep you very much under Big Brother’s beady eye.

This particular wreck site is surveilled by a network of five automated underwater cameras,

and it was Microsoft that stepped in to fund Greek scientists’ development of the Undersea Vision Surveillance System, also known as NOUS (which is Greek for “intelligence”).

The tech giant reckons NOUS will prove to be a valuable tool for monitoring all sorts of endangered underwater environments.

Remember, at a NOUS site the moment you swim in front of the lens the news will be relayed to t’ Internet, so don’t be one of those divers who thinks: “They’ve got hundreds, what difference would one artefact make?” Before we know it, underwater cameras will be everywhere.

ON THE ROCK



Fish, fish, fish everywhere – his photos tell the story but photographer **ALEX TYRRELL** also makes the case for this dive-site not only being the best in Thailand but world class by any standard



THERE ARE TWO VERSIONS of how Richelieu Rock got its name. The first is the one preferred and romanticised by scuba-divers, and credits their beloved Jacques Cousteau.

Here's the gist: When Cousteau visited the Thai region of the Andaman Sea in the late 1980s, he found Richelieu Rock with the help of local fishermen.

Ascending from a dive in the afternoon he was supposedly inspired by the purple, red and pink soft corals illuminated in the strong afternoon sunshine. On surfacing he pronounced: "It looks as if the rock has been draped in a cardinal's cassock."

The most likely cardinal to Cousteau, as a Frenchman, would have been the infamous Richelieu – hence the name.

The second version involves Andrea du Plessis de Richelieu, a Danish naval officer and businessman who became the first and only foreign-born commander-in-chief of the Royal Thai Navy at the start of the 20th century.

It's likely that the rock was named after him, given that Thai naval charts dating back to the 1970s and earlier already had Richelieu Rock clearly marked.

However it was named, Richelieu Rock deserves its ranking among the world's best dive-sites, and if it isn't currently on your to-dive list, perhaps it should be.

This submerged pinnacle lies 11 miles



Above: Snapper in formation.

Opposite page: Giant trevally and silversides over soft corals.

Below left: Harlequin shrimps.

Bottom, from left: Longfin batfish; hunting longnose emperors.

east of Surin Island and 25 miles from the closest point on mainland Thailand.

Its isolation makes it a magnet for marine life that is further enhanced by falling under the protection of the Ko Mu Surin National Marine Park.

The site can be accessed by day-boats – big speedboats with four large outboards strapped to the back. The journey takes two hours each way, so a liveaboard is how most people choose to get there, allowing for a more spacious and comfortable dive platform.

The closest port, Ranong, is an eight-

hour overnight cruise away aboard one of the handful of liveaboards that depart from there, but most use Thap Lamu harbour as their base, 50 miles southwest in Khao Lak. Some boats travel even further, making the journey from Phuket, which is another 60 miles further south.

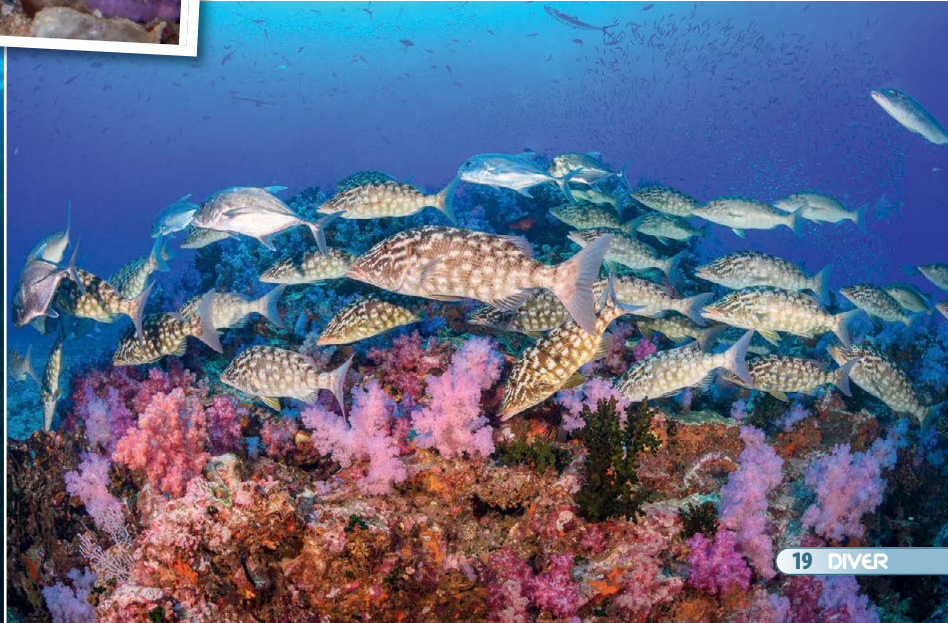
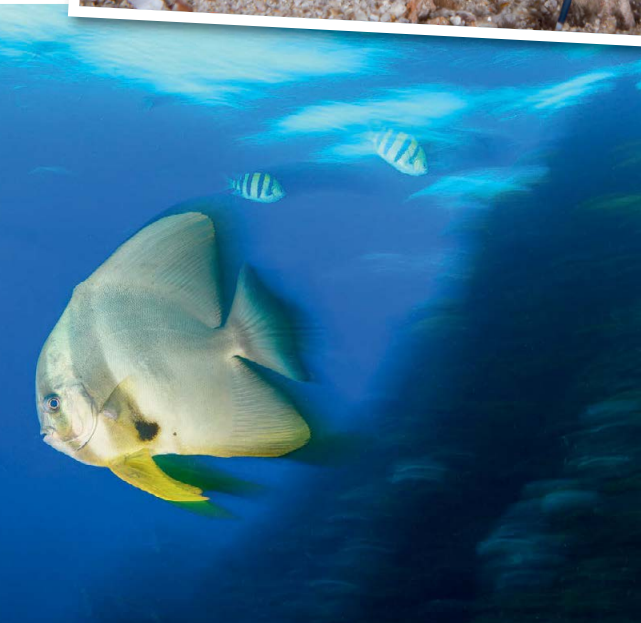
This makes Richelieu Rock the most northerly point of the itinerary for most liveaboards after working their way up from the Similan Islands via Koh Bon and Koh Tachai.

LEAVING THE BEST site to last is the norm, because hitting Richelieu first is setting the bar high for subsequent dives.

If the manta rays are not out to play at Bon or Tachai, what would normally be considered a good dive is then relegated to the realms of mediocre.

But from personal experience, albeit from a photographer's perspective, having your last dives of a trip at Richelieu make you feel you've somewhat wasted previous diving days on inferior sites, and wonder why you didn't come here sooner!

The Thai west-coast dive season runs from mid-October when the marine parks open, coinciding with the beginning of the north-east monsoon, and runs



through to mid-May, when they close ready for the onset of the south-east monsoon, which brings adverse weather conditions in from the Andaman Sea.

Traditionally the best months to dive are January through to April, when seas are normally calm and visibility excellent, though I have dived earlier in the season and the conditions have still been great, with 30m-plus visibility.

Reduced vis can be encountered at any time of the season, however. Gin-clear water isn't guaranteed as in the Red Sea, but it's the nutrient-rich plankton that feeds the abundant soft corals.

Locally known as "the green monster", these temporary upwellings can sweep across dive-sites at any time.

Fortunately they normally last only a matter of minutes, but can bring on a shiver as the temperature drops a few degrees from the normal 28°C.

RICHELIEU ROCK IS horseshoe-shaped. The inner side faces south, with a few small rocks in the middle, and depth ranging from 15m to 25m-plus as you swim out south.

The outer side of the horseshoe has a satellite pinnacle to the east at around 26m, and at similar depth a scattering of small rock formations on the west side running round to the north-east corner.

Near the pinnacle, depths are around 20m. The gradual sloping takes you to 30-32m, the most you need before moving off-site onto the surrounding sand.

The top of the central pinnacle is just below the surface at high tide, and at low tide breaks the surface. The two ends of the horseshoe are at 10-12m before dropping off steeply to the sand below.

Currents tend to run more or less south to north on the flood tide and reverse on the ebb tide. This provides a sheltered lee even when they're running hard at full moon, with greater water movement.

I would suggest diving away from this moon phase if you want to explore the whole site on a more relaxing dive. A little current is however good for activating the marine life and aligning the schools of fish into the current for pleasing images.



Top: Whale shark and diver.

Above: Giant frogfish.

Below from left: Anemonefish on the reef; pickhandle barracuda.

Thailand is overshadowed on the macro front by the critter hotspots of Indonesia and the Philippines, and is considered more of a wide-angle destination with its colourful reefs and pelagic action. But slow things down and notice the smaller denizens of the reef and you'll be surprised by what can be found – a good dive-guide helps too.

Richelieu seems to have at least one pair of beautiful harlequin shrimps at any one time, and more than one pair is often in residence. The same goes for the intricately patterned ornate ghost pipefish, a guaranteed sighting at most

times during the season. There were numerous pairs on my last two trips.

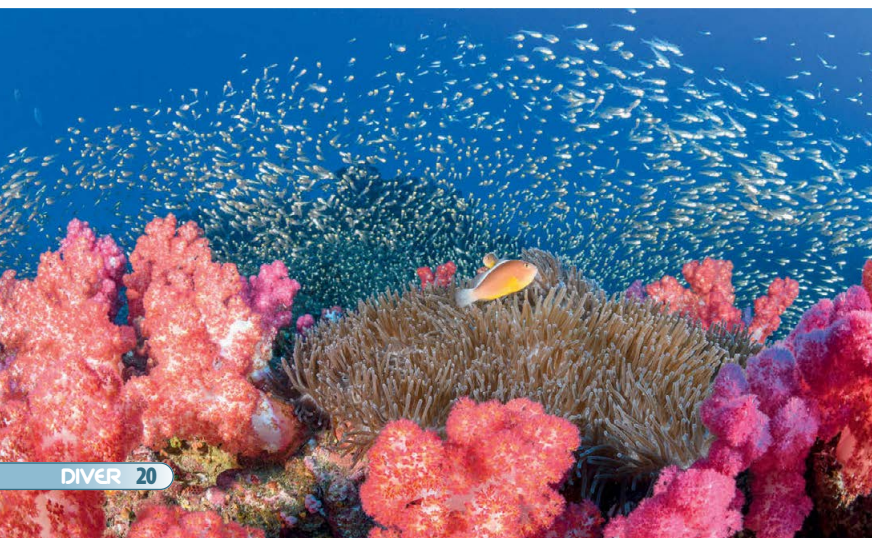
Tigertail seahorses are another regular find and a resident giant frogfish made Richelieu its home throughout the '20/21 season, though this hasn't been the norm in years past. There are always tiger cowries living on gorgonian corals, peacock mantis shrimps are regularly spotted scuttling about and a wide variety of nudibranchs can be found.

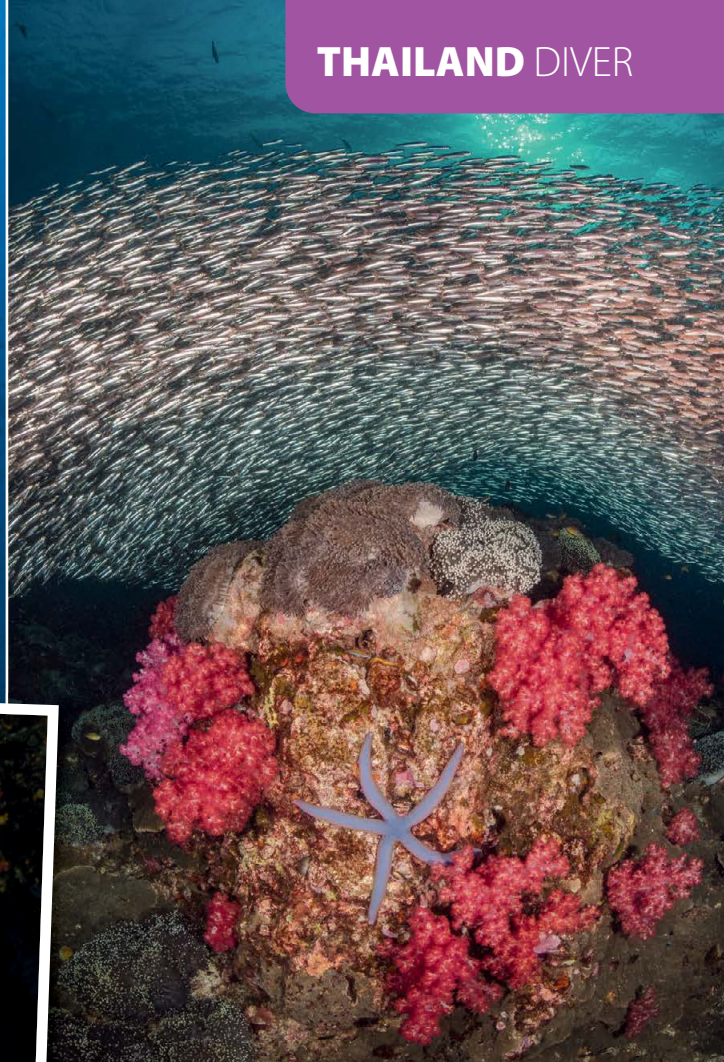
For colourful reefs, schooling fish and pelagic species, Richelieu shines. It's hard to find an area not blanketed with hard coral, anemones, colourful gorgonian or purple- and pink-hued spiky soft coral from the genus *Dendronephthya*.

If you find such an area, silverside schools will cover it up.

Numerous coral grouper in their bright red livery add even more colour to the scenics. At the start of the dive-season pharaoh cuttlefish congregate, the males putting on a display for the females in hopes of impressing a future mate. For photographers this makes the decision to opt for a macro dive a real dilemma!

The schooling action is also prolific. Longfin batfish gather in the shallows around the top of the pinnacle and just below, in the crescent protected from current, will be a resident school of bigeye





snapper mingling with a smaller school of two-spot snapper.

Both pickhandle and blackfin barracuda school further out where there is more water movement, and fusiliers sweep across the reef, plus whitetongue jack in open water closer to the surface.

A huge school of bigeye trevally are normally found out on the deeper satellite pinnacle to the east, at times venturing closer to the main pinnacle or across to the west side when the current is running.

MANY SPECIES gather to hunt, like a school of longnose emperors I've seen on quite a few occasions, working together to round up prey like a pack of hungry wolves. In hunting mode their silver-coloured flanks are replaced by a chequered pattern, and they are commonly accompanied by cornetfish and grouper hoping to capture any stray fish trying to escape the ravenous pack.

The unfortunate prey are silversides. They form numerous small schools over the coral outcrops all over the site, but in places converge to form much larger banquets for the numerous predators.

Rainbow runners, yellowtail scad and



bluefin trevally hunt in small packs to take advantage of this bountiful supply of food, and the peak times to witness them are early mornings and sunset dives.

The action gets frantic, as the bullies of the reef, giant trevally, attack the silversides that move in unison in a bid to mesmerise the predators and not be "that

Above: Blue seastar and silversides.

Left: Ornate ghost pipefish.

Below from left: Painted spiny lobster and coral grouper; Napoleon wrasse among the silversides.


fish" left isolated at the edge of the school.

Twilight favours the predators in this daily battle for survival, and the hectic action of a sunset dive is one you won't want to miss, even if tempted by a cold beverage to end your day.

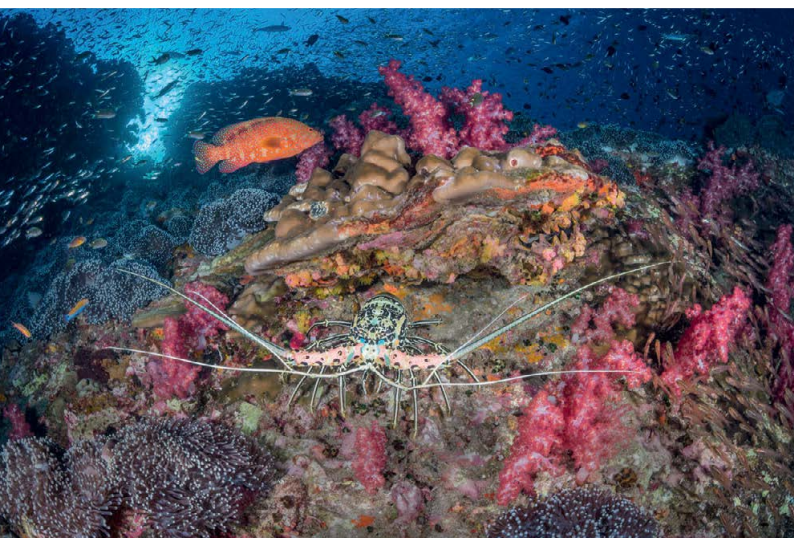
Richelieu can also attract some of the bigger creatures, such as giant and Malabar grouper or the occasional guitar shark, but the star of the show has to be that regular visitor the whale shark.

It is normally smaller juvenile and sub-adults up to 6m long that turn up, but they still dwarf any diver.

Thailand has some amazing dive-sites but for me it's Richelieu Rock that never fails to deliver the goods.

I recently chartered a liveboard for a photography expedition and know that everyone enjoyed the diving in this jewel in the Andaman Sea. 

Alex Tyrrell owns underwater photography training centre Dive4Photos on Koh Tao, Thailand





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CORAL REEFS' DEEPEST SOUTH

STANDING AT THE QANTAS check-in desk in Sydney, Mark Strickland looked like a magician late for his show, still in his dressing room, feverishly loading his vest and trousers with all manner of magic props.

In Mark's case, his "pockets full of tricks" amounted to camera lenses, batteries, housing port extensions and electronics-charging equipment for his underwater photography kits.

Already checked in, I stifled a grin as I watched him rifle through his camera-cases, jamming his pockets with as much gear as he could manage to meet the strict checked-bag weight limits for our Qantas commuter flight to Lord Howe Island (LHI). It was our final destination for a week's worth of diving.

Ironically, I had cautioned Mark regarding Qantas's excess-weight policy when we had booked our seats months earlier. "I've been nicked for overweight bags at the airport every time I book with Qantas," I told him.


"So, for peace of mind, I paid a cheaper, early fee online knowing I'd be weighed and nicked again at the airport if I didn't pay upfront."

But Mark is a seasoned traveller and good at working the system to his advantage, despite flying with two full kits of camera equipment.

In 20 minutes he had miraculously stripped the excess weight from his checked luggage, to the gram, moving all the weight to his clothing to avoid the steep overweight fee.

The once-sceptical Qantas agent shook her head and smiled in disbelief as Mark the magician stood there, at least 7kg heavier, watching the conveyor move his checked bags though.

The idea of diving LHI was a bucket-list desire Mark and I had considered for some time. My motivation was simple: it promised a possible "two for one" photo opportunity to capture a deuce anemonefish species for my image collection.

Amphiprion mccullochi (McCulloch's anemonefish) are found exclusively at LHI and Norfolk Island. *Amphiprion atezonatus* (wide-banded anemonefish) 

Dreams do come true: **MARK B**



HATTER and his buddy enjoy some

cool diving and fish-collecting on Lord Howe Island

Pictured: Gold-banded butterflyfish (*Chaetodon rainfordi*).



Above, from left: Conspicuous angelfish (*Chaetodonoplus conspicillatus*); three-band butterflyfish (*Chaetodon tricinctus*).

Below, from left: Ball's Pyramid; McCulloch's anemonefish (*Amphiprion mccullochi*).

have a slightly greater distribution, including LHI and a few remote locals along the south-eastern Australian coast.

Mark, a veteran cruise director who had worked for years on liveaboards in the heavily travelled Coral Triangle, desired Lord Howe's isolated location far from the beaten path.

Its designation as the world's southernmost coral-reef system was definitely a cool additional factor.

The history and isolation of what is technically called the LHI Group is similar to that of the Galapagos Islands.

Far from continental influences and lying between temperate and tropical



ocean currents, it also has parallels with Galapagos in regard to land and aquatic speciation. LHI has at least two dozen species of plants and animals found nowhere else on Earth, and many more that are localised to a small area regionally just beyond the group.

Some seven million years ago, LHI was born in the Tasman Sea through a combination of subsea tectonic forces and volcanism. Parked between Australia and New Zealand at 31.55°S, LHI is a full 8° south of the Tropic of Capricorn, and 560 miles south of the Great Barrier Reef.

At such an extra-tropical latitude, LHI waters might reasonably be expected to be anything but tropical. However, the South Australian Current bathes the islands in temperatures warm enough to support 40 species of reef-building hard corals.

The island's first reported European sighting came in 1788. Lt Henry Lidgbird Ball commanded HMS *Supply*, a tender sailing from Botany Bay with a cargo of prisoners to found a new penal colony on Norfolk Island to the north. He named the island in honour of Richard Howe, then First Lord of the Admiralty.

He also named one of its peaks Mt Lidgbird, and dubbed an isolated, towering spire 14 miles south-east of the main island that rose 551m from the seabed Ball's Pyramid.

Today, after eons of sculpting wind and waves, LHI is a 40th of its original size, divided into 28 islands and rocks, Ball's Pyramid included. Only the main island, at 5.6sq miles, is large enough to support

a modest local human population.

As of the latest census in 2016, LHI boasted an enviably low count of 382 full-time residents. Its designation as an Unesco World Heritage Site means that no more than 400 tourists are allowed on the island at any one time.

What wasn't to like about LHI? That's why we found ourselves bucking weight restrictions at the Qantas Airlines desk.

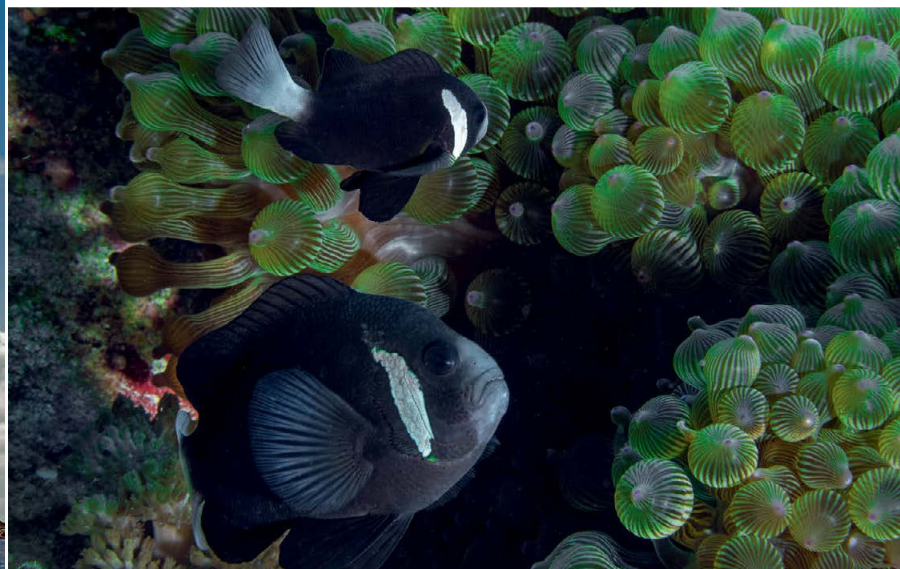
OUR FIRST DIVE was at the iconic Arch, minutes from the beach. Shrouded in 5mm of neoprene, I figured I was prepared for cooler waters, yet, a trickle of water leaking down my spine on entering the water felt almost paralysing.

"What's the matter?" laughed Aaron Ralph, owner of Pro Dive Lord Howe Island, our selected guide charter for the week. "It's a warm 23°C!"

It seemed a bit mind-blowing that water this cool supported so many species of tropical corals, especially compared to the reef water temperatures north of the Tropic of Capricorn. At LHI, seasonal water temperatures range from a chilly 18°C in winter to a moderate 25°C in summer.

Ironically, its corals have evolved to survive this cooler temperature range, so will bleach (and have) if temperatures reach 26°C for extended periods.

As I settled in the sandy bowl at the base of the arch, an adult conspicuous angelfish (*Chaetodontoplus conspicillatus*) glided in to check me out. Rare in most of its range (it was the first I'd encountered





among countless sites where it's meant to be found), it is common at LHI.

Behind me, under the arch, Mark was zeroing in on a pair of strictly endemic three-band butterflyfish (*Chaetodon tricinctus*), cruising up the reef wall.

I shook my head in disbelief. Within two minutes, a pair of species we could only hope to encounter had paraded fearlessly before us.

I turned back to the conspicuous angelfish, which had scurried to the far side of the sand bowl, stopping in front of a large colony of drab green bulb-tentacle anemones (*Entacmaea quadracolor*) on the rocky wall.

We were only five minutes into our first dive, and I had found half a dozen McCulloch's anemonefish seeking refuge in the anemones. Suddenly, the chill of the water was all but forgotten.

Back on the boat, we chortled as if we'd won the lottery. Between the two of us, we had been able to photograph four species of reef tropicals new to both of us.

BACK AT THE dive-shop, Aaron offered the prospect of something new – an exploratory dive off a newly charted deep reef that rose from plunging depths and plateaued at 30m.

"I charted this reef last year but haven't yet had a chance to dive it," he said. "Tomorrow we have great weather, slacker tides and it would be an opportunity."

The following morning we zoomed north on a calm sea to find and dive the new reef. After a couple of passes we

triangulated the reef-top and dropped a buoy. The top was already at 25m, so we were cautioned to watch our time to ensure a no-decompression dive.

I was on a mission to find the wide-band anemonefish to the exclusion of other possible photo targets, but my search proved fruitless. However, Mark scored with a colourful *Dendronephthya* soft-coral colony on a small ledge, which he shot with his wide-angle kit.

After an hour's surface interval we moved north-east to a group of rocks in an area known as the Admiralty Islands, a fancy name that evokes far more dry land-mass than these rocks and small island represent.

But along and between these rocks and islands I discovered more species than I'd ever before encountered. These included the beautiful gold-barred butterflyfish (*Chaetodon rainfordi*) and the shy black butterflyfish (*Chaetodon flavirostris*).

Further from the rocks in open water, half-banded angelfish (*Genicanthus semicinctus*) endemic to LHI and the Kermadec Islands, fed on plankton a few metres off the bottom.

Genicanthus species are unusual in that males and females differ completely in markings and/or coloration. In the wild, females outnumber singular males, which patrol a rather expansive territory, protecting their harems from other intruding males of the same species.


It's the intrusion of a rogue male into another's territory that presents the best opportunity to capture an image of one of



these beauties. As the two males engage in non-mortal posturing, they forget about their stalker with the camera. But our chances of capturing an image were fleeting, because *Genicanthus* prefers the deeper regions of the reef, limiting our bottom time and thus encounters.

BY MID-WEEK, the wide-band anemonefish still eluded us. However, I had been able to score another strictly endemic species, the Lord Howe moray (*Gymnothorax annasona*), on another site in the Admiralty Islands. And because we'd been diving the best sites we had seen plenty of McCulloch's anemonefish, but I needed a lifeline.

"Here's what I really hope to find today if possible," I said, showing Aaron an image of *Amphiprion latezoneatus*.

"Right! I have a spot!" he replied enthusiastically. "We'll do both dives on this site." He pointed to a wide, sausage-like reef on his nautical chart. "We'll do the first dive on one side and the second on the other." The deepest section was only 20m, with the reef top at 10m, 

Above, from left: Black butterflyfish (*Chaetodon flavirostris*); moray eel (*Gymnothorax annasona*).

Below, from left: Male half-banded angelfish (*Genicanthus semicinctus*); Striped catfish school (*Plotosus lineatus*).





Above, clockwise from top: Wide-band anemonefish family in bulb-tipped anemone (*Amphiprion lazetonatus*); the rare ballina angelfish (*Chaetodontoplus ballinae*); feminine wrasse (*Anampses femininus*).

Below, from left: Lord Howe butterflyfish (*Amphichaetodon howenensis*); unidentified cardinalfish species with eggs in its mouth.

so I would have plenty of time to search. We rolled into the cool water, no longer a system shock to my spine, into 30m visibility. Perfect! The clear water would aid my search as I swam down the reef just above the crown.

Five minutes into the dive, a swirling mass 5m below me near an overhang caught my eye. It was a large school of juvenile striped catfish (*Plotosus lineatus*), another cool novelty on my fish-list. The wide-band would have to wait.

I carefully moved to the ever-morphing shape of the catfish and began to shoot.

Finally satisfied, I moved up to the reef crown and bingo! A pair of wide-banded

anemonefish hosting in a leathery anemone (*Heteractis crispa*) materialised where the reef crown began to slope sharply to the sandy bottom below.

It was bonus time. The fish were guarding a nest of tiny eggs on the rock beside the anemone.

Neutrally buoyant inches above the reef, locked in place by my reef probe wedged between the rocks, I waited patiently for the best shots of the two anemonefish. Only the eventual chirp of my computer, alerting me to zero bottom-

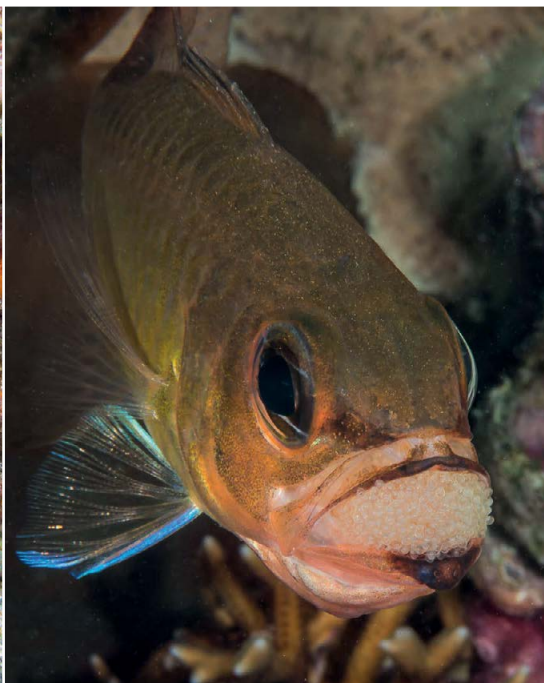
time remaining, broke my intense focus. With a cold body-core and an image card loaded with hopeful shots, I moved up to begin desaturating, and slowly made my way back to the boat.

Mark too had found the catfish and another group of wide-banded anemonefish on his dive. Our second dive would make a nice insurance policy, reshooting the subjects just to be sure.

CAPPING THOSE PERFECT morning dives, we completed a two-hour shallow dive on the inner lagoon's reef at Erscott's Hole. A plethora of multicolored wrasse species and cardinalfish, some with mouths full of eggs, kept us occupied for the rest of the afternoon in the pleasantly warmer lagoon.

With the main focus of my trip behind me, it was time to look ahead to our last day's diving. Every diver who comes to LHI hopes that conditions will be good enough to make the 14-mile run south to Ball's Pyramid, where one of the rarest fish in the world can be found in depths shallow enough for divers to encounter.

The ballina angelfish (*Chaetodontoplus ballinae*) is found only in northern coastal New South Wales and at Ball's Pyramid, and generally at depths exceeding 200m. Oddly, and perhaps because Ball's Pyramid is more temperate



in water temperature than Lord Howe, it can be found around the base of boulders and rocky walls there at around 30m.

Our good juju continued. Aaron announced when we turned up at the dive-shop on our last diving day that conditions were perfect for the trip.

On a smooth sea our fast boat soon had us zig-zagging around before dropping a buoy marking a reef of deep boulders where Aaron expected us to find the *ballina*. He had done his job well, and we weren't disappointed.

At 30m I spotted not one, but two *ballinas*! Mark saw them too as they separated and swam deeper in different directions. Mark and I made eye contact and telepathically agreed that he would follow the one on the right while I took the one on the left.

Time was short but I was able to capture a couple of images before the shy fish disappeared down the rocky slope further down than I could follow.

A few minutes later I found Mark at 20m stalking a loose aggregation of half-banded angelfish. Apparently his *ballina* had also been a brief drive-by encounter.

So in the remaining minutes I searched for a male *Genicanthus semicinctus* to stalk until it was time to ascend.

I had come to LHI with an optimistic



FACTFILE

GETTING THERE ▶▶

Qantas has daily flights from Sydney.

Once Australia reopens, travellers can book several carriers from London to Sydney.

DIVING & ACCOMMODATION ▶▶ Two dive operations on LHI offers daily trips including recommended Pro Dive Lord Howe Island, prodivelordhoweisland.com.au. There is a variety of hotels, B&Bs and holiday homes.

WHEN TO GO ▶▶ Diving season runs from November through April. December through March are the best months to dive based on weather and water temperature.

MONEY ▶▶ Australian dollar.

HEALTH ▶▶ Nearest hyperbaric chamber Sydney or Brisbane.

PRICES ▶▶ Return flights UK to Sydney from £620. Return from Sydney to LHI around £800. Six-dive package from Aus \$520 (around £286).

VISITOR INFORMATION ▶▶ lordhoweisland.info



game plan of capturing images of a couple of anemonefish species. I left with a far greater library of subjects, uncommon if not outright rare in every

other place in the world. Our visit to LHI had been "cool", figuratively and literally.

There are more unique species to encounter and I'm sure we'll be back. █

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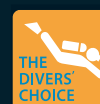
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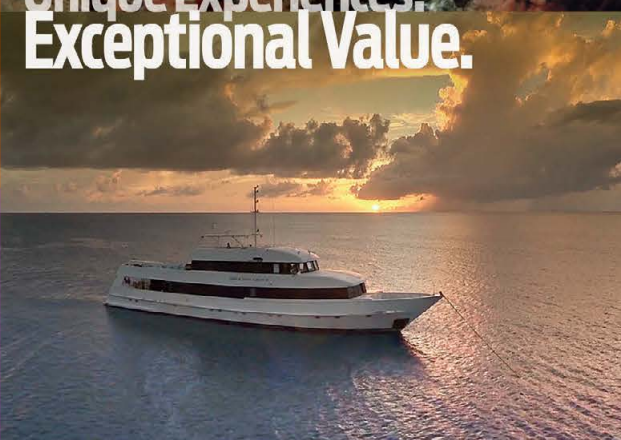
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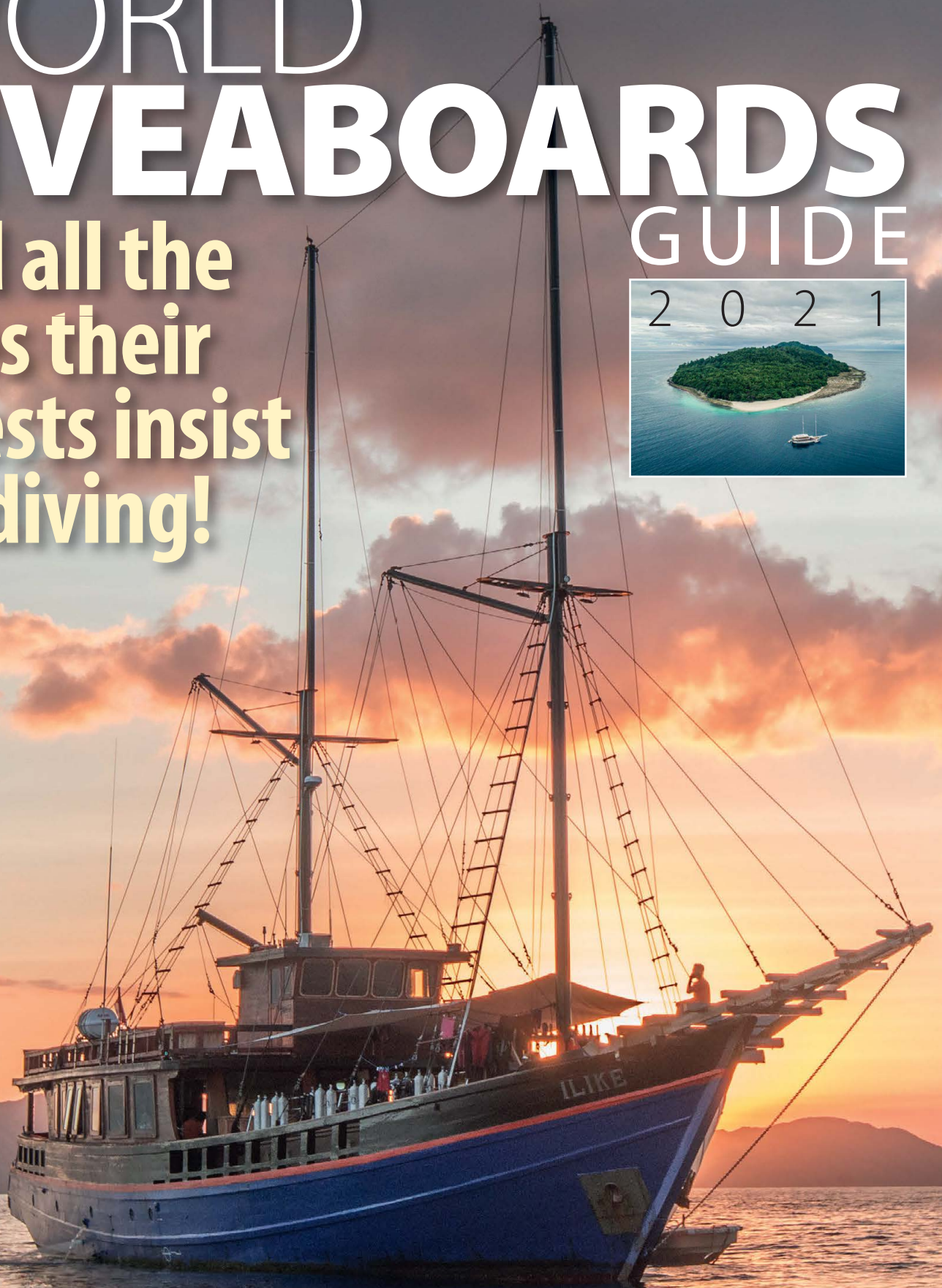
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DIVER

WORLD LIVEBOARDS GUIDE

and all the
sites their
guests insist
on diving!



DIVER World Liveboard Guide 2021

Vessel	Previous name	Operator	Built / Refit	Construction	Length (m)	Beam (m)	Decks	Cabins	Guests	Crew
All Star Avalon II		All Star Liveboards	1988	Aluminium	40	7	4	10	20	12
Amira		Amira	2008	Timber	52	10	4	10	19	30
Aqua Cat		All Star Liveboards	2001	Aluminium	31	11	3	11	22	11
Atlantis Azores		Atlantis Dive Resorts & Liveboards	1984 / 2019	Aluminium	32.6	5.5	2	8	16	10
Bahamas Aggressor		Aggressor Adventures	2012	Steel	30	8	3	6	14	5
Bahamas Master		Master Liveboards	1965 / 2019	Steel	35	7.3	3	8	16	6
Belize Aggressor III		Aggressor Adventures	1987	Steel	33	7	4	9	18	6
Belize Aggressor IV		Aggressor Adventures	2002	Steel	42	8	4	10	20	6
Blackbeard's Morning Star		All Star Liveboards	1983	Fibreglass / Timber	20	6	1	1	18	5
Blackbeard's Sea Explorer		All Star Liveboards	1983	Fibreglass / Timber	20	6	1	1	18	5
Blue Adventurer		Blue O Two	2004 / 2013 / 2016	Timber	32	8	4	12	22	10
Blue Fin		Blue O Two	2005	Timber	39	8.5	4	12	24	10
Blue Force One	<i>Leo</i>	Blue Force Fleet	2014	Timber	42	11	4	12	24	11
Blue Force Three		Blue Force Fleet	2018	Steel	42	8.7	4	13	26	8
Blue Force Two		Blue Force Fleet	2007 / 2019	Timber	28	7	4	9	18	7
Blue Horizon		Blue O Two	2006 / 2016	Timber	41	8	4	13	26	10
Blue Manta Explorer		Explorer Ventures	2014	Steel	45	9	4	14	22	20
Blue Melody		Blue O Two	2005 / 2017	Timber	38	8.3	4	13	26	10
Blue Spirit	<i>Sea Spirit</i>	Blue O Two	n/a / 2002 / 2016	Timber	26	7	2	6	12	8
Blue Voyager		Blue O Two	2001 / 2016	Steel	37	8	4	13	26	10
Blueshark One		EcoProDivers	2002	Timber	30	9	4	9	16	10-11
Caribbean Explorer II		Explorer Ventures	1978 / 1999	Steel	35	6	3	9	18	7
Cayman Aggressor V		Aggressor Adventures	1984	Steel	42	8	4	10	20	7
Cheng Ho		Sea Safari Cruises	1996 / 2019	Timber	33.2	10.7	3	14	26	20
Conte Max		Luxury Yacht Maldives	2004	Timber	33	10	3	9	21	8
Coralia		Coralia Liveaboard	2019	Timber	48	9.1	4	8	16	22
Cyclone		Tornado Marine Fleet	1998	Timber	32	7.3	4	10	20	14
Dewi Nusantara		Dewi Nusantara	2007	Timber	58	12	3	9	18	18
Duke of York		Luxury Yacht Maldives	2010	Timber	36	11	3	11	26	9
Eco Blue		EcoProDivers	2002	Timber	32	10	4	11	20	12-13
Emperor Asmaa		Emperor Divers	2003	Timber	30	7	4	10	20	10
Emperor Atoll	<i>Sea Queen</i>	Emperor Divers	1995	Timber	20	7.1	3	6	12	5
Emperor Echo	<i>C-Echo 1</i>	Emperor Divers	2003	Timber	31	7.8	4	13	25	11
Emperor Elite		Emperor Divers	2006	Timber	38	8	4	13	26	11
Emperor Explorer	<i>Ocean Mist</i>	Emperor Divers	2019	Fibreglass	41	10.3	4	13	26	8
Emperor Harmoni		Emperor Divers	2022	Timber	48	11	3	11	21	18
Emperor Leo	<i>Ark Royal</i>	Emperor Divers	2007	Timber	34	9.4	4	12	24	7
Emperor Raja Laut		Emperor Divers	2005	Timber	31	7.2	2	6	12	12
Emperor Serenity	<i>Island Queen</i>	Emperor Divers	2015	Timber	40	10.6	4	13	26	8
Emperor Superior		Emperor Divers	2004	Timber	37	8.3	4	13	26	11
Emperor Virgo	<i>Ark Venture</i>	Emperor Divers	2011	Timber	32	10	4	9	18	6
Emperor Voyager	<i>Atoll Cruiser</i>	Emperor Divers	2004	Timber	28	9	4	10	20	7
Fenides		Wisata Selam Nusantara	2019	Timber	41	7.7	3	5	11	12
Galapagos Aggressor III		Aggressor Adventures	1993	Steel	30	7	4	8	16	10
Galapagos Master	<i>Deep Blue</i>	Master Liveboards	2004 / 2017	Steel	32.3	7.5	3	9	16	9
Grand Sea Explorer	<i>Grand Sea Serpent</i>	Explorer Ventures	2009 / 2014	Timber	43	8	4	14	28	13
Humboldt Explorer		Explorer Ventures	2009	Steel	34	6.5	3	8	16	9
Hurricane		Tornado Marine Fleet	2004	Steel	36	8	4	11	22	16
ILIKE		Dive Away	2010 / 2017	Timber	32	8	3	8	16	16

Colour Key: FAR EAST CARIBBEAN INDIAN OCEAN RED SEA PACIFIC / ATLANTIC

Dive-team	Max speed (knots)	Range (miles)	Tenders	Base	Area covered	Compressor	CCR-friendly	Website for full details
3-4	12	n/a	3	Jucaro, Cuba	Gardens of the Queen	Air / nitrox	No	allstarliveboards.com
6-7	9	1000	4	Bali / Sorong, Indonesia	Alor, Forgotten, Halmahera, Kalimantan, Komodo, Raja Ampat, Sulawesi, Triton Bay	Air / nitrox	Yes	amira-indonesia.com
4	12	n/a	2	Nassau, Bahamas	Exuma Cays	Air / nitrox	No	allstarliveboards.com
3	10	2500	2	Philippines	Visayas, Tubbataha	Air / nitrox	Yes	atlantishotel.com
3	12	300	1	Nassau, Bahamas	Bimini, Eleuthera, Exuma Cayes, Grand Bahama, Tiger Beach, West End	Air / nitrox	No	aggressor.com
4	10	n/a	2	Freeport, Grand Bahama	Andros, Berry Islands, Bimini, Cat, Exumas, Grand Bahama, Nassau	Air / nitrox	Yes	masterliveboards.com
4	10	300	1	Radisson Ft George, Belize City	Blue Hole, Lighthouse Reef, Turneffe	Air / nitrox	No	aggressor.com
4	12	350	1	Radisson Ft George, Belize City	Blue Hole, Lighthouse Reef, Turneffe	Air / nitrox	No	aggressor.com
1-2	14	n/a	1	Nassau, Bahamas	Exuma Cays	Air	No	allstarliveboards.com
1-2	14	n/a	1	Nassau, Bahamas	Exuma Cays	Air	No	allstarliveboards.com
2	10	500	2	Port Ghalib / Hurghada, Egypt	Red Sea	Air / nitrox	Yes	blueotwo.com
2-3	10	800	2	Port Ghalib / Hurghada, Egypt	Red Sea	Air / nitrox	Yes	blueotwo.com
4	10	1000	1	Male, Maldives	Maldives	Air / nitrox	Yes	blueforcefleet.com
4	10	1500	3	Hurghada / Port Ghalib, Egypt. Port Sudan, Sudan	Egyptian & Sudanese Red Sea	Air / nitrox	Yes	blueforcefleet.com
3	9	800	2	Sharm el Sheikh, Egypt	Northern Red Sea	Air / nitrox	Yes	blueforcefleet.com
2-3	10	500	2	Port Ghalib / Hurghada, Egypt	Red Sea	Air / nitrox	Yes	blueotwo.com
5	10	3500	4	Labuan Bajo / Sorong, Indonesia	Alor, Banda Sea, Komodo, Raja Ampat	Air / nitrox	No	explorerventures.com
2	8	435	2	Port Ghalib / Hurghada, Egypt	Red Sea	Air / nitrox	Yes	blueotwo.com
2	10	500	2	Male, Maldives	Maldives	Air / nitrox	Yes	blueotwo.com
2-3	10	500	2	Male, Maldives	Maldives	Air / nitrox	Yes	blueotwo.com
5	9	450	1	Hulumale, Maldives	Central & southern Maldives	Air	No	ecoprodivers.com
2	12	1000	1	St Maarten / St Kitts	Saba, St Kitts	Air / nitrox	No	explorerventures.com
4	10	350	1	George Town, Grand Cayman	Cayman Brac, Little Cayman, Grand Cayman	Air / nitrox	No	aggressor.com
8	7	1850	2	Labuan Bajo, Indonesia	Alor, Ambon, Labuan Bajo, Raja Ampat	Air / nitrox	No	seasafaricruises.com
3	8	770	2	Male, Maldives	Entire Maldives archipelago	Air / nitrox	Yes	luxuryyachtmaldives.com
6	9	500	2	Sorong / Waisai, Indonesia	Alor, Bali, Banda Sea, Cenderawasih Bay, Flores, Forgotten, Komodo, Halmahera, Lembah, Raja Ampat, Triton Bay	Air / nitrox	No	coralia-liveboard.com
2	12	n/a	2	Saudi Arabia	Farasan Banks, Farasan Jeddah, Seven Reefs, Seven Sisters	Air / nitrox	No	scubatravel.com
5	10	1400	2	Sorong, Indonesia	Alor, Ambon, Banda Sea, Cenderawasih Bay, Halmahera, Maluku Tenggara, Raja Ampat, Triton Bay, Tual	Air / nitrox	No	dewi-nusantara.com
4	9	780	2	Male, Maldives	Entire Maldives archipelago	Air / nitrox	Yes	luxuryyachtmaldives.com
5-6	10	450	1	Hulumale, Maldives	Maldives	Air / nitrox	Yes	ecoprodivers.com
2	11	600	2	Marsa Alam, Egypt	Brothers, Daedalus, Elphinstone, St John's	Air / nitrox	Yes	emperordivers.com
1	7	250+	1	Male, Maldives	Baa Atoll to Meemu Atoll	Air / nitrox	Yes	emperordivers.com
2-3	9	800	2	Port Ghalib, Egypt	Brothers, Daedalus, Elphinstone, St John's	Air / nitrox	Yes	emperordivers.com
2-3	10	800	2	Port Ghalib, Egypt	Brothers, Daedalus, Elphinstone, St John's	Air / nitrox	Yes	emperordivers.com
5	12	300+	1	Male, Maldives	Baa Atoll to Addu Atoll	Air / nitrox	Yes	emperordivers.com
5	11	1500	3	Serengan, Bali, Indonesia	Alor, Ambon, Hamlahera, Komodo, Raja Ampat	Air / nitrox	No	emperordivers.com
4	8	300+	1	Male, Maldives	Baa Atoll to Addu Atoll	Air / nitrox	Yes	emperordivers.com
3	9	1500	2	Serengan, Bali, Indonesia	Alor, Ambon, Hamlahera, Komodo, Raja Ampat	Air / nitrox	No	emperordivers.com
4	10	300+	1	Male, Maldives	Baa Atoll to Addu Atoll	Air / nitrox	Yes	emperordivers.com
2-3	10	800	2	Hurghada	Northern Red Sea, Brothers	Air / nitrox	Yes	emperordivers.com
3	9	300+	1	Male, Maldives	Baa Atoll to Addu Atoll	Air / nitrox	Yes	emperordivers.com
3	8	300+	1	Male, Maldives	Baa Atoll to Addu Atoll	Air / nitrox	Yes	emperordivers.com
3	10	2500	2	Ambon, Bima, Kalabahi, Labuan Bajo, Maumere, Sorong, Ternate	Alor, Banda Sea, Halmahera, Komodo, Raja Ampat	Air / nitrox	No	fenidesliveboard.com
3	10	800	2	Baltra, Galapagos	Galapagos National Park	Air / nitrox	No	aggressor.com
2	9	n/a	2	San Cristobal, Galapagos	Galapagos islands	Air / nitrox	No	masterliveboards.com
3	12	1800	3	Hurghada, Egypt	Brothers, Daedalus, Ephinstone, Fury, Gubal, Ras Mohammed, Tiran, St John's	Air / nitrox	Yes	explorerventures.com
2	10	1800	2	San Cristobal, Galapagos / Ecuador	Central Islands, Darwin, Wolf	Air / nitrox	No	explorerventures.com
2	12	n/a	2	Marsa Alam, Egypt	Brothers, Daedalus, Elphinstone, Rocky, St John's	Air / nitrox	Yes	scubatravel.com
4	9	112	2	Bali, Indonesia	Indonesia	Air / nitrox	No	ilike-liveboard.com

Specifications supplied by operators

DIVER World Liveboard Guide 2021

Vessel	Previous name	Operator	Built / Refit	Construction	Length (m)	Beam (m)	Decks	Cabins	Guests	Crew
Indo Aggressor		Aggressor Adventures	2001	Timber	30	7	3	8	16	15
Indo Siren		Master Liveboards	2010 / 2019	Timber	40	9.7	2	8	16	11
Kona Aggressor II		Aggressor Adventures	1989	Aluminium	24	8	2	6	14	6
Maldives Aggressor II		Aggressor Adventures	2009	Steel	41	8	4	10	22	16
Mistral		Tornado Marine Fleet	2010	Steel	34	8.2	4	11	22	16
Nautilus Belle Amie	<i>Where's John</i>	Nautilus Liveboards	2015	Steel	44.8	9.8	4	17	32	12
Nautilus Explorer		Nautilus Liveboards	2000	Steel	40.2	7.9	4	13	25	11
Nautilus Gallant Lady	<i>Esprit</i>	Nautilus Liveboards	1984 / 2018	Aluminium	35.4	7	3	6	12	7
Nautilus Undersea	<i>Undersea Hunter</i>	Nautilus Liveboards	1968 / 2017	Steel	32	9.8	3	9	19	9
Odyssey		Odyssey International	1978	Steel	40	7.3	3	9	16	9
Okeanos Aggressor I		Aggressor Adventures	1988	Steel	33	7	4	10	22	8
Okeanos Aggressor II		Aggressor Adventures	2010	Steel	36	8	3	11	22	10
Oman Aggressor		Aggressor Adventures	2017	Steel	45	8	4	11	22	13
Palau Aggressor II		Aggressor Adventures	2010	Aluminium	32	9	3	9	18	13
Palau Siren		Master Liveboards	2012	Timber	40	9.7	2	8	16	9
Philippine Siren		Master Liveboards	2013	Timber	40	9.7	2	8	16	9
Philippines Aggressor		Aggressor Adventures	2020	Steel	41	8	4	12	24	13
Quino el Guardian		El Guardian	1989 / 2015	Timber	27.5	7	2	5	16	9
Raja Ampat Aggressor		Aggressor Adventures	2015	Steel	30	7	3	8	16	13
Red Sea Aggressor II		Aggressor Adventures	2014	Timber	42	7	4	11	22	12
Red Sea Aggressor III		Aggressor Adventures	2014	Timber	39	7	4	11	22	12
Roatan Aggressor		Aggressor Adventures	1989	Aluminium	36	6	3	9	18	6
Rocio del Mar		Del Mar	2008	Steel	33.5	7.6	3	10	20	10
Rock Islands Aggressor		Aggressor Adventures	2010	Aluminium	32	9	3	9	18	13
Saildive		Saildive Azores	2018	Fibreglass	14	7.8	2	5	8	3
Samambaia		Samambaia	2015	Timber	42	9.5	3	7	14	20
Scubaspa Yang		Scubaspa Maldives	2014	GRP	50	11	4	19	40	25
Scubaspa Ying		Scubaspa Maldives	2014	GRP	50	11	4	19	40	25
Sea Safari VI		Sea Safari Cruises	1999 / 2019	Timber	35	9.5	3	10	20	18
Sea Safari VII		Sea Safari Cruises	2001 / 2019	Timber	37.5	10.5	3	14	28	20
Sea Safari VIII		Sea Safari Cruises	2003 / 2019	Timber	34	10	3	12	23	20
Socorro Aggressor		Aggressor Adventures	2018	Steel	41	8	4	13	26	11
Solitude Adventurer	<i>White Rabbit</i>	Solitude Liveboards & Resorts	2000 / 2017	Aluminium	36	12	4	8	18	16
Solitude One	<i>Big Blue Explorer</i>	Solitude Liveboards & Resorts	1979 / 2013	Steel	52	8.6	4	10	22	20
Solomons PNG Master	<i>Taka</i>	Master Liveboards	2004 / 2014	Steel	30	8	3	12	20	9
Thailand Aggressor		Aggressor Adventures	2013	Aluminium	35	7	4	8	16	8
The Junk (June Hong Chian Lee)		Master Liveboards	1962 / 2005	Timber	33	8.5	2	6	18	9
The Phinisi (Cheng I Sao)	<i>Maldives Siren</i>	Master Liveboards	2007 / 2018	Timber	34	8	2	7	18	9
Tiare Cruise		Tiare Luxury	2016	Timber	45.6	9	3	6	14	17
Tiburon Explorer		Explorer Ventures	2020	Steel	38	7.5	3	8	16	9
Truk Master	<i>Astral Star</i>	Master Liveboards	1974 / 2016	Steel	34	7	3	8	16	9
Turks & Caicos Aggressor II		Aggressor Adventures	1994	Aluminium	36	6	3	9	18	6
Turks & Caicos Explorer II		Explorer Ventures	1995 / 2005	Aluminium	37.8	6.7	4	10	20	7
Typhoon		Tornado Marine Fleet	2020	Steel	34	8	4	10	20	16
Whirlwind		Tornado Marine Fleet	2006	Timber	36	8	4	12	22	16
White Manta Explorer		Explorer Ventures	2018	Steel	46	10	4	14	24	20

Colour Key: FAR EAST CARIBBEAN INDIAN OCEAN RED SEA PACIFIC / ATLANTIC

Dive-team	Max speed (knots)	Range (miles)	Tenders	Base	Area covered	Compressor	CCR-friendly	Website for full details
3	8	600	2	Bali, Indonesia	Forgotten, Komodo National Park & Deep South	Air / nitrox	No	aggressor.com
3	9	n/a	0	Sorong / Labuan Bajo, Indonesia	Alor, Forgotten, Halmahera, Komodo, North Moluccas, Raja Ampat, Spice, Triton Bay	Air / nitrox	Yes	masterliveboards.com
4	10	400	1	Kailua-Kona, Hawaii	Kona	Air / nitrox	No	aggressor.com
4	12	1000	1	Male / Addu, Maldives	Male, N & S Ari, S Male, Vaavu	Air / nitrox	No	aggressor.com
2	13	n/a	2	Hurghada / Sharm el Sheikh / Marsa Alam, Egypt	Northern Red Sea (Southern on request)	Air / nitrox	Yes	scubatravel.com
7	12	2500	3	Cabo San Lucas, Mexico	Baja California	Air / nitrox	Yes	nautilusliveboards.com
7	12	6000	2	Cabo San Lucas, Mexico	Baja California	Air / nitrox	Yes	nautilusliveboards.com
4	17	4000	1	Cabo San Lucas, Mexico	Bahia de Los Angeles, Sea of Cortez, Socorro	Air / nitrox	Yes	nautilusliveboards.com
6	11	4000	2	Cabo San Lucas, Mexico	Espiritu Santo, Sea of Cortez, Socorro	Air / nitrox	Yes	nautilusliveboards.com
5	8	1200	2	Weno, Chuuk	Chuuk (Truk) Lagoon	Air / nitrox, trimix	Yes	trukodyssey.com
4	10	1000	2	Puntarenas, Costa Rica	Cocos	Air / nitrox	No	aggressor.com
4	10	1000	2	Puntarenas, Costa Rica	Cocos	Air / nitrox	No	aggressor.com
4	12	1000	2	Muscat / Salalah, Oman	Daymaniyat, Hallaniyat, Masyrah	Air / nitrox	No	aggressor.com
4	10	400	1	Koror, Palau	Palau, Rock Is	Air / nitrox	No	aggressor.com
3	9	n/a	3	Koror, Palau	Palau	Air / nitrox	Yes	masterliveboards.com
3	9	n/a	2	Cebu / Puerto Princesa, Philippines	Leyte, South & East Visayas, Tubbataha	Air / nitrox	Yes	masterliveboards.com
5	10	1000	2	Philippines	Tubbataha, Visayas/Cebu	Air / nitrox	No	aggressor.com
3	9	4000	2	San Jose del Cabo / Puerto Penasco, Mexico	Sea of Cortez, Socorro	Air / nitrox	Yes	mexicoliveboards.com
4	8	600	3	Raja Ampat, Sorong	Derawan, Raja Ampat, Raja/Halmahera/Lembah	Air / nitrox	No	aggressor.com
4	12	600	2	Hurghada, Egypt	Northern Red Sea	Air / nitrox	No	aggressor.com
4	12	600	2	Port Ghalib, Egypt	Deep Southern Egyptian Red Sea	Air / nitrox	No	aggressor.com
3	10	400	1	French Harbor, Roatan, Honduras	Bay Is, Honduras, Roatan	Air / nitrox	No	aggressor.com
3	10	4000	2	San Jose del Cabo / Puerto Penasco, Mexico	Sea of Cortez, Socorro	Air / nitrox	Yes	mexicoliveboards.com
4	10	n/a	1	Koror, Palau	Palau, Rock Is	Air / nitrox	No	aggressor.com
2	10	n/a	0	Porto da Horta, Azores	Faial, Graciosa, Pico, Sao Jorge	Air	No	saildive.pt
4	10	1600	2	Benoa, Bali, Indonesia	Alor, Banda Sea, Komodo, Raja Ampat, Triton Bay	Air / nitrox	Yes	sambaiba-liveboard.com
5	9.5	2000	2	Male, Maldives	Maldives	Air / nitrox	No	scubaspa.com
5	9.5	2000	2	Male, Maldives	Maldives	Air / nitrox	No	scubaspa.com
6	8	1700	2	Sorong, Indonesia	Ambon, Raja Ampat, Wakatobi	Air / nitrox	No	seasafaricruises.com
8	7	2100	2	Labuan Bajo, Indonesia	Alor, Bali, Flores, Lombok, Sumba, Sumbawa	Air / nitrox	No	seasafaricruises.com
7	7	1350	2	Sorong, Indonesia	Cendrawasih Bay, Raja Ampat, Triton Bay	Air / nitrox	No	seasafaricruises.com
5	10	1000	3	San Jose del Cabo / Ensenada, Mexico	Socorro, Guadalupe	Air / nitrox	No	aggressor.com
5	23	1840	3	Indonesia	Alor, Banda Sea, Forgotten, Halmahera, Komodo, Lembah, Raja Ampat	Air / nitrox	No	solitude.world
5	14	10,400	3-5	Cebu, Philippines	Anilao, Cebu, Malapascua, Romblon, S Leyte, Surigao, Ticao, Tubbataha, Verde & Palau	Air / nitrox	Yes	solitude.world
3	11	n/a	3	Honiara, Solomons	Solomons: Florida Is, Guadalcanal, Russel Is, Western Province	Air	Yes	masterliveboards.com
3	9	400	2	Taplanu Pier, Thailand	Northern Andaman Sea	Air / nitrox	No	aggressor.com
3	8	n/a	2	Chalong / Phuket, Thailand	Phi Phi, Phuket, Similan, Surin	Air / nitrox	No	masterliveboards.com
2	n/a	n/a	2	Chalong / Phuket, Thailand	Hin Daeng/Hin Muang, Koh Haa, Phi Phi, Phuket, Similan, Surin. Mergui, Burma Banks	Air / nitrox	No	masterliveboards.com
4	11	1020	3	Bali, Indonesia	Alor, Banda Sea, Forgotten, Halmahera, Komodo, Maumere, Raja Ampat, Triton Bay	Air / nitrox	No	tiarecruise.com
2	12	1800	2	Baltra, Galapagos / Ecuador	Central Islands, Darwin, Wolf	Air / nitrox	No	explorerventures.com
2	8	n/a	2	Weno, Truk / Ebeye, Bikini	Bikini Atoll, Truk Lagoon	Air / nitrox	Yes	masterliveboards.com
4	10	350	2	Providenciales, TCI	Dominican Republic/Providenciales, Puerto Plata, Turks & Caicos	Air / nitrox	No	aggressor.com
2	14	1500	1	Providenciales, TCI	French Cay, Grand Turk, South & West Caicos	Air / nitrox	No	explorerventures.com
2	11	n/a	2	Saudi Arabia	Farasan Banks, Farasan Jeddah, Seven Reefs, Seven Sisters	Air / nitrox	Yes	scubatravel.com
2	12	n/a	2	Sharm el Sheikh, Egypt	Abu Nuhas, Gubal, Shag Rock, Sha'ab Ali, Sha'ab Mahmoud, Ras Mohammed, Tiran, Sharm	Air / nitrox	Yes	scubatravel.com
5	10	3500	4	Derawan / Sorong, Indonesia	Banda Sea, Derawan Archipelago, Raja Ampat	Air / nitrox	No	explorerventures.com

Specifications supplied by operators

FAR EAST *The dive-sites liveaboard guests insist on diving!*

TOBIAS FRIEDRICH



Amira.

Amira "There is no one dive-site. Some divers love muck, others macro only, the next big fish such as mantas or whale sharks, but most simply love the diversity. We can offer as many as 400 sites!"



Atlantis Azores.

Atlantis Azores "Monad Shoal, Malapascua in the Philippines is the most consistent location for thresher sharks. It's an early-morning dive (best around 5.30), as the sharks emerge from the deep on to the cleaning station. We often see mantas too.

"You can reach this site from the island (it's about a 40-minute ride) but diving from a liveaboard you beat all the day-boats so have a better chance of a private encounter. On the same day you get to dive other amazing sites in the area, such as Gato and the Kalanggaman islands."



Blue Manta Explorer.

Blue Manta Explorer "Besides the schools of hammerhead sharks, the Banda Sea has pristine coral reefs, unique sea-life in Alor, sea snakes in Manuk and a visit to the spice island in Banda Neira.

"The remoteness of these islands, along with the low levels of human population, have meant less fishing and pollution pressures, resulting in a vibrant, natural and healthy reef system.

"Expect reefs bursting with life, huge seafans and sponges, monumental hard corals and more fish than your mask can cope with. The variety and volume of fish life, large and small, is extraordinary."

Cheng Ho "Castle Rock is a favourite of visitors to the Komodo Marine Park. This underwater pinnacle is located just off of the north-eastern tip of Komodo Island, where divers often see hunting grey



Thresher shark, Malapascua (Atlantis Azores).



Cheng Ho.

reef along with blacktip and whitetip reef sharks. "This vibrant, healthy reef is also home to large resident Napoleon wrasse and, if you're lucky, you can spot some tiny *Hippocampus bargibanti* seahorses on the seafans as well."



Coralia.

Coralia "Melissa's Garden is in the central part of Raja Ampat, in the Fam Islands. This fantastic dive or snorkel is an absolute favourite of our guests.

"Three small rocks are surrounded in the shallows by a spectacular hard-coral garden. Full of life, you can spend half the dive (and all of a snorkel!) watching the colourful fish fluttering in and out of the corals. Blacktip reef sharks patrol the plateau and there's a good chance of seeing a wobbegong shark lazing in the sand on the edges of the site."



Dewi Nusantara It's Magic Mountain in Misool, Raja Ampat – clouds of fish, schooling jack, sweetlips, big-eye snapper, Napoleon wrasse, blacktip reef sharks, and the magic of the site lies in the huge mantas that sweep majestically into the cleaning stations.



Emperor Raja Laut.



Coming next year: Emperor Harmoni.

Emperor Raja Laut / Harmoni

"In Ambon, **Nil Desperandum**, in the middle of the Banda Sea, consists of massive coral and sponge formations, with beautiful hard coral to the reef side and shoals of big fish such as tuna, Spanish mackerel and, most impressive of all, resident hammerhead sharks rising from the depths in the blue."



Melissa's Garden, Raja Ampat (Coralia).



Fenides.

Fenides "The entire area of Raja Ampat has 1000-plus species of reef fish, 500-plus types of hard corals, and more than 700 species of molluscs, as

GONGPI/CLACES

DEBBIE ARRIAGA



Anemonefish, Raja Ampat (Fenides).

well as insane numbers of mantas and sharks, huge schools of fish, macro, drift-dives and pretty much everything in between. It's a world-beater."

rays, eagle rays, occasional mola molas in Manta Alley, Komodo Dragon Walk and fruit bats from Satonda Island."

ILIKE "There are too many fantastic sites, but one of the highlights on our schedule is definitely Misool in Raja Ampat.

"There are many dive sites there but one of the all-time favourite is Shadow Reef, also known as Magic Mountain."



ILIKE



Indo Siren.

Indo Siren "Everyone has an opinion about night dives, but if you do only one, it has to be **Torpedo Alley** on Rinca island in Komodo!

"Endless surprises are in store – all of the weird and wonderful kind. How often can you go in one dive from a riverbed, where every stone can hide tiny juvenile frogfish, to muck-diving black volcanic sand?"

"Ever wanted to see the sci-fi-esque bobbit worm? An electric torpedo ray? Nudis that seem to be endemic to this dive-site? The rare Ambon scorpionfish? Torpedo Alley is your chance!"

Indo Aggressor

"Highlights are the USS *Liberty* wreck, the abundance and diversity of soft corals, schooling jack, oceanic whitetip sharks, underwater bubbles from Sangeang Volcano, excellent macro life, octopuses, manta



Indo Aggressor.



Philippines Aggressor.



Philippine Siren.

Philippine Siren "Apo Island is one of the most successful marine sanctuaries in the Philippines, and one of our guests' favourite places. It has many dive-sites, but if our guests remember only one, it will be **Rocky Point West**.

"Just beyond the chapel, opposite the marine park warden's office, Rocky Point West offers some of the most stunning hard corals in the region, with endless patches of leather corals. The steep reef-

walls support numerous colourful reef species.

"Pyramid butterflyfish and red-toothed triggerfish are here in their hundreds, and frogfish, cuttlefish, banded sea-snakes, and hawksbill turtles are among common sightings."



Apo (Philippines Siren).



Raja Ampat Aggressor.

Raja Ampat Aggressor "Misool is the south-east of the four big islands of the Raja Ampat archipelago, one of the most biodiverse regions in the world. The rich variety of the reefs is accompanied by vertical walls, slopes, dry rocks, caves and lagoons, some covered with hard corals while the others are covered with brightly coloured soft corals. It's also renowned as the centre for pygmy seahorses and gorgonians."



Torpedo Alley, Komodo (Indo Siren).

GERARD RAMBERT

BRANDI WUELLER

HEATHER SUTTON



Samambaia.

Samambaia "Time and time again the **Magic Mountain** site in Misool leaves divers with 500-plus dives under their belts surfacing to say: "That is the best dive I have ever done." A beautiful submerged ridge that starts just 6m from the surface. It resembles an underwater plateau mountain that progressively steps down half a dozen times.

"Dropping in from the dive-boat, the first sight is an impressive hard-coral garden on the shallowest flat top of the ridge.

"Many times we have dropped into this site to see a giant black Pacific manta within minutes.



Giant Pacific manta (Samambaia).

"As the dive progresses, we drop a level and start making our way down to 25m along the ridge edge. Here you can find a microcosm of weird and wonderful macro critters clinging to the ridge walls.

"Towards the deep end of the ridge, the current picks up a little. With that come schools of pelagics



Cape Kri, Raja Ampat (Sea Safari VI).

and other large fish. Among many species barracuda and abundant Napoleon wrasse are highlights.

"At the end of the ridge, the final flat-topped step is at around 20m, which is where you start to raise your profile progressively up the steps and experience the diversity of critters to be found while ascending back to the coral garden."



Sea Safari VI.

Sea Safari VI "At the eastern edge of Mansuar island, it's said that you can see more species of fish and coral at **Cape Kri** than at any other dive-site in the world. It's a beautiful reef slope and perhaps one of the most gorgeous shallow reefs on the planet.

"School is in session here, and divers can expect to see schooling trevally, barracuda, sweetlips, hogfish, parrotfish and more. It's truly a must-see."



Sea Safari VII.

Sea Safari VII "Off the southernmost part of Komodo island divers have the opportunity to see oceanic and reef mantas. On descending, they make

their way to the 20m-deep cleaning station before following the slope until they reach **Manta Alley**.

"Here it's possible to see what is sometimes referred to as a manta parade, with scores of them coming through the alley one after another. It's a unique Komodo diving experience."



Sea Safari VIII.

Sea Safari VIII "Diving in a natural aquarium, **Sawondarek Jetty** has to be one of the best ways to end a Raja Ampat itinerary. Visit the school of sweetlips by the large cluster of cabbage coral, then slowly glide along the rich and healthy reef slope on the way back to the jetty in front of the village.

"Here divers can see schooling barracuda, schooling bigeye trevally, whitetip and blacktip reef sharks and a large resident Napoleon wrasse.

"For those with a keen eye, watch out for robust pipefish and *Pontohi* seahorses."



Sawondarek Jetty (Sea Safari VIII).



Solitude Adventurer "For those who've dived the famous **Magic Mountain** in Misool, it's easy to understand how it got its name, because the experience really is quite magical.

"This iconic dive-site offers an array of pristine corals, clouds of clouds of colourful fish and a breeding ground for Napoleon wrasse and whitetip reef sharks. But what makes it such a spectacle are the frequent visits by the elegant reef mantas and enormous oceanic mantas that come along for cleaning."



Solitude One.

Solitude One “Tubbataha in the Philippines is located in open ocean and comprises two large atolls and one small one, **Jessie Beasley Reef**.

“Despite all its reefs teeming with dense shoals of tropical reef-fish and vibrant corals, this reef tends to be a site that surprises divers with something special. It can be hard to look away from the mesmerising reef but it’s always worth keeping an eye out in the blue for some of the larger pelagic visitors that frequent Tubbataha – whale sharks and tiger sharks, hammerheads and silvertips.”



Thailand Aggressor.

Thailand Aggressor “One of Thailand’s most famous dive-sites, **Richelieu Rock** is an isolated horseshoe pinnacle that falls steeply to the surrounding sand bottom at a maximum 35m.

“The south side is a bay with a slope that gently falls to the deep, while the rest comprises sheer walls, groups of rock and numerous small caves hosting marine life. Colourful soft corals jostle against the wall, accompanied by huge seafans, hard corals and sea anemones.

“Because of its diversity, Richelieu Rock is a paradise for underwater photographers. Ghost pipefish, frogfish, harlequin shrimp, seahorses and Jans pipefish are among the smaller marine life, and divers have often encountered cuttlefish mating.

“In addition, anemonefish species, particularly tomato clownfish, are regularly sighted. Giant, zebra and white-eyed moray eels are common. Pelagic fish

swarm around the small outcrops, including chevron barracuda, rainbow runners, and giant grouper resting on the sand.”



The Junk.

The Junk “It’s predictable, but **Richelieu Rock** covered in its purple *dendronephthya* soft corals is a must-see. Barely breaking the surface at low tide, this lonely outcrop slopes to a sandy bottom at 18-35m.

“Marine life is prolific and hugely diverse for such a small and isolated spot. Among many other things you can see pharaoh cuttlefish, large octopuses, all five varieties of Andaman Sea anemonefish, moray eels, ornate ghost pipefish, smashing mantis shrimps, harlequin shrimps, tiger-tail seahorses, Spanish mackerel, frogfish, many schooling snapper and occasional manta rays and whale sharks.”



The Phinisi.

The Phinisi “In Burma, make sure to have plenty of gas and deco time to enjoy **Western Rocky**. The site is a rocky outcrop in open sea where you will almost always see lots of schools of hunting fish.

“It also features interesting underwater architecture, with a large swim-through arch that makes a perfect backdrop for photo enthusiasts.

“Once you’re done with the wide-angle, you can focus on the smaller stuff such as nudis, frogfish, and even Spanish dancers at night. Oh, one more thing: Western Rocky is also known to attract rare bowmouth guitar sharks during the mating season!”



Jessie Beasley Reef, Tubbataha (Solitude One).



Tiare Cruise

“Our choice would be **Boo Windows in Raja Ampat**, with its big swim-throughs. Divers enjoy the diverse marine life throughout their dives there.”



Boo Windows, Raja Ampat (Tiare Cruise).



White Manta Explorer “Off the east coast of Kalimantan, the Indonesian portion of Borneo, the islands of Sangalaki, Maratua and Kakaban (also called the **Derawan Archipelago**) offer some of the most remote and untouched diving spots we visit.

“Guests dive away from the crowds and the diving is spectacular, with plenty of big-fish sightings possible throughout the area.”



Richelieu Reef, Thailand (The Junk).



All Star Avalon II.

All Star Avalon II "Five Seas in Cuba is named after a wreck, which at this point is just a bunch of rubble. The reef that bears its name, however, is one of the most spectacular in the Caribbean. This is a site you could spend a full day exploring and not cover it all.

"Giant pillar coral can be found at the top, surrounded by schools of grunt and snapper. As the reef drops to the sandy bottom it creates ledges where giant schools of tarpon can be found.

"Exploring out in the sand and seagrass, keep an eye out for amazing macro life such as yellowhead jawfish or endemic nudibranchs. The Gardens of the Queen have barely been explored, and new species are being found every year."



Aqua Cat.

Aqua Cat "If you've been diving in the Bahamas, you've surely heard of the famed **Washing Machine**. Drift-diving at its best, the Washing Machine sends you through the spin-cycle at depth! "You'll come out the other side stain-free and lavender-scented (figuratively, of course).

"This is a high-speed drift that sends you on a wild ride, only to propel you out the other side of the channel to a slower drift.

"This is over a patch-coral reef that's home to a family of nurse sharks, turtles and healthy coral."



Bahamas Aggressor "The *Austin Smith* wreck is a 27m Bahamian Defence Force cutter lying in 18m of water. Ironically, it sank in 1995 while being towed to San Salvador – to be sunk there as a dive-site!"



Bahamas Master.

Bahamas Master "Tiger Beach is a 20sq mile area 30 nautical miles off the west end of Grand Bahama Island, and the best-known place for tiger, great hammerhead, Caribbean reef and lemon shark encounters, on a shallow white-sand bottom.

"We usually meet pregnant female tiger sharks that remain in these shallow waters for several months on end, so we're familiar with these ladies and consider them our friends.



Tiger Beach (Bahamas Master).

MICHAEL WEIER

"On a Tiger Beach trip, you'll not only encounter these impressive sharks but are likely to get to know several individuals, such as Emma and Princess."



Belize Aggressor III.

Belize Aggressor III / IV "The **Blue Hole** is a collapsed freshwater cave system about 300m across and more than 120m deep, made famous by Jacques Cousteau, who declared it one of the world's top 10 dive-sites. In 1971 he brought his ship the *Calypso* to chart its depths.

"Once descended, guests see beautiful vertical stalactite formations. The first shelf of this collapsed underground cavern begins at 33m, where stalactites descend from the ceiling.

"A healthy reef around the edge of the hole hosts an abundance of juvenile sea-life, as well as schools of parrotfish, squid, flaming scallops and angelfish. These shallows are great for diving or snorkelling."



Morning Star – Sea Explorer (below) is identical.

Blackbeard's Morning Star / Sea Explorer "Dog Rocks Wall starts at around 12m. with amazing fish and coral life. Fingers of coral extend out toward the deep blue, creating fissures and swim-throughs before quickly dropping off to the abyss.

"Descending, you'll find brightly hued barrel sponges, whip coral and black coral. Keep an eye out to the blue, because there can be great hammerheads cruising off the wall."



Sponges (Turks & Caicos Explorer).



Caribbean Explorer II "It's the whole of Saba Marine Park for us. Saba, "the Unspoiled Queen", is known for its offshore pinnacles and deep underwater seamounts. The 5sq mile top of a dormant volcano, it towers 2700m above the surface, surrounded by warm volcanic sand.

"The abrupt and jagged topography above the sea is mirrored below, with dramatic dive-sites and a profusion of marine life that attests to the early institution of the SMP in 1987. It's Caribbean diving at its best.

"Favourite sites include Diamond Rock, Man O'War Shoals, Custom's House, Tent Wall, Tent Reef, Ladder Labyrinth, Torren's Point and Third Encounter (The Needle/Eye of the Beholder).

"Common marine-life sightings include inquisitive nurse sharks, reef sharks, turtles, lobsters, eels and, for the lucky divers, eagle rays, seahorses and batfish."

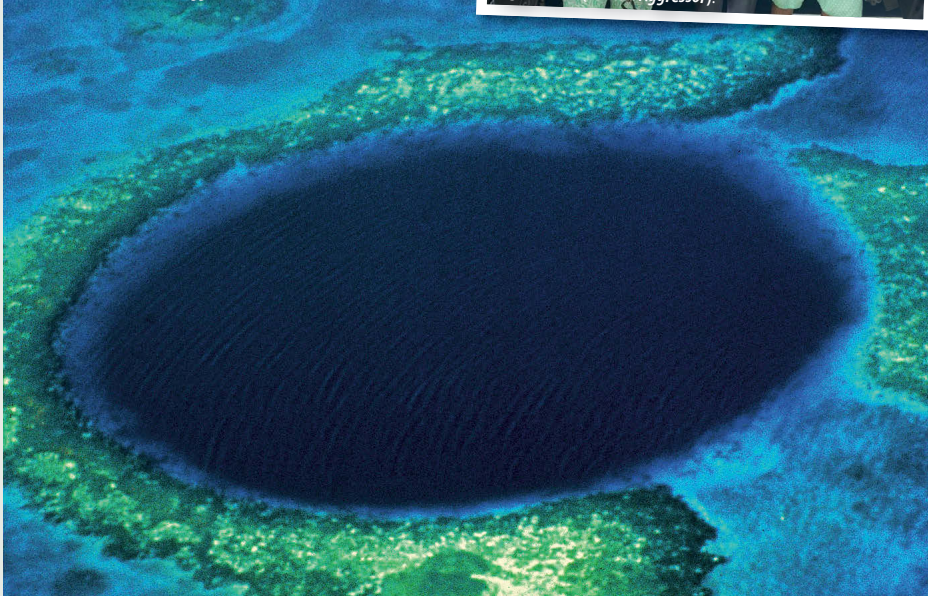


Cayman Aggressor.

Cayman Aggressor "Three Fathom Wall, or Mixing Bowl, is the crossroads of Bloody Bay Wall, where the 'sheer' wall meets the 'gentle slope'.

"This site offers more fish than any other site in Little Cayman. Schools of Bermuda chub, three-spotted goatfish, snapper and grouper of all sorts can be identified here.

The Blue Hole, Belize (Belize Aggressor).



Back to the boat (Turks & Caicos Explorer).

"The rubble of the shallows is home to an array of creatures, including the timid yellowhead jawfish.

"If you're more adventurous, make a cut through the coral fingers and end up on the wall (there are several passages covered over by coral formations).

"Lobster are frequently seen on the wall area. Turtles, spotted eagle rays and an occasional reef shark or nurse shark can be observed at any time."



Roatan Aggressor.

Roatan Aggressor "The beauty of Coco's Sea Mount lies in the mix of coral and good visibility

that divers always enjoy. The ocean floor rises from great depth to only 12m from the surface.

"These sea mounts are far from Utila and Roatan, so they are rarely visited by day-boat divers."



Turks & Caicos Aggressor II.

Turks & Caicos Aggressor II "French Cay - Double D is simply described as a Garden of Eden, with an abundance of marine life on its overgrown wall. There are two huge coral mounds, both teeming with fish.

"A resident spotted scorpionfish often poses for photos, and spotted eagle rays are often seen here."



Night divers (Roatan Aggressor).



Turks & Caicos Explorer II.

Turks & Caicos Explorer II "TCI sits surrounded by turquoise waters containing more than 1000sq miles of living coral reef and the islands are known for their expansive underwater visibility, high-voltage wall-dives and a profusion of marine life of all sizes.

"Low annual rainfall and reliable ocean currents contribute to the remarkable visibility but also provide nutrients for the many large pelagics common in these waters."

INDIAN OCEAN *The dive-sites liveaboard guests insist on diving!*



Tiger shark, Tiger Zoo, Maldives (Blueshark One).



Blue Force One.

Blue Force One "In August and September, the best time to visit the Maldives' northern atolls, our manta expeditions explore North and South Male atolls, cross to Ari and complete the cruise in **Baa**, in the Dharavandhoo area. In the UNESCO Biosphere Reserve at Hanifaru Bay Reserve we aim to enjoy snorkelling with the many mantas in the bay."



Blueshark One.

Blueshark One "Fuvahmulah is not an atoll but an island in the open ocean between Addu and Gaafu Alifu Atoll. It is famous for its legendary dive-site **Tiger Zoo**, named because of the great opportunities to observe as many as 15 tiger sharks at once from the shallows to the depths.

"There are estimated to be up to 500 sharks in the population. We dive there with a local dive-centre."



Blue Spirit.

Blue Spirit On North Ari Atoll guests visit **Fish Head**, also known as Shark Point or Mushimasingili Thila, one of the best shark-dives in the Maldives.

The small pinnacle reaches down to 35m and features several caves and overhangs.

"In the past sharks were fed in the area. We're delighted that this tradition has now ended, but the sharks remain.

"Up to 16 resident grey reef sharks can be spotted on a single dive, darting around at high speed."



Blue Voyager.

Blue Voyager "Rasdhoos is about 35 miles from Male and its resident hammerheads and shallow waters make it a diver's paradise.

"Shallow lagoons and gentle reefs provide some great diving for our beginners, while our more advanced divers find the current-charged channels and dramatic landscapes exhilarating.

"The area is regularly patrolled by whitetip and grey reef sharks and schools of eagle rays. There's never a dull moment, even in the shallows.

"Schooling reef fish such as snapper, fusiliers, oriental sweetlips and many more can be spotted."



Conte Max.

Conte Max "The night-dive with hundreds of nurse sharks at **Alimatha Jetty** is definitely one of the highlights of a classic central atolls tour.

"These gentle fellows swim literally among the divers, showing no sign of shyness, unlike Maldives specimens elsewhere. Attracted by the engines of the *dhonis*, they storm in their hundreds overhead, landing among the divers in search of interaction.

"The plus is that nurse sharks are meek creatures, never aggressive or willing to attack humans. The dive is neither deep nor difficult, but it guarantees unlimited emotions and chances for the footage of one's life."

Duke of York "The night-dive with mantas at **Fesdhoo** lagoon is an experience nobody wants to miss. In all divers' lives there comes a moment when



Whale shark, Maldives (Conte Max).



Duke of York.

they find themselves crying in their mask from joy, and this is the moment.

"One, two, three, four mantas gliding above you, brushing your head, feeding on the plankton the rear lights attract. It's the perfect chance for a close encounter of the best type, and one of those dives you want to repeat whenever you visit.

"The dive is a very easy and static one, at no more than 4/5m depth."



Eco Blue.

Eco Blue "Moofushi Kandu, aka **Manta Point**, is a drift-dive with a chance to spot the rays hovering over the cleaning station at 14-25m. If mantas are spotted it is recommended not to use current hooks but to stay around the cleaning station for longer.

"The dive-site is quite popular during the north-east monsoon and sometimes might become overcrowded with divers.

"Whitetip reef sharks are common visitors around the deeper part of the cleaning station, with blue-striped snapper and fusiliers being permanent residents."



Manta ray, Manta Point, Maldives (Eco Blue).



Emperor Atoll.

Emperor Atoll **Kandooma Thila** is the stand-out dive in South Male Atoll and can be spectacular. It's possible to dive with an incoming or outgoing current, and grey reef sharks are found in the split-point, along with schooling eagle rays and fusiliers.

"A large school of bigeye jack is commonly seen, along with dogtooth tuna and giant trevally. The top reef is healthy and home to various reef fish, along with resident hawksbill turtles. The currents can be strong, but divers are in for an action-packed dive."

Emperor Explorer "**Fuvahmulah South Plateau** is ranked as the best in the Maldives to encounter pelagics and offers one of the most incredible drift-dives. Fuvahmulah island is a unique atoll in the Maldives, with no lagoon and surrounded by great depths.

"The dive can be done in many ways, but the best



Emperor Explorer.

is during the north-east monsoon with a bluewater entry, letting the current do the work and passing over the top of the deep plateau.

"Lucky divers can encounter hammerhead, thresher, tiger, silky, silvertip, grey reef and whale sharks, and even mola molas and oceanic mantas."



Emperor Leo.

Emperor Leo "**Fish Head** is one of the most famous sites in the Maldives, now a protected marine area. It's a medium-sized *thila*. Grey reef sharks patrol in the upcurrent, surrounded by huge schools of fusiliers that are frequently hunted by tuna and trevally. Eagle rays are often seen too.

"The top is home to resident hawksbill turtles and the Maldives' iconic blue-lined snapper cover the reef. Currents can be strong here and visibility varies depending on the current. A small to medium one is best because, as they say: no current, no action!" 🐟



Soft coral, Kuda Bah Thila, Maldives (Emperor Virgo).



Whitetip reef shark, Fish Head, Maldives (Emperor Virgo).

INDIAN OCEAN *The dive-sites liveaboard guests insist on diving!*

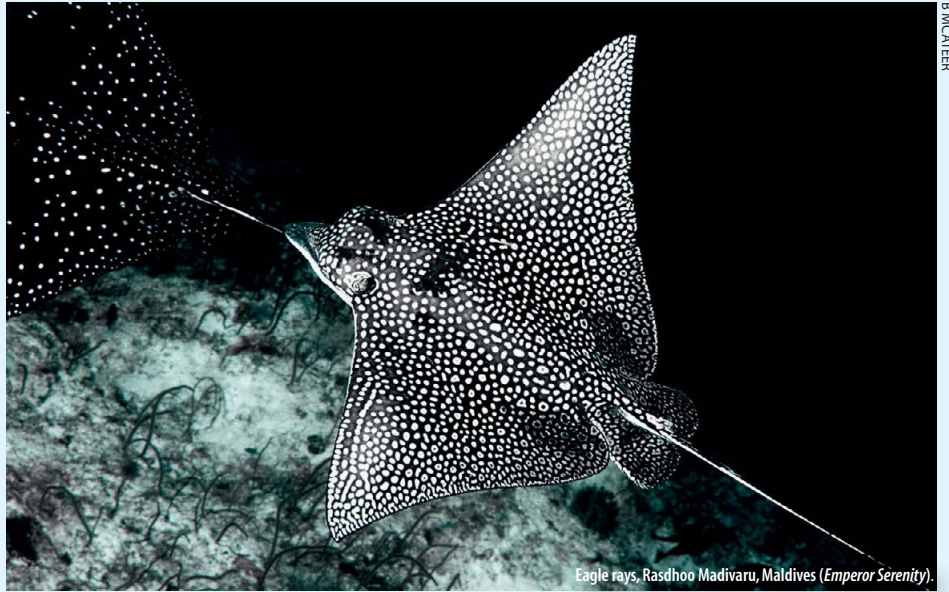


B.MCATEER

Emperor Serenity.

Emperor Serenity "Rasdhoov Madivaru has a huge variety of marine life, and several different ways to dive the site. The main reef is best on an incoming current but can also be dived when it's outgoing. Grey reef sharks and schooling eagle rays are common sightings, and marbled sting rays and Napoleon wrasse can also be observed.

"For divers with a keen eye, leaf scorpionfish and juvenile razor wrasse can be a macro highlight, while batfish and schooling fusiliers are common, and hunting tuna can cause frenzied action."



B.MCATEER

Eagle rays, Rasdhoov Madivaru, Maldives (Emperor Serenity).



B.MCATEER

Emperor Virgo.

Emperor Virgo "Kudarah Thila is a highlight of any trip. The small pinnacle is a hub of life, covered with fusiliers often being hunted by tuna and giant trevally. The healthy reef is home to anthias, redtooth triggerfish and schooling bannerfish.

"Eagle rays circle the site, and divers get to swim through large schools of blue-lined snapper on the reef and in overhangs. Macro lovers can search for nudibranchs, peacock mantis shrimps and whip-coral shrimps. There's a seafan garden in the deeper areas, and even a swim-through."

Emperor Voyager "Moofushi cleaning station is a hotspot for manta rays in the dry season, providing mesmerising encounters. Grey reef sharks and eagle rays can also be seen on the cleaning station, which is surrounded by a large school of blue-lined snapper and oriental sweetlips.



B.MCATEER

Emperor Voyager.

"Whitetip reef sharks can be found on the sand at the bottom of the reef, as tuna and trevally pass by."



Maldives Aggressor II.

Maldives Aggressor II "Alimatha House Reef is one of the best night-dives in the Maldives. Every night a show is performed by large numbers of nurse sharks, sting rays and massive jack.

"Maximum depth won't exceed 15m and most of the time you're kneeling on the sand waiting for the sharks to come closer. Not to be missed!"



Oman Aggressor.

Oman Aggressor "Aquarium is the pearl of the Daymaniyat Islands in Oman. You can see fish in their thousands: schools of jack, snapper, batfish, barracuda, scorpionfish and red-toothed triggerfish.

"Huge sting rays and eagle rays, turtles, leopard sharks, endless morays, seahorses, numerous nudis, cuttlefish, squid and whale sharks can all be seen."



Scubaspa Ying & Yang.

Scubaspa Ying The Maldives is famous for its channel dives, and **Miyaru Kandu** is one of the best. Located in the east of Vaavu Atoll, it quickly became Ying guests' favourite. Its name means 'Shark Ocean'!

"With incoming current, divers can expect to see whitetip, blacktip, grey reef and occasionally hammerhead sharks. Other common encounters include eagle rays, tuna, Napoleon wrasse and schooling barracuda. The inner walls in a shallow sandy area offer rich reef life and healthy hard corals."

Scubaspa Yang "Our guests love **Kudarah Thila** for its abundance of schooling blue-striped snapper, jack, rainbow runners and great barracudas; as well as the pinnacle's unique architecture.

"The main reef consists of two shallow reefs at both ends connected by a deeper ridge covered with colourful macro life. The *thila* is also famous for its canyons, tunnel and huge overhangs."



Blue-lined snapper, Maldives (Scubaspa).

RED SEA *The dive-sites liveboard guests insist on diving!*



Blue Adventurer.

Blue Adventurer "St John's is high on most divers' agendas. Suitable for all levels, this large coral-reef system is an exciting spot that gives everyone the opportunity to absorb the mind-blowing marine life and the ocean's underwater aquarium.

"The area is full of bumphead parrotfish, baby whitetips, barracuda and much more. Also watch out for the amazing dolphins, which move between areas putting on a real show for our divers."



Blue Fin.

Blue Fin "The *Carnatic* is a beautiful 19th-century wreck on Sha'ab Abu Nuhas Reef. Its shallow depth makes it accessible to all levels of diver and everyone will appreciate it as a great wreck-dive.

"You see giant moray eels and other Red Sea reef fish that have made the wreck their home.

"In the holds are the remains of the original cargo of wine-bottles (the gold and copper was salvaged) with shoals of glassfish inhabiting them."



Blue Force 2.

Blue Force 2 "Shark & Yolanda Reef is the most famous Red Sea dive and one of the best in the world. We start off at Anemone City, where dozens of magnificent anemones hosting a multitude of clownfish and damsels are found.

"From here we leap into the blue, crossing the depths below to the walls of Shark Reef. Along the way possible sightings include sharks, tuna, red snapper and other large pelagics.

"We continue into shallower water to see parts of the freighter *Yolanda* that struck the reef and gave it its name. Among the debris is a large collection of toilets and the remains of the captain's BMW.

"The surrounding area often houses lionfish, blue-spotted sting rays and morays.

"The entire stretch between the two reefs is strewn with rocks overgrown with coral and lots of coral on the sides of the reef, contrasting nicely with the white, sandy bottom. The shallow water, the light reflecting from the bottom and colourful reefs make this a photographer's paradise."



Blue Force 3 "The world's most famous wreck ss *Thistlegorm* is located in Sha'ab Ali, about 30 miles from Sharm el Sheikh. Sunk by German aircraft in October 1941 and later discovered by Jacques Cousteau, it offers spectacular dives

"Normally a minimum of two dives are made on the wreck, one outside, visiting the propeller, anti-aircraft gun and locomotives, and another going through all the decks and holds. It's highly recommended to use nitrox on this dive. If possible, we do a spectacular night-dive too, and perhaps even get to see the skittish lanternfish!"

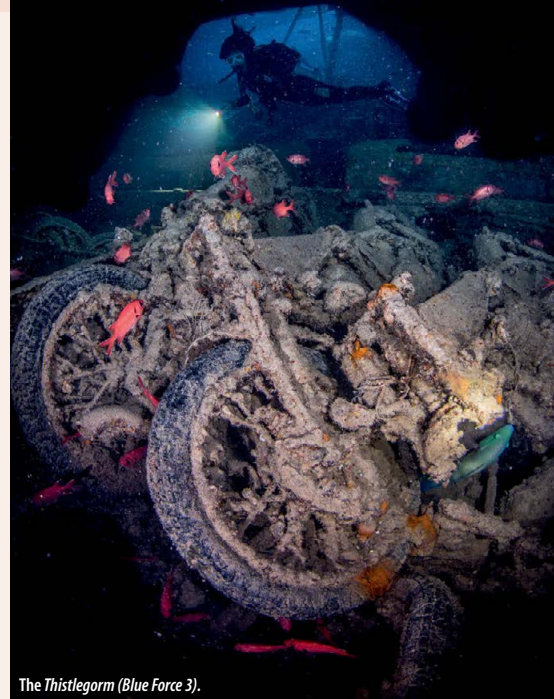


Blue Horizon.

Blue Horizon "Our guests love the *Thistlegorm*, one of the best dive-sites in the world. They love its rich history. When the ship sank she housed two locomotives, two tanks, army trucks, Jeeps, motorbikes and various mechanical parts.

"It's like diving within that history – the perfect spot if you love wreck-diving."

Blue Melody "About 12 miles south of Sharm el Sheikh lies Ras Mohammed, and this national park offers some of the best diving in the Red Sea, where you get the opportunity to dive with grey and blacktip reef sharks and larger pelagic species.



The Thistlegorm (Blue Force 3).



Blue Melody.

"It also includes the stunning **Yolanda Reef**, named after the wreck located far below. The park offers an abundance of reef-fish life, scorpionfish, multiple macro critters and hard and soft corals."



Emperor Asmaa.

Emperor Asmaa "The whole of the southern Egyptian Red Sea is picturesque under water, with large hard coral gardens inhabited by colourful reef fish. One reef in particular comes up as a diver's favourite and a must-do for the southern routes, and **St John's Caves**.

"Divers can explore this shallow network of



Oceanic whitetip shark (Red Sea Aggressor III).

RED SEA *The dive-sites liveaboard guests insist on diving!*

tunnels in the reef for more than 30 minutes, taking it easy as light streams in from above, providing a sense of ease and beauty. Out of the caves, there is a beautiful hard coral reef with a resident friendly Napoleon wrasse and schools of batfish that share their underwater home with you."



Emperor Echo "Daedalus reef is famous for its permanent school of inquisitive scalloped hammerhead sharks. Best seen from April to November, they follow the thermocline to depth and so might stay below the divers who float in the blue, looking down at them.

"However in the right months, and especially if the reef isn't busy, they come closer and closer, eventually surrounding the awe-struck divers as they find themselves in the middle of 30 or 40 graceful, languid animals.

"There might be areas of the world where a diver can see more hammerheads at once, but we'd wager that none of them has the same intimacy as the school at Daedalus."



Red Sea reef (Red Sea Aggressor II)



Emperor Elite



Emperor Superior

Emperor Elite "Little Brother is the smaller of the two Brothers Islands, which sit in the middle of the Red Sea between Egypt and Saudi Arabia.

"The walls offer a great drift-dive and can often result in hammerhead sightings, while the cleaning station on the south corner is the real treat.

"Thresher sharks are often here, especially in the morning, and careful divers can have an amazing encounter with these graceful animals.

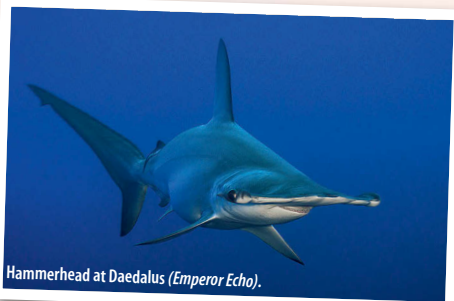
"Longimanus and other large pelagics frequent the reef, so it's one that can't be missed."

Emperor Superior "It's impossible to choose a favourite from Ras Mohammed and the wreck of the *Thistlegorm* – two world-class dives for very different reasons within a stone's throw of each other.

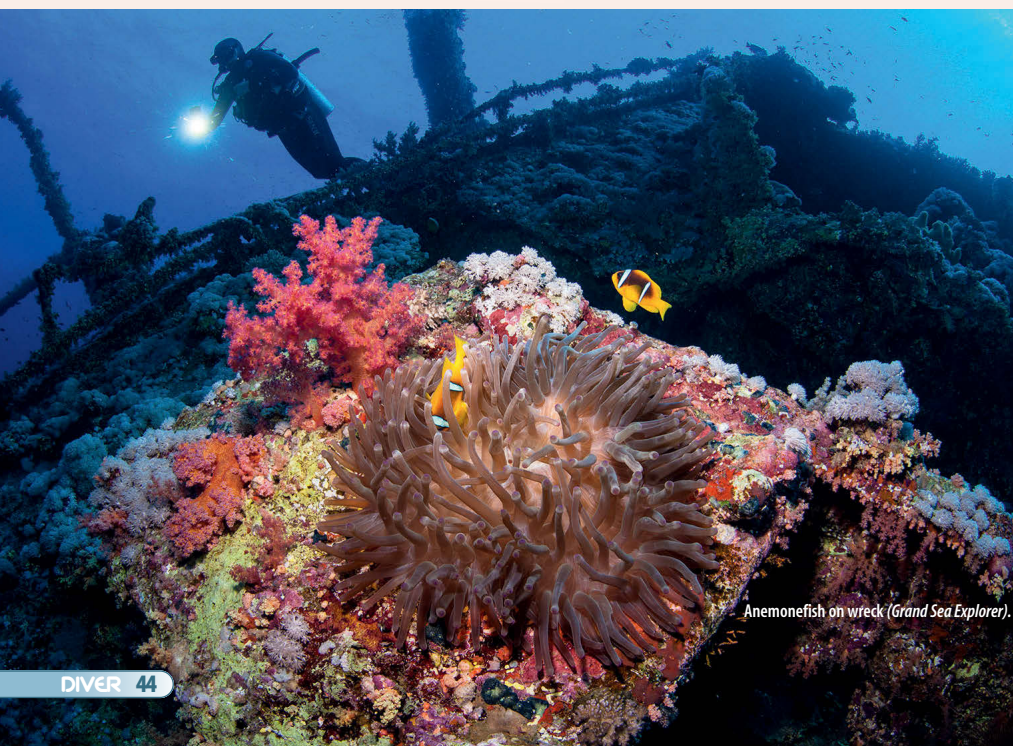
"Ras Mohammed – especially Shark & Yolanda reef – offers an exhilarating wall-dive where in early summer large fish schools congregate for spawning; here you get quality and quantity!

"The *Thistlegorm* is like an underwater museum, a merchant navy supply ship where divers can explore the holds to find weapons, motorbikes, trucks, armoured cars and even locomotives that never made it to their destination."

F. BARRIOS



Hammerhead at Daedalus (Emperor Echo)



Anemonefish on wreck (Grand Sea Explorer)



Grand Sea Explorer

Grand Sea Explorer "Scuba-diving the Red Sea's Brothers Islands, Daedalus and Elphinstone Reef are unequalled. Part of the marine park, these dive locales show you the best of the best – breathtaking underwater scenery, walls boasting huge, pristine hard-coral formations, sheer drop-offs covered with soft corals and frequent rush-hours of pelagics.

"Sightings of thresher sharks, whale sharks, schooling tuna, mantas, grey reef sharks, oceanic whitetips and schooling hammerheads are common. Occasionally a spectacular moonfish will also be spotted. On these remote, unspoiled reefs, guests' senses are happily overwhelmed."



Hurricane "Daedalus is a huge Toblerone-shaped reef with many dives on offer. The north tip is the best place to hang out for hammerheads, and then drift down the walls.

"The west wall is another great place to bump into the odd hammerhead, because there are several cleaning stations.

"The east wall is home to the Anemone City, with a narrow band of splendid anemones and clownfish sprawling down the reef. The south plateau is a brilliant boat-dive with chances to see reef sharks, huge barracuda and tuna racing on the edge of the drop-off, and camouflage fish on the plateau itself.

"The hard corals are simply spectacular and worth investigating in their own right, with loads of macro, especially *Flabellina nudibranchs*."



Mistral "The *Thistlegorm* needs little introduction to UK divers – sunk during WW2, she was laden with munitions and with several dives available (including a night-dive) to explore the holds, decks and environs, new visitors soon discover why this ranks as one of Egypt's top dives."



Red Sea Aggressor II "The *Thistlegorm* is the most famous of the Red Sea wrecks. The 129m ship was bombed by German planes on 6 October, 1941 while transporting military supplies to



Dolphins (*Grand Sea Explorer*).

Alexandria, as well as armoured MG vehicles, motorcycles, Jeeps, trucks, rolling stock, airplane parts, stacks of rifles, radio equipment, munitions, and a plentiful supply of Wellington boots.

"Now the wreck is an artificial reef on a sandy bottom 32m deep and is home to an enormous variety of marine life with large schooling fish.

"Additionally, the wreck provides a hunting ground for giant tuna and snapper."



Red Sea Aggressor III.

Red Sea Aggressor III "The large *Daedalus* reef, also referred to as Abu El Kizan, lies 50 miles off from Marsa Alam. A lighthouse built in 1861 by the British stands on the small artificial island at the centre, today manned by the Egyptian military.

"Currents tend to be much more predictable here, and divers have an excellent opportunity to spot large pelagic life such as schooling hammerhead and thresher sharks, which are commonly seen in the north. Mantas can be found anywhere (from March to October), and grey reef and whitetip reef sharks occasionally pass in the summer months.

"Broccoli corals in a range of candy colours grow from the reef on all sides. There are pristine hard-coral formations in the north and east especially, while overhangs are home to schools of glass sweepers. The south plateau is covered in yellow *Litophyton arboreum* and pulsing *xenia*.

"The west has two spectacular sights – Anemone



City, a section of reef wall covered in magnificent anemones and, further south-west, another section is covered in elephant ear coral.

"The very north of the reef is concave. Wrasse, parrotfish, rabbitfish and unicornfish congregate on top of the reef in the clear, shallow water."



Typhoon.

Typhoon "The *Farasan Banks* is one of our guests' favourite dives, an extensive shoal of coral reefs that runs about 320 miles from west of the coastal town of Al Lith in Saudi Arabia down to Kamaran Island. It's a shallow area where extensive reefs have created beautiful coral gardens.

"Jacques Cousteau, in his book *The Living Sea*, describes this area as one of the most interesting coral ecosystems in the world.

"It is isolated, surrounded by sea and desert and relatively unaffected by tourists, fishing or pollution."



Whirlwind.

Whirlwind "Ras Mohammed is rightly one of the best-known areas for diving in the northern Red Sea, and certainly among our guests' favourites. The coral gardens play host to hundreds and thousands of candy-coloured fish.

"The deep walls and startling drop-offs are where, if you're lucky, you can see large pelagic sharks gather.

"Blacktip, leopard and even hammerhead sharks have all been known to visit."



DANIEL NORWOOD



Galapagos Aggressor III "Darwin and Wolf islands would be the undisputed stars. Both these tiny rocks are completely uninhabited, and unreachable except via liveaboard."

"Dozens of hammerheads face into the current just a few feet away and among them are silky sharks, larger Galapagos sharks, countless clouds of reef fish, Mola mola and whale sharks."



Galapagos Master.

Galapagos Master "Darwin's Arch is likely the most famous dive-site in Galapagos and is the one that guests look forward to. This wall-drift, surprisingly, has an average depth of only 9m."

"Medium-to-strong currents are to be expected but these bring large numbers of hammerhead, blacktip, silky and Galapagos sharks with them."

"Schools of jack are a common sight, along with turtles, angelfish and moray eels. Occasional sightings of tiger sharks, manta rays and bottlenose dolphins make for a thrilling time spent here."

"Whale sharks can also be seen between May and November."



Whale shark (Galapagos Aggressor).



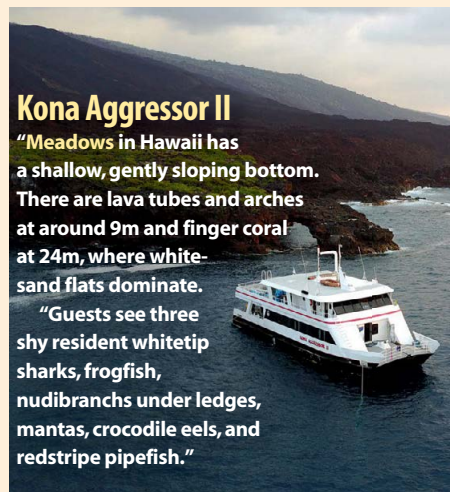
Humboldt Explorer.



Tiburon Explorer.

Humboldt Explorer / Tiburon Explorer "Guest favourites are Wolf and Darwin Islands, small, remote and best reached by liveaboard. The diving experience generally includes Galapagos and silky sharks and lots of schooling hammerheads being cleaned by king angelfish."

"Turtles, schools of tuna, eagle rays and sea-lions are very common sightings, and seeing whale sharks is very possible from June through November. These are amazing sites for underwater photography."



Kona Aggressor II

"Meadows in Hawaii has a shallow, gently sloping bottom. There are lava tubes and arches at around 9m and finger coral at 24m, where white-sand flats dominate."

"Guests see three shy resident whitetip sharks, frogfish, nudibranchs under ledges, mantas, crocodile eels, and redstripe pipefish."



Nautilus Explorer.



Nautilus Belle Amie.

Nautilus Explorer / Belle Amie / Undersea / Gallant Lady "San Benedicto, the third largest of the Revillagigedo Islands, offers the most beautiful landscape, with incredible sunrises and sunsets between dives. Below the waves, the dive site **El Boiler** never disappoints, with lots of manta ray and hammerhead encounters."

"Our guests are never disappointed and we really enjoy being able to show them something that brings so much joy."



Nautilus Undersea.



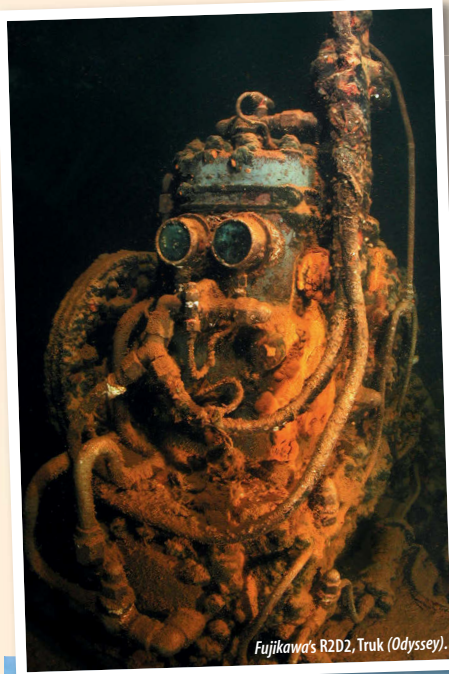
Nautilus Gallant Lady.



Odyssey "There isn't one guest favourite dive-site in Truk, but these are probably the top three:

Fujikawa Maru features lush coral growth and Zero aircraft fuselages and wing sections, while **Shinkoku Maru** also has the lush coral growth, fantastic marine life and an excellent engine-room.

"**Nippo Maru** has two-man tank and artillery guns on deck and a photogenic wheelhouse."

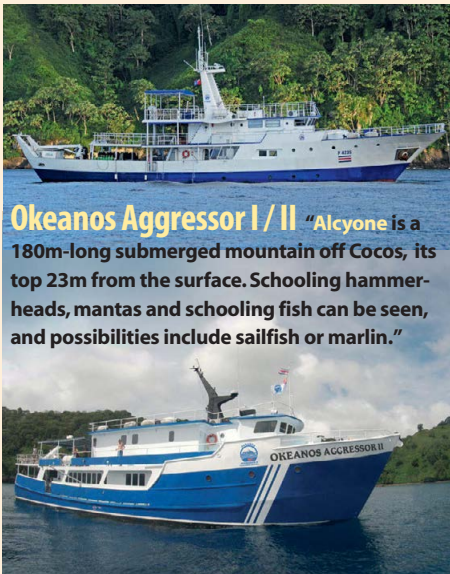


Fujikawa's R2D2, Truk (Odyssey).



Palau Siren.

amazing coral formations in the channel itself, because there are plenty of giant grouper and just about anything is possible on this dive!"



Okeanos Aggressor I / II "Alycone is a 180m-long submerged mountain off Cocos, its top 23m from the surface. Schooling hammerheads, mantas and schooling fish can be seen, and possibilities include sailfish or marlin."



Palau Aggressor II.



Quino El Guardian.

Quino el Guardian "We visit the Sea of Cortez, called "the world's aquarium" by Jacques Cousteau, from July through October, spending 8-13 days diving on untouched walls and reefs abounding in marine life.

"We encounter large and small whale species, snorkel with whale sharks and see countless sea-lions, eels, octopuses, fish, and jumping mobula rays.

"It's a macro photographer's dream too, with nudibranchs, colourful blennies, dancing jawfish and seahorses. Favourite sites are at the **Animas** and **San Petro Martir** islands, with their playful sea-lions."



Rock Islands Aggressor.

resident Napoleon wrasse often accompany the divers throughout their dive. Dogtooth tuna, eagle and manta rays, whitetip and hammerhead sharks, turtles, schooling barracuda and schools of reef fish populate the site."

Palau Aggressor II / Rock Islands Aggressor "The best known and most highly rated dive-site in Micronesia, **Blue Corner** features a shallow coral shelf that projects out into the ocean and has vertical walls on both sides. An upwelling created by the currents attracts schools of fish and large pelagics to the top edges of the walls.

"The dive is best known for its schools of grey reef sharks, which cruise the edge of the wall. Two

Palau Siren "Forget Blue Corner; **Ulong Channel** is the best dive-site in Palau. Drop into the channel on the ocean side on an incoming tide and this exhilarating drift-dive has it all.

"There are hard and soft coral-encrusted walls, including what is reputed to be the largest patch of lettuce coral in the world. In the mouth of the channel there are schools of sharks and other pelagic action.

"Keep your eyes open drifting through the



Sea-lions, Sea of Cortez (Quino El Guardian).



Palau reef (Rock Islands Aggressor).



Ulong Channel, Palau (Palau Siren).

PACIFIC *The dive-sites liveboard guests insist on diving!*



Rocio Del Mar "From November through May we visit the Revillagigedos, a group of four volcanic islands and a spectacular magnet for the world's largest ocean pelagic animals, including schooling hammerhead, tiger, silky, Galapagos, oceanic whitetip and whale sharks, bottlenose dolphins, clouds of jack and barracuda, tuna, wahoo and humpback whales.

"Manta rays are the claim to fame, however, and predominately congregate at **El Boiler** at San Benedicto Island. The Revillagigedos mantas are friendly and enjoy the presence of humans."



Socorro Aggressor "Roca Partida is a small crag only 40m high and 100m long that emerges from the depths of the Pacific. It's the smallest island in the Socorro Islands archipelago and can be circled a couple of times on a single dive.

"This stone pillar is a vertical wall that attracts



Giant manta, Socorro (Rocio Del Mar).



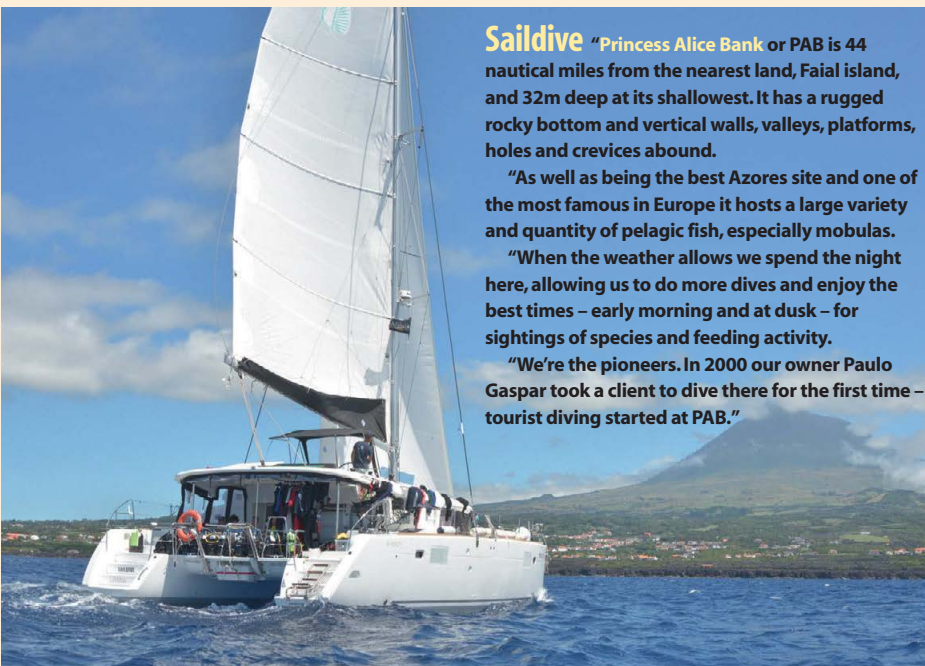
USS Saratoga, Bikini Atoll (Truk Master).

large pelagics, from the biggest whale sharks you'll ever see to dolphins, humpback whales migrating to colder waters, hammerhead, silky or grey sharks, mantas and huge schools of jack and tuna."



MARTIN CRIDGE

ATLANTIC



Saildive "Princess Alice Bank or PAB is 44 nautical miles from the nearest land, Faial island, and 32m deep at its shallowest. It has a rugged rocky bottom and vertical walls, valleys, platforms, holes and crevices abound.

"As well as being the best Azores site and one of the most famous in Europe it hosts a large variety and quantity of pelagic fish, especially mobulas.

"When the weather allows we spend the night here, allowing us to do more dives and enjoy the best times – early morning and at dusk – for sightings of species and feeding activity.

"We're the pioneers. In 2000 our owner Paulo Gaspar took a client to dive there for the first time – tourist diving started at PAB."

IGOR STAROSVETSKI

Truk Master "The signature dive in Bikini Atoll is without doubt the **USS Saratoga CV-3**. This 270m-long, 29m-wide aircraft-carrier rests in the lagoon at a depth of 52m. Its bridge is easily accessible at 18m, its flight deck at 28m, and the hangar for the Helldivers is at 32m.

"The planes were all swept off the deck during the Baker test and the remains are scattered around the *Saratoga* on the seabed. On deck, however, 350lb and 500lb bombs, air-drop torpedoes and depth-charges can all still be found."

"On our Truk Lagoon itinerary, a signature dive is the **Fujikawa Maru**, a 132m armed cargo ship sitting perfectly upright on the sandy bottom at 37m, with the forward king-post reaching up to 5m.

"The *Fuji* has six holds, four of which are open, in which can be found parts of Zero fighter aircraft including engine components, propeller-blades and fuel-cells.

"Deeper inside, Mitsubishi A5m Claude and A6M parts can be found. The bow gun is encrusted with corals and the outer wreck supports seafans, soft corals and anemones. Exploring the *Fuji* is possible for divers of all levels."

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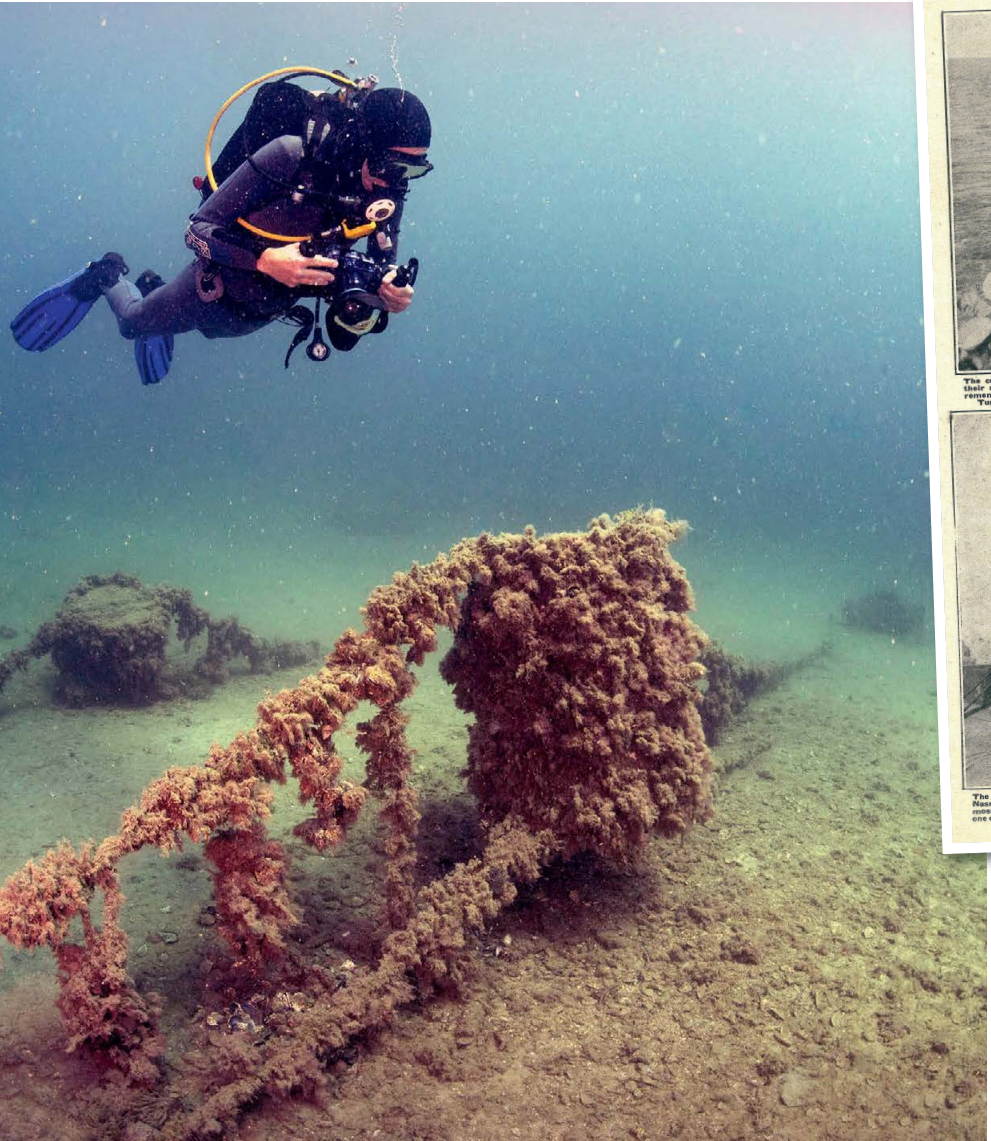
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Shown here is something that amazed divers and naval historians alike – remains of the anti-submarine nets that were evaded by British subs in their deadly incursions into the Dardanelles in WW1. Wreck-hunter **SELCUK KOLAY** has been diving the victims of *E11* in Akbas Bay – and finding answers to questions with descendants of its acclaimed commander, Martin Nasmith. Underwater photography by **ALI ETHEM KESKIN**



The War Illustrated, 25th Feb

“The
The crew of H.M.S. Or...
their return from the...
reunited that the...
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The hero-view of M...
Nasmith, V.C., on the...
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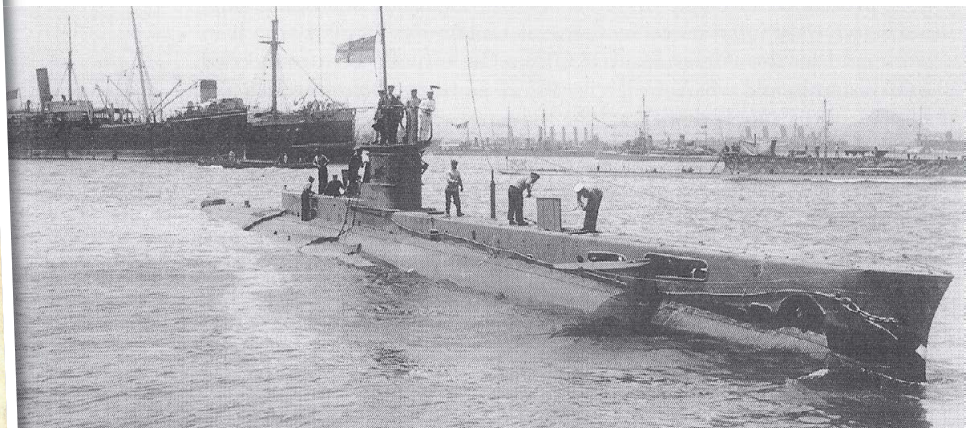
RELIQS OF THE GREAT ADVENTURE

THE WORLD WAR ONE naval battles in the Dardanelles went beyond the famous unsuccessful attack on 18 March, 1915, when many ships were lost as the Allied forces attempted to pass through the Straits. There are other shipwrecks related to attacks that happened later, when the Australian submarine *AE2* did pass through the Straits submerged, paving the way for British E-class submarines to take the same route.

Most successful of these was HMS *E11*,

commanded by Martin Nasmith. He entered the Marmara Sea three times, sinking some 45,000 tonnes of shipping. Because of the lack of suitable roads connecting the Gallipoli front with Istanbul, troops and supplies had to be transported by ships and small craft. Akbas Bay in the Dardanelles was an important port in this respect, with ships unloading supplies mainly from Istanbul before returning with wounded soldiers. One of these ships was the *Halep* of 3616 gross tonnes, built by Robert Napier & Sons at Govan in Scotland in 1881. Starting her career as the British cargo liner *Aberdeen* of the Aberdeen Line fleet, she was the first ship successfully powered





by a triple-expansion steam engine. After being in high-speed service between the UK, Australia and the Far East, *Aberdeen* was sold to the Ottoman Government in 1906 and renamed. As *Halep* she worked as a passenger and cargo steamer for eight years before being seized by the Ottoman Navy at the outbreak of WWI.

Though she often carried wounded soldiers on return trips to Istanbul, she was not marked with a Red Crescent. In home waters, no attack was expected.

On 5 August, 1915, *Halep* was about to leave Akbas with almost 200 wounded soldiers on board. *E11* had passed through anti-submarine nets at Nagara Point about 30 minutes earlier to start her second patrol into the Marmara Sea.

While navigating the Straits, Cdr Nasmith spotted *Halep* and, assuming that she was just a cargo ship, fired the starboard torpedo.

It hit *Halep* on the starboard side, near the foremast, and the ship went down by the bow, listing and evidently aground, with only the aft deck staying above the water's surface. All the soldiers drowned.

THREE WEEKS later, on 25 August, Nasmith was again in charge at Akbas Bay, firing two torpedoes at the cargo-steamer *Kios* and *Tenedos* and sinking both of them.

Kios was a 3564 gross tonne vessel launched in 1893. *Tenedos* was built by Armstrong & Mitchel in Newcastle upon Tyne for the Hamburg-Amerika Linie-



HAPAG in 1888. She went through several incarnations under various names (*Italia* and *Milano*) based in Hamburg until in 1914 she came under Ottoman Navy command.

The other Akbas Bay wreck is the paddle-steamer *Tuzla*. Built by Barclay Curle in Glasgow in 1885 for the North British Steam Packet Co as the *Diana Vernon*, she became the *Worthing Belle* with J Lee, Shoreham from 1900. In 1913 she was sold to state-owned shipping

Above, clockwise from left: Newspaper clipping about *E11*'s exploits; *E11* during the Gallipoli campaign; Akbas Bay following *E11*'s attacks of 5 and 25 August – from left to right the wrecks of *Halep*, *Tenedos* and *Kios*.

Left: Commander Martin Nasmith, seen on the right after WW2 as Commander-in-Chief of the Royal Navy.

Below: Remains of the anti-submarine nets as seen on the side-scan sonar.

company Ottoman Seyrusefain Idaresi.

It's not clear who sank the *Tuzla*. Cdr Nasmith marked on his map the names of the three steamers sunk by *E11* on 25 August as *Tenedos*, *Kios* and *Halep II*.

However, there was no such ship as *Halep II*. There was a paddle-steamer called *Halep* that had almost the same dimensions as *Tuzla* – not to be confused with the *Halep* he had sunk on 5 August!

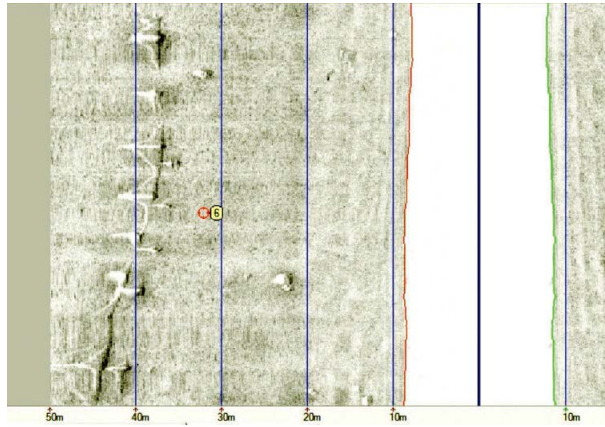
He had probably used a catalogue to identify the ship, saw the paddle-steamer *Halep* and thought it should read *Halep II* because he had already sunk *Halep*.

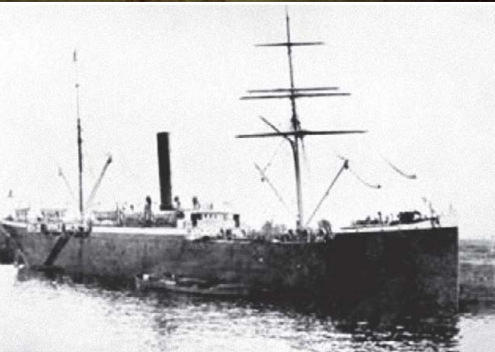
Turkish archives do state that *Tuzla* was sunk by a British battleship in Akbas Bay, and because no British battleship was in the Dardanelles on that date it must have been *E11*. The *Halep* paddle-steamer actually remained in service until 1954, when she was sold for scrap.

SO TO THE DIVING. Akbas Bay is on the main road connecting the city of Canakkale with Istanbul, so it can be reached by car as well as boat.

I had planned a sonar search before the dives, so took the boat the five nautical miles from Canakkale with electronics technician Fuat Coker and diver Ismail Sari. The other divers, underwater photographer Ali Ethem Keskin and Doruk Dunder, drove up from Istanbul.

With an average depth of 12m we could forget our heavy deep-diving open-circuit gear, rebreathers and complicated gas-mixes for once, and simply use air in single 10- and 12-litre tanks.





Visibility is generally good but this can change following rain, when a creek running into the bay can bring in mud. Water temperature ranges from 24°C in summer to 15°C in winter.

The bay is not affected by the Strait's currents, which mostly run from north to south, up to about 5 knots.

We decided to cover the *Kios* and *Tenedos* wrecks in one dive. Diving conditions were quite pleasant.

The ships were at anchor very close to each other when *E11*'s torpedoes struck, and remain close on the seabed, facing towards the Straits.

After the war, when the Turkish Republic was founded, salvage works had begun to clear the shallow waters of wrecks that could threaten sea-traffic, including the Akbas Bay wrecks.

Most of the superstructures and the upper parts of the hulls had been removed, leaving a scrapyards scene.

However, the keels and profiles of both wrecks, as well as part of the stern of *Tenedos* including part of the rudder, were recognisable.



Above, clockwise from top left: Two views of the *Tenedos* steamer wreck; the *Kios*; the *Tenedos* afloat.

Below from left: Aft deck of the *Tuzla*; salvaged bow section of the same wreck.

Tuzla rests upright further away, near the bay's north coast at a depth of 11m.

We had some rain after our first dive and the creek lies quite close so, after checking the visibility, we decided to postpone the dive.

Akbas Bay is only seven miles from the Gallipoli Historic Site and war memorials, and the archaeological site of the ancient city of Troy is only 22 miles away, so this was a good chance to revisit these sites.

TWO DAYS LATER the visibility had improved and we descended on the shotline. We could see the *Tuzla* easily from 5m down.

It proved to be more intact than the others, though the timber superstructure was gone, exposing the main deck.

Some 6m of the bow is also missing, probably the result of earlier salvage work when the anchor-chains and the windlass were removed. The paddle-wheel boxes are missing too, though the fixing supports remain in place.

Parts of the wheels are strewn around the seabed. The stern section is quite intact, with the rudder tilted to the starboard position.

Carrying out the sonar survey, we had come across another interesting find: remains of the anti-submarine nets that





my boat and side-scan sonar to travel round the Marmara – which we did the following May.

“We felt incredibly fortunate and it was quite fascinating – there is no other way that it would have been practical to visit the various places that my grandfather’s submarine *E11* had been to 90 years before,” said Duncan about the trip on 18 March, 2010, addressing a special event at Istanbul’s Naval Museum.

“We used the reports that he and his navigating officer had kept of the patrols that *E11* made, along with Selcuk’s knowledge of many of the wrecks, to give us directions to a number of significant locations.”

I had also arranged for Turkish historian Kenan Celik to provide a brief tour of some of the Gallipoli battlefields.

“They were keen that we should visit a cemetery at Akbas, which we didn’t know existed,” said Duncan.

“They explained that it contained the graves of 200 Turkish soldiers who were drowned when their ship the *Halep* was torpedoed and sunk by *E11*.

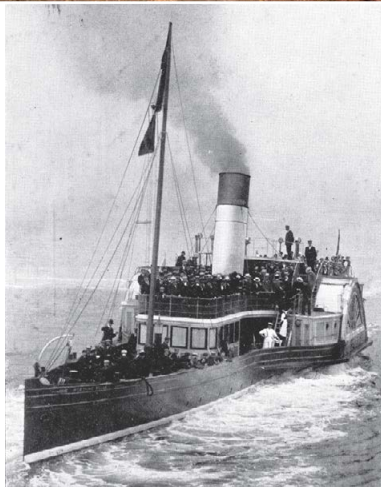
“These soldiers had been badly wounded on the peninsula and were about to start their journey by sea back to hospital in Istanbul early in the morning of 5 August, 1915.

“*E11* had passed up through the anti-submarine nets at Nagara about half an hour previously, at the start of her second patrol into the Marmara, when she torpedoed the *Halep*.

“In *E11*’s navigating officer’s report, written immediately upon their return to base, the following entry reads: ‘Observed vessels in Akbash Liman. One a hospital ship, being painted, the other a large steamer with three masts, one funnel, painted black, and a few sailing ships.

“‘Fired starboard torpedo at steamer, which hit on starboard side forward under foremast. When last seen, vessel was down by the bows and listed over, and was evidently aground.’

“The significance of the *Halep*’s human cargo was something that my uncle and I, and possibly my grandfather, were



them the pictures taken by Ali Ethem.

Halep remained half-submerged for a few years before being refloated and towed to Istanbul for repairs.

A few years later she was put out of service and sold for scrap after 1924.

But while still in Akbas Bay, she had a second visit from Cdr Nasmith. It was just after WW1 and he was commanding the battleship HMS *Iron Duke*, on his way to Istanbul during a period of Turkish/Greek unrest.

Passing through the Dardanelles he saw *Halep* still submerged, her stern above the surface. He ordered a boat to be lowered and the nameplate removed.

During this operation some shots were fired from land. Bullets passed through the nameplate, though there were no casualties.

THERE IS A LINK between all these wrecks, the Nasmith family, the *Halep* nameplate and me. In 2005, Cdr Nasmith’s grandson the late Duncan Dunbar-Nasmith gave a talk at the Royal Marines Museum in Portsmouth during a conference to mark the 90th anniversary of the Gallipoli landings.

I was also there, talking about my discovery of the *AE2* submarine, and offered Duncan and his uncle Prof James Dunbar-Nasmith my help and the use of

Above: Main deck of the *Tuzla*.

Left: The *Tuzla* when she was named *Worthing Belle*.

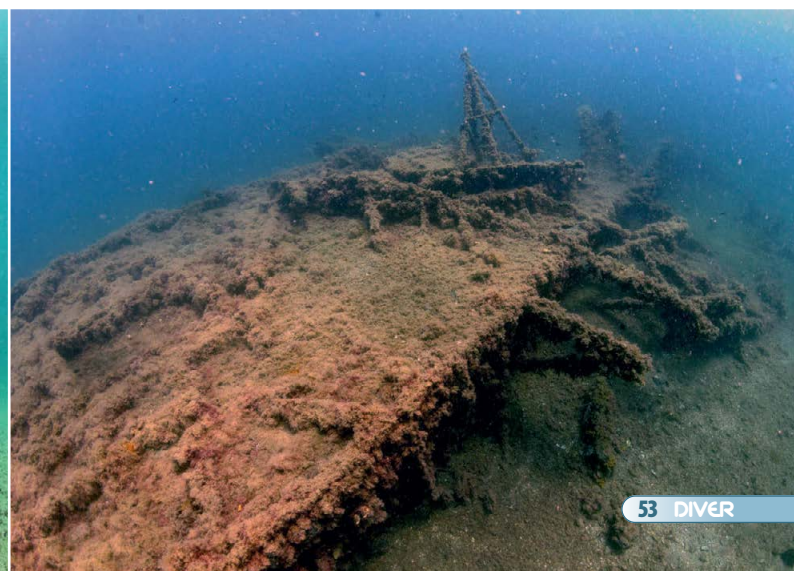
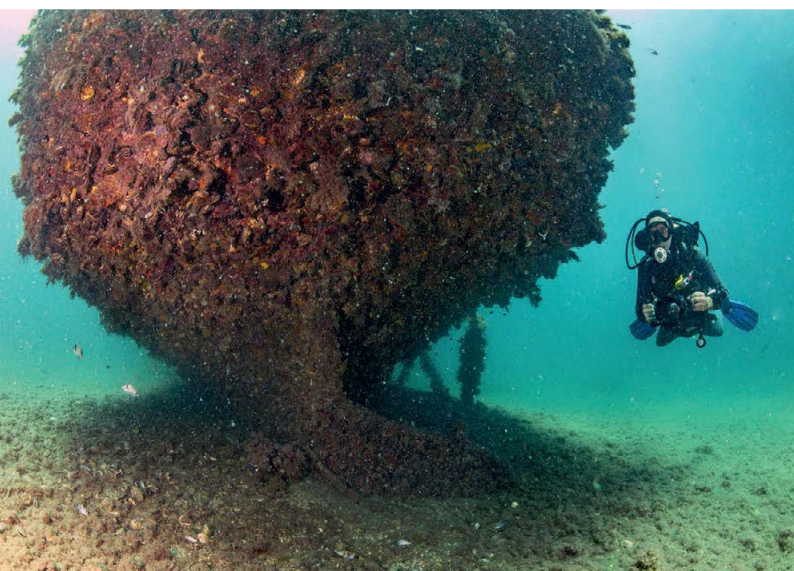
Below from left: The *Tuzla*’s stern and rudder; the remains of the portside paddle-wheel box.

had been laid across the Dardanelles at various points to deter enemy subs.

E7 had been a victim of these nets at Nagara Point and was scuttled by her commander Archibald Douglas Cochrane on 4 September, 1915. They were supposed to have been removed after the war – but apparently not.

After thoroughly examining the *Tuzla*, we decided to carry out a third dive to investigate what we thought must be fragments of these nets.

They were indeed, with the steel cables and some of the floats still buoyant. This was a huge surprise for all of us, including naval historians when we later showed





never aware of,” said Duncan. “When we went to the cemetery and I heard the name *Halep*, it seemed familiar to me.

“It was indeed the name of the ship whose nameplate I had grown up with at home – simply referred to as ‘the Turkish nameplate’. As you can imagine, our visit to the cemetery at Akbash was an emotional one.”

Clockwise from above: Akbas cemetery; Duncan Dunbar-Nasmith at his grandfather's grave in Elgin; *Halep*; Prof James Nasmith, Duncan Dunbar-Nasmith and Selcuk Kolay with *Halep*'s name-plate at the Naval Museum in Istanbul.

SO HOW HAD the nameplate come to spend almost 90 years in Scotland?

“My grandfather returned to the Marmara and Istanbul in 1921 as captain of the battleship *Iron Duke* during the Turkish/Greek unrest of that time, and the nameplate was removed from the *Halep* and given to him,” Duncan told his audience.

“I was always told that some of the holes in the nameplate were caused by rifle bullets that were fired at whoever was removing it, but that might just be



a good story.”

I had visited the Nasmiths in Glen of Rothes in 2006 and been very surprised to see the nameplate hanging in the living-room, and to hear this story.

It was then that the family decided to return it – and why Duncan was addressing all those gathered at the Naval Museum on the 95th anniversary of the Dardanelles landings.

“Our visit to the cemetery at Akbash in May 2006 was a very special one, and it struck me that it would be wonderful if perhaps a copy of the nameplate could be displayed in some way at the cemetery as well,” said Duncan.

“My lasting recollection of that visit will be of a tranquil and beautifully maintained resting place for a lot of brave young men – one of many such places on the Gallipoli peninsula where thousands upon thousands of brave young men from different nations lie.

“Had these men met under circumstances of their own choosing, there is no doubt that many would have formed the kind of friendships that my uncle and I have been fortunate enough to make with our Turkish friends.”

H E THEN FORMALLY handed the *Halep* nameplate back to Turkey “with all the good wishes of my family – and I am very relieved that no-one is firing bullets at it on this occasion”.

At the moment Akbas Bay is hosting Directorate General of Coastal Security and Coast Guard vessels.

However, this is set to change. The Directorate of Gallipoli Historic Site has plans to open the bay and enable international divers at all levels to visit the historical sites that bear witness to one of the most important battles of WW1 – the Dardanelles campaign. ❏



TANKED UP

'The pay for our new job – \$50 a week, each – was on the low side, to say the least, but we did get room and board plus free beer from the hotel bar.' It's 2001, and diving instructor **BEN THOMPSON** and his partner Vicky Page have just got themselves work at the remote South Caicos Ocean & Beach Resort in the Caribbean. Here's an extract from Ben's new book...



ONE OF THE THINGS that excites me most about starting a new dive job is getting to know the sites and learning how best to dive them to take advantage of the conditions, and to maximise chances of seeing the biggest possible variety of local marine life.

Bob and Diane were both new to the lifestyle and tropical diving, so they were still very enthusiastic about getting out on dives and exploring new areas, and eager to share this with us, which was great.

All the sites were accessed by boat and were on fringing reef that dropped off very dramatically to great depths. The closest were literally two minutes away, with the furthest taking up to 20 minutes.

There were no other dive-operators in the area, though a liveaboard boat from the luxury Aggressor Fleet brand would come by a couple of times a month.

They had very kindly put fixed buoys down at some of the most impressive sites. This made life a lot easier, as it meant that we didn't have to anchor the boats, and it is a lot better for the environment.

The idea was that once we knew the sites, Vic and I would operate a boat each, motor out to the location, moor the boat, dive and return to it.

There was no surface-support driver on the boats. I think Vic found this a little daunting, as it would not only entail captaining a boat, but also having to dive and return to the exact place.

The most noticeable thing about diving in this part of the world is the water clarity; the visibility ran consistently at 30m or more, and we did not suffer from too many "bad-vis" days, which is rare.

Together with the dramatic walls and drop-offs, this made for some spectacular dives. The disadvantage was that it was so easy to descend deep into the gin-clear waters that you constantly had to check your instruments in order not to end up too deep or stay too long; with the water clarity, these simple errors were dangerously easy to make.

MANY OF THE SITES were deep, but Bob and Diane did know a great location for a refresher dive.

It was a wreck of a plane that was lying in shallow water with a surprisingly intact fuselage, cockpit and wings.

There was lots of macro life here, and interesting and easy penetrations into the wreck.

The reef itself comprised mainly small fan and whip corals along with sponge.

Although in a healthy state, it was not as diverse or dense in coral and marine life as Asian reefs. But what it lacked in fish density and macro life, it certainly made up for in large pelagics.

It was shark heaven, with a good variety of reef sharks plus

other larger oceanic species patrolling at all depths.

We could easily have 12 to 14 large greys circling around us – more when the 'Big Grab' was on, the very short lobster season, when virtually anyone on the island who could swim took to the water to grab as many of the crustaceans as they could get their hooks into.

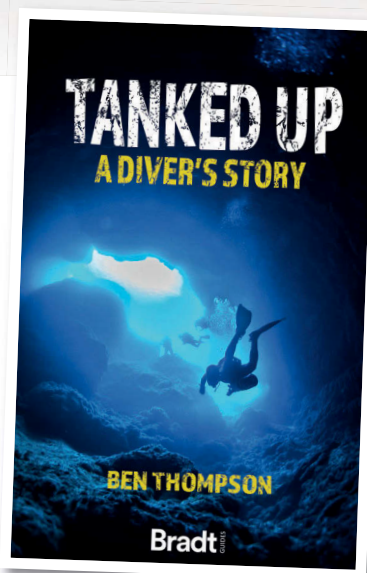
The lobsters were cleaned and processed on the dockside in town, which not only agitated all the sharks on the reef but brought many into the shallows of the bay, right in front of the dive-centre.

Vic would get very edgy as they circled in tighter and tighter with their backs arched, occasionally coming in for a bit of a side-swipe. On more than one occasion I would find her sheltering behind me in the water as they did their fly-by a little too close for comfort.

As well as the ever-present shark population, there were many of their cartilaginous cousins around: the rays.

We saw numerous species, ranging from the familiar blue-spotted rays to the large sting and marbled rays.

The latter would bury themselves in the sand and enjoy a good scratch between the eyes from a trusted diver, or they'd circle about and over us, giving us a chance to marvel at their alien-like faces and gaping



gills. Often, they had their symbiotic friends, remoras, in tow, sucking on the rays' backs and going along for the ride.

But the real stars of the reef for me, and probably one of my favourite underwater sights of all, were the fleets of eagle rays that flew in squadrons, sometimes of more than 40, following the contours of the outer reef.

Their distinctive triangular shape, long fine tails and defined black wings with many white spots was unmissable.

They would glide effortlessly as they held formation, seeming to hover in a preordained pattern.

Or, like the Red Arrows, they could, with a flick of their wings, take off at great speed, doing loop-the-loops together or one after another, taking it in turns to nosedive to the ocean floor, briefly breaking the sandy bottom in search of a snack before racing up towards the surface.

They were regular visitors to the reef, and it was these sights that our few guests would get to enjoy all to themselves.

AS MOST WEEKS were quiet, the diving was very relaxed and generally I had groups of just two to four.

The divers who flew in were usually American and very experienced, staying with us for a few days only. They would turn up with enough equipment to put a BBC underwater cameraman to shame, and I had very little teaching to do.

While I enjoy teaching immensely, it was good to have a break from it.

What can be very stressful for a dive guide is the pressure to manage and meet people's expectations, but on Caicos this was generally easy due to the consistently good visibility and the regularity with which the "big stuff" made an appearance.

Even though the groups were small, Vic would usually come along on the dives, partly to familiarise herself with the sites and the routes through to the outer reef, but mostly because there was hardly anything else to do on the island and, with such enjoyable diving, why not?

There were often not enough clients to warrant two dive-guides, so being the instructor and the most experienced I did most of the work – except during busier times.

Vic was, by this time, a very accomplished and confident diver, but she was not quite so enthusiastic about the boating side of things. The boats themselves were quite simple to drive, not too big and easy to manoeuvre. They were also a fast and fun way out to the reef.

However, the 70hp outboards on the back were very difficult to hand-start.

Hand-starting an outboard engine requires a certain element of strength and



a great deal of technique. Generally, the biggest are 40hp, so when Vic attempted to start these models there were a lot of choice words, bloody knuckles and bruised arms as the pull-cord snapped back.

Even though she did manage to get them going on occasion, she never felt confident enough to be a solo captain.

I also had a close call early on, when I was captain and in charge, which further put her off.

THE SKY WAS GREY that day, with a brisk wind blowing as we departed with a larger than normal group of six experienced divers.

I had picked a site off the large main cay in front of the bay, as the sea was choppy and I wanted to keep the boat-ride short. This site offered protection behind the cay, along with a good-sized mooring buoy.

The dive went well, but meanwhile there had been a wind shift and, as we prepared to surface, the breeze was blowing straight from the sea towards the cay, which left the boat exposed rather than protected.

I knew this had happened, even as we were diving, as I could feel the surge pick up as we entered the shallows. I usually aim to get within the vicinity of the buoy-

line before we're ready to surface, in case I need a little extra time to locate it.

Divers, even experienced ones, are at their weakest and most vulnerable on the surface, when their equipment, neutrally buoyant under water, becomes a heavy load. Also, if I have divers low on air, I can buddy them up and send them to the surface while the others continue their dive.

As I approached the line now, I could see how much it was snatching back and forth, indicating how rough the sea was getting. It was going to be tough getting people back on the boat.

There are many different aspects to boat-diving that can be tricky, whether it be trying to kit up while sitting on the tube of a RIB or walking to the dive platform on a purpose-built dive-vessel in a rolling sea.

All dive-boats have their idiosyncrasies, depending on their type and size, but exiting the water in a heavy sea is difficult on nearly all of them.

This was especially the case with the skiffs, as few people could haul themselves up and over the steep sides, so I would normally get people to remove kit at the surface as they bobbed around, with each diver taking turns to hand their kit up.

They would then swim their way to the stern, where they could climb on board



using the ladder by the engine.

This generally worked well in the predominantly calm seas around the cays.

From below, I could now see the flat hull of the skiff slapping the surface dramatically. I decided that even though conditions were deteriorating quickly, and the light was starting to drain from the sky, I did not want to surface everyone together.

Having a whole group try to simultaneously get a hold on the grab-line trailing behind the boat in these conditions could easily result in separated divers drifting off to the very rough and rocky shoreline of the cay.

Everyone had to do a safety stop. I indicated to Vic that I would go up first on my own, and get in the boat.

She could then send the divers up in three pairs, so I would only have to deal with two people at a time.

ON SURFACING, I was greeted by a melee of spray and confused waters. The waves were rolling in from the ocean, then hitting the long cay behind us, causing the water to slap back against the incoming ocean waves like sloshing water in a bath.

Thankfully, the grab-line was trailing reassuringly behind the boat.

Making your way along even a small

'THE BIG ROCK CAY BEHIND ME SEEMED CLOSER, BUT I THOUGHT IT MUST BE JUST AN OPTICAL ILLUSION'

boat from the bow-line, tied to the buoy, to the stern can be intimidating in rough weather. Being at eye level with the water's surface, with the solid hull rising and falling above you and the waves seemingly trying to push you under it, can be most perturbing. Especially if you consider the consequences if the boat were to come crashing down on your head.

The natural tendency for any diver, but especially for novices or those who are scared, is to stay close to the boat and try to reach for it as a point of safety.

I usually try to encourage divers to keep their mouthpieces in and faces down when swimming in bad weather, and to keep away from the boat until they can directly approach the spot where they need to board which, in this case, was the stern.

The back of the boat now looked an intimidating place, however, with an angry-looking propeller rising and falling less than a metre from the ladders.

I am used to boarding this way and see the engine as a handy grab-point on which to heave myself up with full equipment, but I knew we would have our work cut out getting everyone aboard this way, even after they had already handed their kit up to me.

I had an experienced group, however, so was not overly concerned at this point.

BY THE TIME I was aboard with my equipment, Vic had sent the first pair up. They surfaced and made their way to the grab-line through the swell and, with some effort, boarded.

Vic, seeing that they were safe, sent the next couple up and readied the final couple to follow them.

This is where things started to go wrong. The big rock cay behind me seemed closer, but I thought it must be just an optical illusion, paid it little heed and concentrated on helping the next two divers out of the water.

As I helped the third diver into the boat, I looked up again to the rock cay and thought: It bloody is closer. My heart raced. Has my bow-line snapped? Are we now untethered from the buoy?

I lurched over to the bow to check. No, we're still attached. Looking round, I could see that we were edging still closer to the cay, and the waves breaking ashore took on a new, menacing form.

Shit, the buoy-line must have broken free from the concrete base. I beckoned the fourth diver to approach the stern. My voice rose as I urged them on.

I had three divers in the boat, one on the grab-line and three hanging under water, beneath the boat, holding on to the buoy-line that was no longer attached to the bottom. Has Vic noticed? The boat was getting closer to the rocks.

I started the engine and revved it in neutral, to try to alert the divers below.

We were no longer in deep, dark blue water and I could clearly see the menacing reef beneath us.

ACAPTAIN'S FIRST priority is to save the boat; without it, everyone would have a big problem. But if I drove forward, even slowly, I ran the risk of running over the divers, plus I still had one trying to climb up the stern near the engine.

An eternity passed as I waited for the fourth diver to board. As soon as his final limb was aboard, I called out to one of the group: "Cast us free from the mooring!"

I fixated on the approaching rocks. As the skiff parted from the buoy, my eyes traced the bubble patterns on the surface in the desperate hope that I could get clear of the divers.

Praying that no-one was below, I fired up the outboard and eased the boat into gear to stop our relentless drift towards

the white water crashing over the reef. I had to get the boat moving to avoid disaster. Now it was under power, I could hold the boat steady as Vic surfaced with the last pair of divers.

She had seen what was going on and fortunately, being capable divers, these two had gone straight onto their backs and were finning against the waves away from the shore.

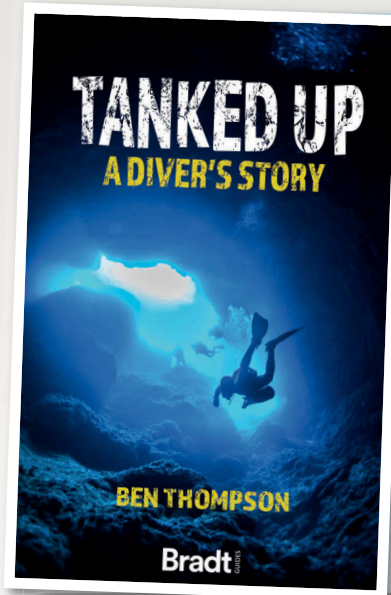
We edged our way forward, trying to put a little distance between us and the rocks. I knew they could not go on long before they tired.

Once we were in the more steadily rolling waves, as we edged into deeper water, I got the divers to come alongside the boat.

The guys in the boat took the gear from them as I shifted the boat in and out of gear to hold position.

Then, one at a time, the last divers floated to the back of the boat and we were able to get them up while the engine was in neutral.

WHEN VIC WAS finally on board and I could pull away, there was a huge, communal sigh of relief. The whole experience can't have lasted long but, as the stress eased away, it felt as if I'd been battling against the odds for hours.



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This incident showed how the failure of one small thing – a loose shackle, attaching the buoyline to the concrete base on the sea-floor, that might not have been wired in place properly – could have ended with, at the very least, the boat smashed against the shore.

It also highlights the need for divers to have experience in a variety of conditions and why being confident in your surroundings and about your equipment,

plus having a good finning technique, can keep a situation manageable.

If a person cannot remove their equipment easily, can't swim efficiently on their back or is not calm in rough conditions – all of which are common traits in holiday divers – a situation can deteriorate fast.

This incident happened a long time ago. I doubt many operators today would allow dives from an unmanned boat...

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The new abnormal

WE'VE STARTED TO EMERGE. The desperate dash for a dive is on – but where and how? What is our new diving normal? How much has altered over these past 16 or so months. I headed south-west to investigate.

If the extended traffic jam where the M4 meets the M5 is anything to go by, nothing much has changed.

It's horribly familiar, yet somehow my mind had blanked that experience out. I was simply dazzled by the excitement of getting away to go diving.

Gordano service station is usually the point in the journey where I realise that the torch-charger cable is back home in the kitchen-drawer. No change there!

With Covid restricting our travel abroad, most of England has now decided that Cornwall is the ultimate holiday destination. So if you're considering a dive out of Cornwall in 2021, I'm afraid it's full.

Yes, I know the locals have been saying this for 23 years, but this time it's patently obvious to all. Every last stitch of accommodation has been booked up until September (earliest). And that's September 2022. No hope of a dive at Hope Cove any time soon.

To many people living in Cornwall, tourism is a necessary evil. To the rest, it's just evil.

Divers are an extra-specially irritating species of tourist. We manage to be annoying on both land and sea at the same time!

Our over-sized vehicles and rubber boats on trailers obstruct the narrow lanes. We faff about on slipways, cause chaos in the harbour and constantly demonstrate our maritime ineptitude.

Parking space in Cornwall is under more pressure than the West End of London. No wonder the locals roll their eyes and curse when an armada of dive-club vehicles turns up at their tiny local harbour.

Devon, on the other hand is merely 95% booked – largely because it's such a laidback place that few businesses bother to answer their phones. It's also 75% under-staffed.

Those businesses that have managed to re-open have barely enough staff to unlock the doors and turn you away because it's a Tuesday. Those notices pinned to the restaurant windows are not copies of the menu. They're a roll-call of recruitment needs.

So everything that was contentious and tricky before Covid has become doubly difficult. It's the new abnormal.

THE SOUTH-WEST is a victim of its own gorgeousness. We can't give up on so much that is wonderful. Jewel anemones. Wrecks. Drop-offs. Great vis. Basking sharks. Lundy! Seals.

So what is a diver to do? The patience that's needed to complete your stops is the same patience you'll need with people who are dealing with a tsunami of pent-up demand.

Self-reliance is a virtue, and diving teaches you about redundancy. A back-up Pot Noodle for those emergency "out of food" incidents never goes amiss. Most of all, do not panic. In the midst of strife, maintain a sense of humour.

Respect the unique qualities of the places you visit and the creatures who inhabit those environments. Even when those creatures are refusing to sell you a bag of crisps because all the tables inside the pub are taken, and "we don't serve food outside".

Just breathe. Regain control.

Join the queue for fish and chips instead.

LOUISE
TREWAVAS



THE STORY OF **APO**



DAVE HAAS



The story of Apo Island in the Philippines is one that will inspire all environmentally minded divers – but success didn't come easy. **RONI BEN AHARON** tells the story. Photography by courtesy of **ATLANTIS DIVE RESORTS**



NOAMI KORTLER

USING FEWER PLASTICS, recycling, buying tuna from so-called “dolphin-safe” fisheries – we ocean-lovers do what we can to protect the Big Blue. But protecting something so vast and under so many pressures, one's efforts can feel like a drop in the ocean.

Small scales can make a huge difference, however, as illustrated by the story of Apo Island, one of the Philippines' first Marine Protected Areas (MPA), which made marine-conservation history one fish at a time.

The Philippines lies in the north-western corner of the Coral Triangle, the world's most biodiverse marine area.

More than 100 million people there rely on the sea for their livelihood and, especially in small shoreline fishing communities, have learnt to respect the delicate balance of their reefs.

Located off the coast of Negros Oriental which, with Negros Occidental is the Philippines' fourth-largest island, Apo is a hidden gem. Less than 1sq km in area, it hosts a documented 650 fish species and more than 400 corals – most of the species found in the Philippines.

It was on this island that science and the community combined to find the delicate balance between protecting reef-fish in their habitat while still relying on them as a food source.

The example set by Apo Island fostered

the creation of hundreds of other marine sanctuaries in the island-nation.

Apo (which means grandchild in the local Visayan language) has under 1000 inhabitants. With no infrastructure or access to fresh water or electricity, the people rely heavily on the ocean. Traditionally fishers, they sold their catch in Malatipay, a market town across the channel on Negros.

In common with other fishers all over Asia, they would use unsustainable practices such as dynamite fishing and muroami, a destructive method that involves smashing large rocks or cement blocks onto the reef to destroy the fishes' natural shelter and scare them into huge nets.

Back in the day no one saw this as a problem – the ocean's abundance would prevail. But gradually they started seeing fewer and fewer fish, and the tight community grew concerned.

IN 1974 SILLIMAN UNIVERSITY

Marine Laboratory, one of the Philippines' leading marine-science establishments in Dumaguete on Negros, initiated a marine-research project on nearby Sumilon Island.

This was led by Dr Angel Alcala, a pioneering scientist who had grown up in a Negros fishing community and could comprehend, even predict, the destructive impact of unsustainable fishing methods on the natural habitat.

The project studied the effects a pilot MPA would have on surrounding fishing communities. The idea was then revolutionary: to sell the concept of marine conservation to these communities as a way of improving yields.

Dr. Alcala's theory was that the MPA would provide a refuge for fish in which they could safely mature and spawn, and that this healthy ecosystem would benefit surrounding fisheries in two main ways: the spillover of adult fish from the MPA into the surrounding area, and larval export, whereby larvae produced by fish spawning in the MPA is carried on currents to other reefs to boost their populations.

Sumilon Island became the Philippines' first small MPA in 1974. Fishing and other human activity was banned there, allowing scientists to monitor how susceptible unprotected reef-fish were to destructive fishing methods and overfishing, and also how long it would take the fish population to recover.

After 10 years Dr Alcala and Dr Garry Russ of James Cook University in Australia were able to prove that the spillover of adult fish from the MPA had indeed had a positive effect on the surrounding fishing communities.

This not only validated the need for MPAs for conservation but also attached a solid economical value to it.

Unfortunately, political support to maintain the nation's first MPA was

Left: Healthy hard corals on Apo Island.

Above: Aerial view of Apo.

Below: Local fishing boats.



SONNY THAKUR

inconsistent, and local elections in 1984 marked the end of the Sumilon MPA, as incoming politicians promised fishers that they could fish where they wanted – especially in view of the restored “abundance of fish”.

Seeing politics clouding conservation efforts, Dr Alcala well understood the importance of getting the community fully onboard with any future MPA projects. He went to Apo Island in the early 1980s with social workers from Silliman, bearing the gospel of marine conservation as a tool to achieve greater fish yields.

IN 1982, **DESPITE** a measure of scepticism, the Apo Island community declared about 10% of the reef on the south-east side of the island, where little fishing went on anyway, to be an MPA.

Four years later the community put a Marine Management Council in place and declared an end to unsustainable fishing practices, allowing only line- and spearfishing, traps and gill nets.

It also appointed the Bantay Dagat or Sea Guards, who would enforce the fishing ban in the MPA. These moves remain in effect to this day.

In 1992, Dr Alcala was appointed Secretary of the Department of Environment & Natural Resources, and in 1994 Apo Island became part of the National Integrated Protected Area Act



Above: Table corals.

Below, clockwise from top left: Shaun the Sheep nudibranch; turtle; anemonefish in a bubble anemone; banded sea snake.

(NIPA) under the jurisdiction of the Protected Area Management Board (PAMB), a national plan to conserve aquatic and terrestrial treasures.

The message of Apo Island’s success was carried by the currents to the coast of

Negros, continuing to neighbouring islands all over the Visayas, where communities started their own MPAs.

Today there are more than 1500 in the Philippines, a third of them in the Visayas.





BOAZ SAMORAI

With so many MPAs around scientists grew curious, especially about the larval export effect.

In 2011, building on the findings of Alcala and Russ, Dr Rene Abesamis of Silliman University investigated whether the MPAs could connect with each other through the exchange of fish larvae.

A reef-fish's life-cycle goes from egg to larvae before settling on the reef as a juvenile and growing to adulthood.

The larval phase lasts 1-10 weeks depending on the species, during which time the larvae are often carried by the oceans currents, but how far from "home" did these babies travel?

If larval exchange was allowing MPAs to synergise with one another, this could accelerate the recovery of fish populations in areas destroyed by overfishing and

destructive fishing methods.

Dr Abesamis and his team spent 18 months collecting more than 3000 DNA samples of adult and juvenile vagabond butterflyfish over 55 miles of Negros coastline, including Apo Island.

They were looking for DNA matches between juvenile fish and their parents, with the distances between matching pairs providing a guide to how far the babies dispersed from home during their larval phase.

The study, published in 2017, suggested that the larvae produced by an MPA have a strong chance of affecting other MPAs up to 53 miles away. Some of the larvae had travelled as much as 75 miles.

Based on these findings, it's likely that the MPA in Apo Island boosted fish stocks in coastal Negros – proof of what a well-managed MPA such as Apo Island can achieve.


If fish larvae produced by the Apo MPA settle on reefs in another MPA, they have a better chance of surviving and growing from juvenile to adult, and even a spawning adult.

Dr Abesamis is now investigating the source of the babies of Apo Island, extending his study to sites as far away as Bohol.

THE RESEARCH in Apo and Sumilon produced more than 30 years' worth of data on the fish population and habitat in both MPA and non-MPA settings.

Being able to compare the habitat in an MPA that was continuously protected such as Apo with one that had on/off protection (Sumilon), is very valuable in proving the effectiveness of marine conservation.

Combining the studies of Dr Alcala and Dr Abesamis, it is evident that MPAs make more babies that travel in search of a new home, helping to recover devastated communities.

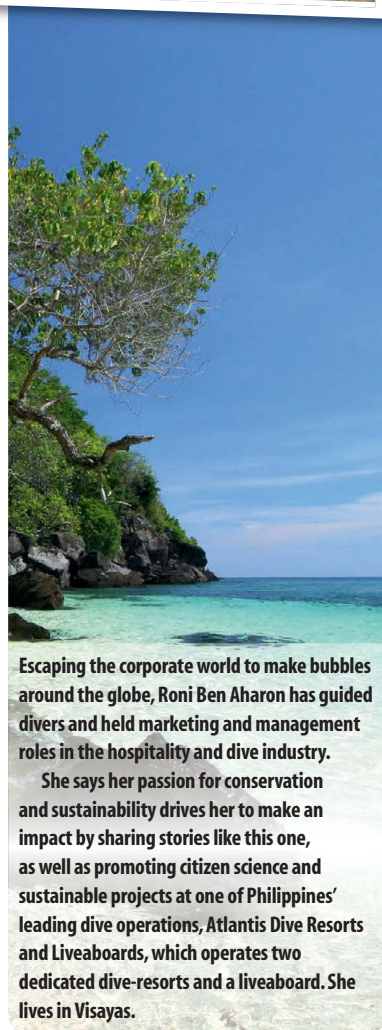
We can replenish the ocean, one MPA at a time. 



SONNY THAKUR

Above: Dr Rene Abesamis.

Below: Apo children.



DAVE HAAS

Escaping the corporate world to make bubbles around the globe, Roni Ben Aharon has guided divers and held marketing and management roles in the hospitality and dive industry.

She says her passion for conservation and sustainability drives her to make an impact by sharing stories like this one, as well as promoting citizen science and sustainable projects at one of Philippines' leading dive operations, Atlantis Dive Resorts and Liveboards, which operates two dedicated dive-resorts and a liveboard. She lives in Visayas.



DAVE HAAS

FROM LONELY SQUEEZES TO A WORLD STAGE

**Aquanaut:
A Life Beneath
The Surface**
by Rick Stanton

WE THINK WE KNOW all about the Tham Luang cave rescue. The 12 boys of the Wild Boars football team and their coach, trapped in a flooded cave in Thailand – it was in the news for weeks in 2018, and became one of those rare instances of amateur divers grabbing the headlines.

And not just any old divers, but cave-divers, the best-concealed of all fields of diving endeavour, and British to boot.

We followed the story of how the boys were discovered by Rick Stanton and John Volanthen, two divers at the top of the global call-list when any serious cave-rescue was required.

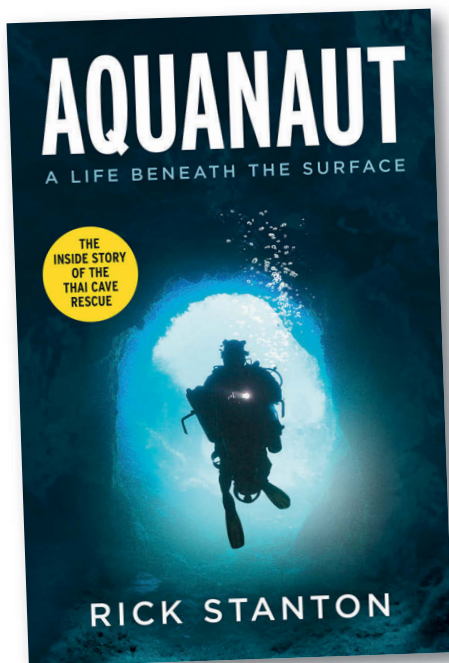
Then we heard about the dramatic rescue itself – and learnt only later about how the pair had located and rescued a bunch of Thai Navy Seals, right at the start of the operation.

In the aftermath we heard much detail (some accurate) from fringe-members of the rescue caravan; read about the boys' recovery and their rescuers being honoured; saw books rushed out to be critically panned; and heard about film-rights bids.

Tham Luang became quite a circus but the real action had all happened out of sight, where the world's press was unable to go.

For a definitive view of the rescue we have to go to the source. Rick Stanton, though normally retiring, is not one to mince his words when things need to be said.

Aquanaut, written with the help of his friend Karen, was worth the wait.



You wouldn't guess that neither of them is a professional writer. In fact you probably won't read a better-written book about diving this year, unless it turns out to be Volanthen's *Thirteen Lives*, which I've yet to read.

In *Aquanaut* we get not only the inside track on the Thai rescue but, masterfully entwined with it, Rick's diving autobiography – the sequence of experiences that led to a cave-diving reputation hard to match.

That in itself is some story, taking in highlights shared with Volanthen such as the world depth record set at Wookey Hole in 2004, and the longest cave-penetration dive in Pozo Azul in Spain in 2010.

Many years ago **DIVER** conducted an in-depth interview with Rick. He had mentioned to me that an outsider's view might help him to understand why he did the things he did.

This was obviously something that nagged at him, and I don't think our article answered his question.

But he addresses it several times in

Aquanaut, and I got the impression that after 40 years he had settled on an answer that satisfies him.

It boils down to a congenital inability to let go of a project until he has reached the bitter end. Simple!

This, after all, is a diver who, days deep into a system, will press ahead solo through gravel squeezes that would give most of us nightmares, sliding into the unknown on mini-avalanches of his own making, as he describes so graphically in this book.

But he has survived so many challenging experiences because, like Liam Neeson in *Taken*, he has "a very particular set of skills" and the ability to stay cool-headed and calculating.

He would deny taking unconsidered chances. An example in the book is a double body-recovery in Norway's Plura. In the end the Finnish divers' buddies went for it, as seen in the film *Diving Into The Unknown*, but Rick insists that for him the end didn't justify the high level of risk.

Constantly fettle his trusty home-made kit, often baffled and frustrated by other people, he emerges as a fully drawn character in the pages of *Aquanaut* as we follow him from student through firefighter to retiree and, throughout, a caver who dives.

He is funny and relentlessly self-deprecating in the book, never one to let his achievements go to his head.

Despite those epic solo dives, cave-diving is very much a team activity, and I don't think the participants ever allow their fellow-divers to get out of their box.

Having reached middle age safely, Rick had in fact scaled back quite a bit on his cave-diving activities when the Thailand call came.

As the book takes us through Tham Luang we meet the divers Rick trusted to come in to help – and one or two others who didn't measure up when the chips were down.

We read about how the core team were cold-shouldered by the

authorities for much of the time, and about serial obstruction by the Navy Seals – not deliberate so much as the result of highly trained operatives being outside their comfort zone.

We meet key characters who succeeded in opening doors, from dry-caver Vernon Unsworth to resourceful interpreters Tom and Bas.

And we gain insight into the heroic part played by Dr Richard Harris, who put his career on the line when he approved use of ketamine to sedate the boys in the flooded tunnels.

In many ways the sheer volume of rescuers with conflicting agendas posed more of a threat to the mission's success than the difficulty of the dives involved.

The British divers needed trust and support, but the green light was a long time coming. The rescue had no right to end as happily as it did.

Rick has spent much of this year in Australia, where he and John Volanthen seem bemused to have actors of the stature of Viggo Mortensen and Colin Farrell respectively portraying them in the forthcoming film *Thai Cave Rescue*.

The two cave-divers are acting as consultants to the film's director Ron Howard, and after reading *Aquanaut* you'll be certain that they won't allow anything that's less than 100% authentic to reach the screen.

When Rick Stanton joined the student caving club in the '80s, he can scarcely have expected it to lead to an MBE, a George Medal and so many lives saved along the way.

I'm not a fast reader and I already knew how Tham Luang turned out, but I read this 488-page book almost at two sittings over a weekend.

Like Rick Stanton on so many occasions, I just had to get to the end.

Michael Joseph
ISBN: 9780241421277
Hardback, 488pp, 15x23cm, £20
Kindle £9.99

TOP 10 BEST-SELLING SCUBA-DIVING BOOKS

as listed by [amazon.co.uk](https://www.amazon.co.uk) (29 May, 2021)

1. *100 Dives of a Lifetime: World's Ultimate Underwater Destinations*, by Carrie Miller & Brian Skerry
2. *Deco for Divers: A Diver's Guide to Decompression Theory and Physiology*, by Mark Powell
3. *Pirate Hunters* (audiobook), by Robert Kurson
4. *Fifty Places to Dive Before You Die*, by Chris Santella
5. *Essentials of Sea Survival*, by Frank Golden & Michael Tipton
6. *Dive Scapa Flow*, by Rod Macdonald
7. *Dive-Navigator: EL Quseir, Port Ghalib, Marsa Alam, Hamata*, by Andrei Dvoretzki
8. *Dorset Dives: A Guide to Scuba Diving Along the Jurassic Coast*, by Will Appleyard
9. *Underwater Foraging – Freediving for Food*, by Ian Donald
10. *Wild and Temperate Seas: 50 Favourite UK Dives*, by Will Appleyard

TOP 10 MOST WISHED-FOR SCUBA-DIVING BOOKS

as listed by [amazon.co.uk](https://www.amazon.co.uk) (29 May, 2021)

1. *100 Dives of a Lifetime: World's Ultimate Underwater Destinations*, by Carrie Miller & Brian Skerry
2. *Diving the Thistle Gorm*, by Simon Brown, Jon Henderson, Alex Mustard & Mike Postons
3. *The Professional Diver's Handbook*, by John Bevan
4. *Wrecks & Reefs of Southeast Scotland*, by Mike Clark
5. *Reef Life: An Underwater Memoir*, by Callum Roberts
6. *Dorset Dives: A Guide to Scuba Diving Along the Jurassic Coast*, by Will Appleyard
7. *Force Z Shipwrecks of the South China Sea: HMS Repulse & HMS Prince of Wales*, by Rod Macdonald
8. *Under Pressure: Diving Deeper with Human Factors*, by Gareth Lock
9. *Fifty Places to Dive Before You Die*, by Chris Santella
10. *Scuba Diving Safety*, by Dan Orr & Eric L. Douglas



ITV NEWS

Rick Stanton, at home with his equipment.

An extract from *Aquanaut*

After tracking down the compressor outside Governor Narongsak's office, we immediately set to work noisily filling our cylinders.

An official soon came running out of the building, complaining that the noise of the compressor was drowning out the press conference being held inside.

Without a word, John and I carried the compressor and set it up outside our room again, which is where we'd wanted it all along.

A compressor is often the scourge of any diving expedition, and this one was proving no exception.

Tanks filled, we changed into our diving kit and went to the cave. As we walked the short distance between our gear room and the entrance, we passed through a crowd of press who began snapping our photographs and yelling questions to us.

One reporter shoved a microphone into John's face, which he quickly brushed aside with the curt response: "We've got a job to do."

I glanced over at John quickly, to see how he was taking all of this.

His brows furrowed, he seemed even more aggravated by the chaos and crowds than I was, and it wasn't long before we were being referred to in the press as "the stony-faced Brits" – which is not the worst thing I've ever been called.

I wore an old one-piece wetsuit (well-worn with various unpatched holes), neoprene socks, caving kneepads, a helmet with lights, and standard green Dunlop wellies.

I carried my fins, which would slip over the boots while diving. A home-made harness strapped round my waist carried some lead blocks and allowed a cylinder to be slung on each hip, in the side-mounted configuration commonly used in caves.

Attached to each cylinder was a Poseidon Cyklon regulator, identical to the one I'd first purchased with Steve Joyce thirty-seven years earlier.

John was dressed similarly, except for one crucial difference: I was wearing an inflated rubber tube on my back.

My lucky wing. "Rick," John sighed after we'd walked past the reporters and their cameras. "You look like you don't even know how to swim."

Inside the cave, we found the entrance chamber had changed drastically from the night before. It was now a large lake, with a river cascading noisily in from the cave's throat – just as Vern had predicted.

There didn't appear to be anybody operating in the flooded cave beyond the entrance chamber, but there was nobody stopping us from entering, so we went in.

John was correct. We had a job to do.

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WELL AND TRULY TESTED



The Garmin Descent Mk2i is a lot of computer at a big price, and even focusing only on its diving capabilities STEVE WARREN needs a cool four pages to analyse it!

COMPUTER GARMIN DESCENT Mk2i

THINK OF MODERN “DISRUPTERS” in the diving industry and we might focus on small crowd-funded start-ups. Some interesting equipment is coming from that sector, but small disrupters who have made big impacts have always been part of diving.

This has been especially true of dive-computers, although when a start-up begins to make waves, a large scuba manufacturer is likely to see it either as a threat or an opportunity and buy it out.

So what to do about Garmin? It's a multi-national, multi-billions tech company, and it could probably buy most of the diving industry's major players from petty cash.

It has also identified the dive-computer market as one in which it wishes to be. The Descent 1, introduced in 2018, fired a warning shot, and its successor isn't firing blanks either.

There are two versions of the Descent Mk2 – non-gas-integrated and the Mk2i, the model reviewed here. It uses an optional remote tank transmitter and can monitor gas-switches for multiple cylinders.

The problem facing other dive-computer manufacturers isn't the diving capabilities of the Descent Mk2i, good as they are. They can and do compete on that level. Where the field is slanted uphill for them is everything else this Garmin does.

You can't define the Mk2i as merely a dive-computer.

Sure, it's also a watch, and we're accustomed to most scuba brands offering computers restyled for such everyday use, but this is a smart watch. You can use it to check emails, for example.

It's further set apart by the scores of other built-in and expandable functions for surface water sports such as boating, boarding, kayaking and swimming as well as orienteering, triathlon, skiing, golfing and keeping fit. Should you fall while walking, running or cycling, it will detect the incident and automatically inform three nominated friends of your GPS location.

Garmin Pay allows you to make contactless payments to buy air or snacks at dive-sites, a very practical feature. Some of these services require additional subscriptions.

The Mk2i can also be linked to other products such as the Garmin InReach Mini, itself multi-purpose. If needed this operates as an emergency beacon, bouncing off a satellite to alert emergency services (and two friends) and continuously updates your location using GPS. It even lets you trade texts with emergency responders so that you know the status of your rescue moment by moment.

In routine use it can upload your route onto social media so that friends and family can see where you are, either when you surface or in real time while hiking or mountain-biking. The InReach Mini and its 100m-rated dive case is the subject of a future review.

All this is what makes the Descent Mk2i a tough gig to review comprehensively. So I'll focus on its use as a recreational air and nitrox dive-computer.



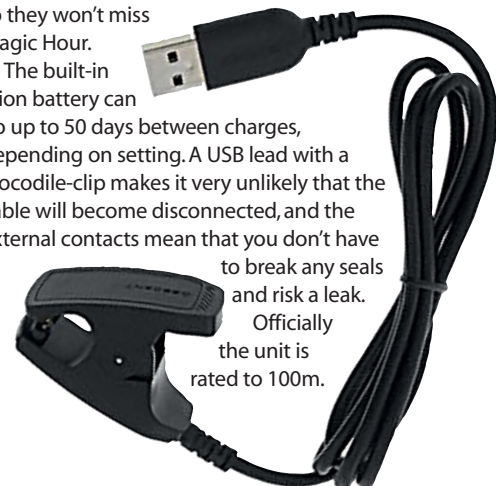
The Design

The rugged casing is made mainly from fibre-reinforced polymer with a titanium accent ring. The 36mm lens is sapphire-crystal, a component of premium dive-watches chosen for its anti-scratch qualities.

Five push-buttons put you in control. As a watch, you can choose between digital read-outs and a simulated analogue display.

A GMT function covers the time in other zones, wake-up alarms, timer and stopwatch. It tells photographers when sunrise and sunset occur, so they won't miss Magic Hour.

The built-in li-ion battery can go up to 50 days between charges, depending on setting. A USB lead with a crocodile-clip makes it very unlikely that the cable will become disconnected, and the external contacts mean that you don't have



to break any seals and risk a leak.

Officially the unit is rated to 100m.



Algorithm

The dive brain is the Buhlmann ZHL-16C decompression algorithm used in many recreational and technical computers.

Although the Descent can measure heart-rate, though not necessarily through a dive-suit, using a sensor on the case's back, and can monitor gas consumption, these are not included in the algorithm's calculations.

The Mk2i meets the needs of recreational divers, with options for air or nitrox and for those moving from rec to tech. It can monitor simple gas-switching for accelerated deco through to calculating deco for as many as 12 mixes for complex trimix open-circuit diving, in addition to its closed-circuit rebreather mode.

Older, less-fit or tubbier divers can choose between three basic caution zones. If you know what you're doing, the in- and outgassing gradient can be adjusted to introduce deep stops, not normally part of the ZHL-16C algorithm.

A simple Plan mode displays your no-stop limits, and a full-on decompression planner provides run-times for advanced dives. If you prefer tables, there's a Gauge setting.

As well as scuba modes there are two comprehensive freediving options, including Apnea Hunt, which mutes alarms so as not to spook fish, useful for spearfishing and photography. You also get a digital compass.

The Mk2i's optional remote tank-transmitter can monitor gas-switches for five cylinders, and you can assign another diver's name to each transmitter to monitor their gas from your Descent – useful for dive-supervisors.

Other hoseless transmitters carry the signal using radio frequencies but this one uses sonar which, Garmin claims, allows one diver to read another's gas from up to 10m away.

The Manual

The manual is surprisingly user-unfriendly.

Firstly, Garmin doesn't include a waterproof diagram of which buttons do what – it's painful trying to set functions while you're getting used to any new dive-computer, and a prompt card can really help. I ended up drawing a captioned layout on my slate.

Secondly, the manual tells you how to set a function but not why you might want to. It isn't Garmin's role to teach you to dive, but at times I struggled on why a feature had value, or was confused by the terminology.

As a diver of some 40 years with recreational BSAC, PADI and NAUI instructor ratings, that put my ego right in the basement.

Thirdly, I'd like page breaks that clearly divided the Descent's dive-settings from, say, its golfing menus, and far more illustrations walking me through the menus and showing all the options for customising screen layouts.

Some information didn't seem to be in the manual at all. I had to seek clarification and, although Garmin was very helpful, I felt that diving, and perhaps other activity modes, needed a far more comprehensive manual of its own.

The instructions are downloadable, so no trees would be harmed by making the manual's quality match that of the machine.

Setting Up

Once past the manual, the Descent was easy to set up. The displays are large, and I could set them without my reading glasses.

At first the five buttons intimidated me. My personal dive-computer has only one. However, Garmin has really thought this through. Use of a separate back button speeds up correcting a mistake, while dedicated up and down buttons, both on the same side, are another nod to logic. A fifth button operates the light.

The buttons are multi-functional and sometimes require a long or short press at the right time, but the Descent felt generally easier to operate than many of its competitors.

For those who use their computers infrequently and get confused, the Descent Mk2i key features, such as setting your mix or depth/time alarms, are generally intuitive. The buttons don't penetrate the casing, so there are no concerns about leak points. A double tap to the face is an alternative to pressing buttons to access some features such as the compass display, or to scroll between dive-screens.

There is a range of preset and customisable visual, audible and vibration alarms and these are simple to locate, select and set.



This makes it quick to change a depth alarm, say, while you're gearing up and suddenly rethink how deep you want to go.

A laudable feature is the Single Gas Back Up menu. The description confused me – it sounded like a mode for changing to a buddy's gas supply or to a pony containing a mix different to that in the tank you had run dry. It had certainly led another reviewer to think that.

How did it differ from Multi Gas, for programming mixes to be changed under water, such as a bottom gas to a deco mix? I ran to Garmin's Rebecca Mansfield, a diver and on the ball.

Single Gas Back Up is a surface-only mode for listing single mixes you might wish to use at some point – basically a custom menu.

So rather than having to start over to change a gas mix because you were expecting nitrox 32 and got nitrox 34, you can call up your list and select it from there, which is quicker and easier.

It can store 12 selections, so you can pre-program, say, air and 11 nitrox mixes from 30 to 40% for near-instant recall. Smart.

The simple dive-planner provides your NDL

based on current inert-gas loading, but it also has a look-ahead feature, allowing you to dial in a surface interval and different gas-mixes to figure out how long you need to remain out of the water to get the no-stop time you want.

This could be used to juggle a series of no-stop dives to photograph a wreck such as the *Thistlegorm*, visiting areas of interest at different depths during the diving day.

A downside is that it doesn't automatically roll or let you scroll manually through a range of depths to see the NDLs. Want to see how much less time you'll get by dropping from 30 to 33m? You have to back up and input a new depth before it shows the updated NDL and MOD.

You can use the decompression-planner to figure out how much deco and at what depths you'll incur stops for different combinations of mix, bottom times and surface intervals.

These plans can be saved and recalled on the surface, or copied to a slate for use under water.

You can work out contingency procedures in advance of diving in case you overrun your intended time or depth. It works well.

At A Glance

A watch-face the size of a normal diver's timepiece offers limited space to present a lot of information. Garmin has culled that data to some extent, dividing it between three main screens, some of which allow you to customise the layout.

While making no-stop dives I was very happy with the Mk2i set to the navigation screen, which provided all my need-to-know information including NDL and current depth, max depth, elapsed time and safety-stop level and countdown. That's a lot of information but it was easy to read.

With gas-integration enabled, you need to start using the air screen. You can see all your essential NDL data along with tank pressure, air time remaining (ATR) and respiratory minute volume (RMV) or surface air calculation (SAC) if using imperial measurements.

To use your compass you need to select the navigation screen, doing without air information.

Navigating generally requires close watching of your compass – you're staring at the Descent near-continuously and it's no hassle to flick back to the air screen once in a while.

It's more convenient than reaching for a hoses pressure-gauge.

Decompression Diving

For deco diving, the navigation screen has too little space for all the info needed, so you must scroll between it and the main dive screen, which presents deco info very clearly.

To check gas levels you again need to scroll to the air screen, because neither air pressure nor ATR is shown on the main dive-screen that guides you through your stops.

I'm going to criticise the Mk2i for this. ATR or cylinder pressure, at least in bar (PSI might be too many digits) could easily replace temperature read-out on the main dive-screen and sit beside the TTS display, but that switch isn't an option.

A temperature display has long struck me 🍷

as useless under water. If you're warm, who cares, and if you're cold, it just confirms it. I'd prefer my TTS and ATR in sight simultaneously along with my current depth info, so that I can manage my decompression without pushing buttons.

If you have a free hand it's easy enough to switch between screens, either by pushing a button or double-tapping the screen, but there's a neat little trick that makes the Descent far more user-friendly – and it's not in the manual.

Double-tap sensitivity can be changed to react to three levels of force and, by choosing the lightest touch setting, a strong flick of the wrist will change the screens. That's a huge benefit when one hand is tied up deploying a reel,



holding a torch or operating a camera, because all your essential information can be referenced hands-free.

The situations in which you still have to push buttons, such as to make a gas-switch, are those in which you would need both hands to operate other kit anyway.

I tried a simulated gas-switch, having set the Garmin to air while actually diving on nitrox.

It's incredibly simple: hit a button to bring up your gas menu, select the new gas mix you programmed topside, save and you're done.

This, I felt, worked very well. On single-screen computers, I've sometimes struggled to follow the small icons on information-crowded displays, and failed to change.

Covid curfews in Gibraltar ruled out night-diving, but I swam into wrecks to see how easy the displays were to read in the dark.

The backlight was set to always be on with maximum brightness. It's superb. The Descent was equally easy to read in direct sunlight.

Air Integration

The air-transmitter was exceptionally simple to pair to the Mk2i and the menus to set cylinder pressure and volume are easily followed.

This information is used to calculate RMV and SAC, information needed to estimate your ATR. RMV and SAC translate into your current breathing rate, so you can see how this might increase if you swim against current or reduce on a relaxed safety-stop.

I watched my RMV soar from under 1 to 1.4 bar per minute as my work-rate increased by what seemed like only a modest amount. These figures

can be used to establish individual breathing rates from which gas planning can be extrapolated, a tenet of technical diving.

Only RMV or SAC is shown under water, but both are recorded in the Descents log.

The ATR takes a minute or so to figure out your breathing rate. Hitting the water on one dive, I was surprised to see an estimated ATR that was scarily short – then it doubled as my breathing rate settled down. Along with the ATR estimate, you have a digital read-out of current tank-pressure.

The gas-integration low tank-pressure warnings are a little quirky. The issue with Garmin's thinking for me is that competitive models allow you to choose two levels of air-pressure warning.

The first, the pressure at which you get your first alert, can be used as a turnaround pressure prompt. This might be set to 100 bar, the point at which dive-guides typically want a tank half-empty signal. I'd regard this as a non-critical reminder alert.

The second is the low-pressure alarm that indicates you are getting low on gas and need to consider ascending. This is usually far more important. Computers normally have a factory-set minimum warning pressure. You're free to choose a higher one such as 50 bar as your reserve, but the computer won't accept 20 bar.

This allows you some flexibility. For example, you might want to hold back more than the arbitrary 50 bar if you're escorting divers to have air for sharing, or less if you're solo-diving close to an exit point.

The Garmin allows you to set only one pressure alarm, which it calls reserve pressure.

I didn't quite get this from the instructions, probably because I assumed, dive-computer terms not being standardised across brands, that this was the turnaround alert.

Omission of a turnaround alert isn't a deal-breaker but it is surprising, given this unit's comprehensive specification.

But while I was figuring this out, I'd set a reserve pressure for 100 bar. When this kicked in, ATR disappeared from the display.

The Garmin still provided my digital pressure read-out, so I knew how much air I had in gauge terms, but not the time. ATR is also based on gas duration until you hit reserve, so if you set 100 bar it's only estimating air duration in minutes for the difference between your cylinder's starting pressure and that point.

So the higher you set the reserve pressure, the less accurate ATR is.

I like ATR information, and would much prefer the choice of selecting both a turnaround pressure and a reserve pressure and having the Descent estimate ATR for reserve pressure.

When I ran my tank very low, the Garmin vibrated insistently and flashed up the message along the lines of below critical pressure – all very commendable. But Garmin does not tell you



Garmin online seminars provide useful information on the Descent Mk2's underwater and surface capabilities.

what it considers critical pressure to be. That isn't in the manual.

Back to long-suffering Rebecca. It turns out to be either half the reserve pressure you set or 21 bar, whichever is the greater. That's safety information you should have.

Sonar Link

The gas-integration version's unique selling point is its range. I had only one transmitter, and limited dives, so I couldn't fully test how well the unit would work for monitoring other divers, but I did get a very encouraging insight into the Mk2i's transmitter capabilities.

Some context: a few years ago Sam Read and I were co-directing and filming underwater sequences for the TV docusoap *Gibraltar – Britain in the Sun*. We set up a night shoot that involved Tony Watkins and Shane Athey from Dive Charters dropping into a small steel barge amidsthips and swimming through a narrow



corridor to the stern to inspect the engines.

I had slipped through a tight deck-hatch and fallen to my knees inside a cabin just behind the engine blocks, pointing my camera through a doorway to film the stars' approach.

To avoid backscatter, Sam had set up overhead lights shining into the wreck through hatches and grilles in the deck. I was outside their beams, and kept my torches off so that my eyes would adjust to the gloom.

We were on comms and Sam, doubling as my safety-diver, wanted me to check my air and report back. This meant me putting the camera down, which raised the silt, finding my gauge, shining my torch on it, spoiling my night vision and calling Sam back.

Because I couldn't hear Shane and Tony until they entered the wreck, I might easily have

missed the shot while doing all this. So I was very interested to see if the Garmin could solve such problems.

Returning to the wreck with son and father team Clifford and Paul Santos from Gibraltar SAC, which hosts most of my gear tests, I passed Paul the Descent Mk2i and, leaving him on deck, re-entered the wreck and took up my original filming position.

Paul was able to monitor my air, even though he wasn't even holding the computer over the hatchway but was beside it, as Sam had been.

The cost of the Descent and its transmitters might cause recreational dive operators to shy away from its safety benefits, but it could have an important role to play on open-water film shoots, allowing a safety-diver to remain out of shot and unobtrusive while still monitoring remaining air for crew and actors/presenters.

In my case, Sam would have been able to continuously update me on how much gas I had, and my ATR. It's a very elegant and practical safety advance and hard to overestimate.

FYI, DAN estimates that 40% of diving deaths are caused by simply running out of air.

Alarms

The Garmin Descent Mk2i's alerts and warnings are very impressive. I set them for audible buzzer and vibration.

I had assumed that the vibration would work over a bared wrist, or maybe through a dive-skin, but not through a "real" suit.

In my head, this created a dilemma. What good is relying on an alarm you can't use all the time?

Doesn't this create the space to fall into the trap of depending on it when you've switched to a coldwater suit and it won't work?

Not a bit of it. Worn over a 7mm wetsuit or neoprene drysuit sleeve, the vibration alerts came through clearly.

In fact, returning from a heavy-breathing regulator test and while piloting a scooter, the Descent had two real goes at me.

One was that critically low air warning, because I was using independent singles and the tank from which the Garmin was reading was running on fumes.

The other was an exceeded ascent-rate wrist-slap as I was rushing to my deco-stop level.

Now these persistent vibration alarms grabbed my attention. Moreover, you don't have to figure out from all the data on the screen what the Descent is concerned about.

It briefly replaces the dive-screen with an easy-to-see written message.

It was less obvious when my tank pressure dropped to my preset warning level of 100 bar. It seemed to give only one pulse, which I could have missed.

Navigation

The Descent's great navigation system is based around a digital compass. This doesn't have waypoint settings but allows you to preset your outward heading and store a reciprocal route to call up later.

A match needle digital display uses one index

to show you your current heading and a second indicates the course you should be on. Turn until they coincide and you're sorted.

You can also choose settings that guide you through making 90° left and right turns, so it's easy to swim a square pattern.

That way you can follow a trail that will let you see far more of a dive-site than a simple out-and-back reciprocal route.

This is a good pattern to use for searches, too – if you drop a camera, for example, or are exploring and mapping a new site. By bringing up the stopwatch display, you can time the distances you've swum.

This improves accuracy and means that you needn't memorise or write down your computer's elapsed dive-time read-out.

If you want to make expanding searches, timing informs you when you've completed a longer leg and need to turn again onto a shorter one. You can also pause the stopwatch if you stop moving to look at something. For no-stop diving, I tended to use the navigation screen with its NDL read-outs a lot, switching to the air screen now and again to check my air.



The desired heading is 250° and the diver needs to turn until the two arrows coincide to get onto it.

While GPS satellites don't work under water, the Descent can save your co-ordinates for the exact points at which you descended and resurfaced.

This has some practical benefits. In a missing diver scenario, if you follow the rule to search for a minute, then surface, then tag your position, searchers at least have a useful starting point.

A friend of mine, a respected shark-researcher, sees this feature as having real applications for recording sightings.

Naturally, the Descent has lots of aids for navigation and recording your position on the surface too. It even predicts tides.

Logs

Along with the usual total dive time, time of dive and surface interval, you'll find average and maximum depth and temperatures in the dive-logs. You can also check your heart-rate among other records such as oxygen toxicity unit tracking.

Add air integration and you can recall starting and ending pressures, SAC and RMV. The at-a-glance logs can be transferred wirelessly to other devices. However, I had been using the Garmin to record some walks and found that I had to scroll through all these records to get back to my logs!



Conclusion

This is a long review, even limited as it is to the Descent's recreational-diving functions. The far-reaching sophistication of the Descent Mk2 series means that these units can only really be appreciated by downloading the specifications and watching Garmin's YouTube product seminars.

Overall, I was very impressed by this Garmin. It excels at meeting three of my personal dive-computer must-haves: being easy to read, with intuitive menus and dependable safety features. My few criticisms are minor.

As a stand-alone dive-computer for recreational diving, this is an extremely attractive machine. When you add in its technical open-circuit and CCR capabilities, it just gets better.

Count up all the additional built-in instrumentation for surface adventure activities and how it dovetails with other Garmin products, including satellite emergency beacons, and you see just how out there the Descent Mk2i is. Highly recommended. ■



SPECS

PRICE ▶ Descent MK2i Titanium Carbon Grey DLC with black band £1400, with T1 transmitter £1800. Transmitter only £350. InReach Mini £300. InReach Dive Case £43.

ALGORITHM ▶ Buhlmann ZHL-16C

GASES ▶ Air, Nitrox, Trimix

POWER ▶ Li-ion rechargeable cell

DEPTH RATING ▶ 100m

WEIGHTS ▶ 94g

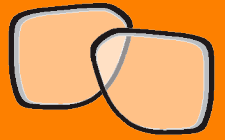
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Aqua Lung Xscape

Xscape 4/3mm wetsuits are intended for warmwater diving, snorkelling and surface sports. Their Yulex construction is claimed to be more eco-friendly than Neoprene, and combines natural rubber with a polyester lining made from recycled plastics that's said to be hard-wearing. In women's and men's styles, the £315 Xscape has a back zip and Supratex knee-pads.

» aqualung.com

TUSA Intega M2004 Mask

TUSA promises a perfect fit for all shapes of face with its new M2004 model, thanks to the self-adjusting 3D SYNQ mask-seal. A choice of clear or black silicone skirt is offered together with a range of corrective lenses from -1 to -8 dioptres. The price is £85.

» cspartnership.com



INON Split-Easy Adapter

Split-level photography comes to action cams with the new Split-Easy adapter for the INON UFL-G140SD semi-fisheye lens. The simple £10 device seals water between the camera housing and lens, so there's no waterline or bubbles to mar your footage. Useful for polecam filming, too.

» inonuk.com



BALL Engineer 111 Hurricane Hunters Watch

This 100m-rated chronograph is described as perfect for dive-travellers. Its GMT read-out allows you to see time and date in two time-zones simultaneously and you can choose between a count-up or count-down bezel. The body is stainless steel, the lens sapphire-crystal and you can choose a sapphire or ceramic bezel. Limited to 1000 pieces, this watch is priced at £2600.

» ballwatch.com



Mares Magnet Connector

Able to support 60kg, the Magnetic Connector is a great alternative to carabiners, snap-hooks, bolt-snaps and clips, according to Mares. It's said to be ideal for safely managing lights, cameras and consoles. With a 360° swivel for convenience, the £23 connector also has a one-handed quick-release mechanism to make it easy to remove equipment as needed.

» mares.com



Garmin Descent Mk2s >>>>

Garmin has added to its Descent range of dive computers (see **DIVER Tests**) with the Mk2s, priced at £950. Designed for the smaller wrist or to be more discreet, the new model shares many of its stablemate's features, including Air, Nitrox, Multi-gas, Rebreather and Apnea modes. It can also be linked to Garmin InReach emergency personal location beacons. The Mk2s is also a smartwatch and comes preloaded with apps for outdoor adventure, gym and wellness activities.

>>> garmin.com



Certina DS Action Diver Sea Turtle Conservancy Watch <<<<

A long-time supporter of Sea Turtle Conservancy, Certina introduces its DS Action Diver watch, with special-edition STC logo. Combining Certina's stainless-steel turtle case and Double Safety sealed crown, the watch is rated safe to 300m. The case sports a PVD finish and scratch-resistant sapphire-crystal lens, while hands and indices are treated with Super-LumiNova for easy reading in low light. The ETA automatic movement has an 80hr power reserve. The price is £720.

>>> certina.com



Red Original Kids Short Sleeve Pro Change Robe >>>>

Young divers and snorkellers can expect some comfort and privacy when changing with this robe, though it's hardly a snip at £110. It has a wind- and rain-proof outer shell and a towel lining said to be quick-drying. There are handwarmer pockets and a chest pocket for valuables.

>>> redoriginal.com

TROPICAL ATLANTIC



Two divers assess the Turks & Caicos Islands – one from a liveaboard, the other shore-based

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HSE MEDICALS and phone advice - Poole

Dr Gerry Roberts and Dr Mark Bettley-Smith.
Tel: (01202) 741370

Diving Medicals - Midlands (Rugby) - HSE, Sports Medicals and advice at Midlands Diving Chamber. Tel: 01788 579555 www.midlandsdivingchamber.co.uk (72756)

CLUB NOTICES

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Arnewood Divers, Christchurch - where diving is safe and fun from our own hard boat. Training from beginner to Instructor. Find us on Facebook or <https://sites.google.com/view/adsac/home>

Active and friendly BSAC club. All year diving in local lake. New and qualified divers of all agencies welcome. Own clubhouse with 7m RIB and compressor. For further information visit www.mksac.co.uk (64403)

Alfreton (Derbys) BSAC 302. Welcomes new members and qualified divers. A small but active club with own RIB, wreck diving a speciality. Contact Angela on 07866 799364. (68370)

Appledore Sub-Aqua Club (SAA 35) Friendly club welcomes experienced divers from all agencies. Regularly dives Lundy island, own hard boat / compressor. Contact Damian 07831 152021.

Banbury SAC. Friendly, active club with weekly meetings and training sessions, own boat, compressor and equipment. Welcome divers/non-divers. www.bansac.org or call 07787 097 289. (69308)

Birmingham Underwater Exploration Club. Friendly, active dive club. Weekly pool sessions. Regular trips. Own RIB based in south Devon. Training and equipment loan available to members. Tim 07775 580033.

Bracknell Sub Aqua Club welcomes new and experienced divers from all agencies. Meets poolside at Bracknell Sports Centre, Thursdays from 8.30pm. Diving, training and social calendar: www.bracknellscuba.org.uk or tel: 07951 855 725. (65792)

Braintree Riverside Sub Aqua Club based in Braintree, Essex. A friendly club, we welcome divers of all abilities and have an active diving and social programme. Come and join us! email: denise.f.wright2@btinternet.com or www.braintreeriversidesac.co.uk (69397)

Bromley/Lewisham Active divers required. Full programme of hardboat diving throughout the year. Check out Nekton SAC www.nekton.org.uk or contact Jackie (01689) 850130. (68537)

Buckingham Dive Centre. A small friendly club welcoming all divers and those wanting to learn. We dive throughout the year and run trips in the UK and abroad. www.stowe-subaqua.co.uk Tel: Roger 07802 765366. (69433)

Chelmsford and District SAC meet at 8pm every Friday at Riverside Pool. New and qualified divers are welcome. See our website for details: www.chelmsforddiveclub.co.uk (68620)

Cockleshell Divers, Portsmouth, Hants. Small, friendly club welcomes new and experienced divers from all agencies. Meets at Cockleshell Community Centre, Fridays at 8pm. Email: cockleshell.divers@aol.co.uk (64762)

Colchester Sub-Aqua Club welcomes experienced divers and beginners. Sub-Aqua Association training. Diving at home and abroad. Meets at Leisure World Friday evenings. Contact Tony (01787) 475803. (68263)

Chingford, London BSAC 365. Friendly and active club welcomes divers from all agencies and trainees. Meet Wednesday 8pm, Larkwood Leisure Centre E4 9EY. Information: www.dive365.co.uk Email: loughtondivers365@gmail.com (69208)

Cotswold BSAC, a friendly club based at Brockworth Pool, Nr Cheltenham, Fridays 8pm. Regular inland diving and coast trips. Tel: 07711 312078. www.cotswoldbsac332.co.uk (68577)

Darlington Dolphins Sub Aqua Club, small friendly BSAC/PADI, open to new and experienced divers. Meet Friday night in Dolphin Centre at 8.30. Tel: 07773 075631 or email robkilday@hotmail.co.uk (72665)

Darwen SAC, in Lancashire, with an active diving programme. Own RIB. new members welcome regardless of agency/training. We provide BSAC training. Weekly pool sessions. www.darwensac.org.uk (69161)

Dream Divers. Very friendly dive club in Rotherham welcomes divers of any level/club. Meet at the Ring O Bells, Swinton, last Thursday of the month at 19.30. Email: info@dreamdiversltd.co.uk (69699)

Ealing SAC. BSAC 514. Friendly, active club, own RIBs; welcomes new and experienced divers from all agencies. Full dive programme. Meet Wednesdays. See us at

www.flintsac.co.uk or call 01352 731425. (64293)

Guildford BSAC 53. Welcomes new and qualified divers. Friendly, active club with 2 RIBs, compressor, Nitrox, meets Tuesday at clubhouse with bar. www.guildford-bsac.com or call 07787 141857. (67287)

Hartford Scuba BSAC 0522, based in Northwich, Cheshire. A friendly, active diving club. Compressor for air and Nitrox fills. RIB stored in Anglesey. www.hartfordscuba.co.uk (67287)

Hereford Sub Aqua Club, is looking for new members. Regular diving off the Pembrokeshire coast on own RIBs. Training and social nights. Contact: rusaqua@googlemail.com (69146)

HGSAC, South Manchester based friendly, non-political club welcomes newcomers and qualified divers. Lots of diving and social events. Family. Three RIBs and compressor. www.hgsac.com (68501)

High Wycombe SAC. Come and dive with us - all welcome. Active club with RIB on South coast. Contact Len: 07867 544 738. www.wycombesubaqua.com (69131)

HUGSAC - BSAC 380. Experienced club, based around Hertfordshire, with RIB on the South coast. Members dive with passion for all underwater exploration. All agencies welcome. www.hugsac.co.uk (63275)

Ifield Divers. Crawley-based club. Twin engine dive boat with stern lift in Brighton Marina. Training for novices, diving for the experienced - all qualifications welcome. www.ifield-divers.org.uk Email: info@ifield-divers.org.uk or tel: 01883 731532. (64514)

Ilkerton & Kimberley SAA 945, between Nottingham and Derby, welcomes beginners and experienced divers. We meet every Friday night at Kimberley Leisure Centre at 8.30pm. Contact through www.iksac.co.uk (68559)

K2 Divers, covering West Sussex/Surrey. A friendly BSAC club, but all qualifications welcome. Training in Crawley, boat at Littlehampton. Email: k2divers@yahoo.co.uk or tel: (01293) 612989. (68335)

Kingston BSAC, Surrey. Two RIBs, clubhouse and bar, active dive programme, two compressors, Nitrox, Trimix, full training offered at all levels. All very welcome. www.kingstonsac.org or tel: 07842 622193. (69176)

Lincoln - Imp Divers. Small, friendly, non-political diving club with our own RIB are looking to welcome new and

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Lincoln and District BSAC. Active club with own RIB, compressor and other facilities. Regular trips and training. www.lincolndivingclub.co.uk (69336)

Lincs Divers BSAC 1940. Friendly, active dive club offering dive trips and training for new/experienced divers. Lincoln based. www.lincsdivers.co.uk

Llantrisant SAC, two RIBs, towing vehicle, welcomes new and experienced divers. Meet at Llantrisant Leisure Centre 8pm Mondays. Contact Phil: (01443) 227667. www.llantrisantdivers.com (68519)

Lutterworth Dive Club, active, social, friendly. Own RIB, regular trips. Welcomes qualified divers, any agency. Training at all levels. Most Tuesdays, Lutterworth Sports Centre. www.lwsc.co.uk (70043)

Leeds based Rothwell & Stanley SAC welcomes new and experienced divers, full SAA training given. Purpose built clubhouse with bar, RIB, compressor. Meet Tuesday evenings: 07738 060567 kevin.ody@talktalk.net

Mansfield and District Scuba Diving Club. www.scubamad.co.uk. Sub Aqua Association - club 942. 8 Beech Avenue, Mansfield, Notts. NG18 1EY. (71643)

Manta Divers, Norfolk wreck & reef diving. Small, friendly, experienced club. All agencies welcome. SAA training. www.mantadivers.org (64088)

Mercian Divers (BSAC 2463) Active & Friendly club. New, experienced & junior divers welcome. Own RIB. Based in Bromsgrove, West Midlands. Tel: 01905 773406 www.mercian-divers.org.uk (65391)

Merseydivers (BSAC5) Friendly & active club with 2 RIBs & Compressor/Nitrox/Trimix. Meeting every Thursday 7pm till late. All divers welcome. www.merseydivers.com or call Steve on 07570 015685.

Merseyside training club, new and active divers from all agencies, weekly pool session. Own Rib towing vehicle Contact www.wapsac.org.uk or wapsacsa@gmail.com

Millennium Divers. Active, friendly club for all levels and certifications of diver, based in Portland, Dorset. UK diving and holidays. Club social nights www.millenniumdivers.org (68351)

Mole Valley Sub Aqua Club. Surrey based SDI club, own RIB, active diving UK & Abroad, training and social events. Trainees/crossovers welcome. Contact: 07410 949268 or email: info@mvsac.org.uk (68691)

Monastery Dive Club (Dunkerton Branch). New divers welcome to join our club. Trips to Plymouth and NDAC. GSOH is a must. South Wales Area (Crosskeys, Risca.) Text: Flinty 07971 432803 or email: welshflinty@hotmail.com (65305)

Nekton SAC. Based in Bromley, we are a friendly and active SAA Club that welcomes experienced and new divers alike. Info@nekton.org.uk or call Steve: 020 8467 4599. (68387)

Nemo Diving Club. Small friendly dive club offering dive trips and training for non/experienced divers in Retford and surrounding areas. Contact: www.nemodiver training.co.uk (69640)

North Wales Sub Aqua Club. Llandudno based and open to new and experienced divers. Fun, friendly and active SAA affiliated club. Training every weekend. www.nwsac.wales (70688)

North Glos BSAC 80. Friendly, active club welcomes new and experienced divers. Own boat and equipment with weekly pool sessions, Thursdays, 8.30pm at GL1 Gloucester, (Gloucester Leisure Centre). www.nglos.co.uk (68483)

Nuneaton, Marlin BSAC welcomes experienced divers to Pingles pool every Thursday. Active training, diving, social programme in a flourishing club with no politics allowed. www.marlinsac.com (69322)

Orkney SAC. Small, friendly active dive club, based in Kirkwall, welcomes divers of any level or club. Own RIB and compressor. Contact Craig: 07888 690 986 or email: craigbarclay31@hotmail.com (69735)

Plymouth Sound Dive Club welcomes qualified and experienced guest divers. See www.plymouthdivers.org.uk for more information/weekly club notices. Contact relevant dive manager or divingofficer@plymouthdivers.org.uk to join a dive. (72219)

Preston Divers SAA 30. The friendliest dive club. Come and meet us at Fulwood Leisure Centre, Preston on Monday nights between 8.00pm - 9.00pm. www.prestondivers.co.uk (64198)

Reading Diving Club. Experience the best of UK diving with a friendly and active club. All welcome. Tel: 01183 216310 or email: info@thedivingclub.co.uk www.thedivingclub.co.uk (69447)

Reading Sub-Aqua Club (BSAC 28). Active, friendly, based Palmer Park. Clubhouse, licenced bar, compressor, 2 RIBs. Club night Thurs, all grades/agencies. Training to Adv Diver +. rbsacinfo@gmail.com www.rbsac.org.uk Tel: Colin 07939 066524. (72402)

Richmond Sub-Aqua Club (Surrey) welcomes new and experienced divers. Very active diving, training and social calendar for about 100 members. Contact: contact.rsac@gmail.com, www.richmondsubaqua.club, 07843 959 775.

Robin Hood Dive Club. Yorkshire based one of the most active in the country with a full 2019 calendar of trips. All agencies and grades welcome. No training or pool, just a growing bunch of regular divers. www.robinhooddiveclub.com or find us on Facebook. (59245)

Rochdale Sub-Aqua Club. Beginners and experienced divers welcome. Full training provided. Pool session every Wednesday. Club has two boats. More info at

www.RochdaleDivers.co.uk or call Mick 07951 834 903. (65103)

Ruislip & Northwood BSAC. Friendly, active club, RIB, welcomes new and qualified divers. Meets Highgrove Pool Thursday nights 8.30pm. www.rnbsac.co.uk Tel: 07843 738 646 for details. (69469)

Scotland Plug Divers. Small, friendly dive club welcomes newly qualified and experienced divers to join us. Regular hardboat diving around Bass Rock/Firth of Forth/Eyemouth and trips abroad. Tel George: 07793 018 540. Email: plugdivers@btinternet.com (64638)

Selby Aquanauts SAA 1117. Family friendly club, welcomes new and qualified divers. Regular trips UK & abroad. Meet every Thursday, Albion Vaults, Selby at 9pm. Contact Mark: 07831 295 655. (69261)

Sutton Coldfield SAC, friendly BSAC club, welcomes all divers from trainee to advanced. All agencies. Own RIBs and compressor. Meet every Wednesday, 8.15pm at Wyndley (3.4m pool). For free try dive call Alan: 07970 573638 or Mark: 07787 106191. (64974)

Sheffield BSAC36. Friendly, social and active dive club welcomes newcomers or qualified divers. Trips, socials, weekly pool and club/pub meetings, club RIB. See www.bsac36.org.uk (69191)

Slough 491 BSAC; small friendly club welcomes divers at all levels. Meet at Beechwood School Fridays 19.30. Diving holidays and South Coast. Email: malcolm@uv.net or tel: Tony (01344) 884 596. (69722)

SOS Divers (SAA 263), Stourport, Worcestershire. Founded 1979. Friendly family club welcomes qualified and trainee divers. Own RIB. Contact Althea by email: arannie123@outlook.com (57542)

South Coast Divers (SAA 1150) Portsmouth. A friendly and active club welcomes new and experienced divers from all agencies. Email: southcoastdivers@hotmail.co.uk or call Darren: 07449 794 804. (69224)

Totnes SAC (Devon). We are an active multi-agency club and welcome new members and qualified divers from all organisations. Two RIBs and own compressor/nitrox, plus club 4WD. Diving all round South Devon and Cornwall. Visit www.totnes-bsac.co.uk for details. (68319)

South Queensferry SAC, near Edinburgh. Two RIBs, gear for hire. Pool training during the Winter; trips & expeditions in the Summer. Pub meeting at Hawes Inn. Call Warren: 07980 981 380. www.sqsac.co.uk (64861)

Steyning Scuba Club, West Sussex. All divers welcome. Steyning Pool, Monday evenings at 8.30pm. Contact Andy Willett on 07786 243 763. www.seaurchin divers@hotmail.co.uk (63956)

The Bath Bubble Club SAA777 seeks new members. New and qualified divers of all agencies welcome. Weekly pool training, every Wednesday at 9pm, Culverhay Sport Centre, Rush Hill, Bath. Regular diving programme from club RIB. www.bathbubbleclubuk.co.uk (68434)

Wells Dive Group. Friendly, active club in Somerset welcomes new or experienced divers. Meeting/Training at The Little Theatre or the pool on Thursdays, try dives available. Regular RIB diving, trips around the UK and abroad. Visit: www.wellsdivers.co.uk or Tel: Rob, 07832 141250. (69653)

TridentDivers.co.uk (find us on Facebook) Cardiff-based SAA club taking on new trainees and crossover members contact us on 07547 398802. (71656)

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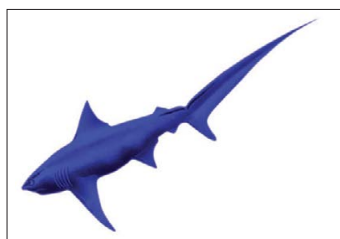
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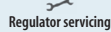
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ADVERTISERS' INDEX

AGGRESSOR ADVENTURES 5	O'THREE	73
ATOMIC AQUATICS 65	OTTER WATERSPORTS	28
BEAVER SPORTS 79	PRODIVERS MALDIVES	4
CARIBBEAN FUN TRAVEL 58	REGALDIVE	58
DIVE MASTER	SCUBA TRAVEL	76
INSURANCE 10/11 & 74	SEA & SEA (DEEP BLU)	59
DIVE WORLDWIDE 49	SHEARWATER	22
DIVER APP 75	SILADEN RESORT & SPA	80
EMPEROR DIVERS 27 & 49	SPORTIF DIVE	9
EXPLORER VENTURES 28	TUSA	70
HOTEL LES ILLES 49	WESTFIELD SUB AQUA & MARINE INSURANCE 74/75	
MALTAQUA 2		



PENELOPE GRANCYCOME has written before about feeling the effects of cold water but, not wanting it to become an obstacle to enjoying UK dive-sites to the full, she and a friend seek help from the experts of GUE

Feeling **the cold** is off-putting – but it's all about **preparation**

"GOT CHILLS, THEY'RE MULTIPLYING" is not a thought any diver ever wants under water. Not only is the likelihood of the chills diminishing non-existent, but the rapidity with which being cold can escalate into something far more serious is real.

In cold water, a serious medical emergency might be minutes away if no immediate action is taken.

Having often taken to summer-cold UK waters, with temperatures averaging 18-21°C, but always feeling that tinge of discomfort in my regular drysuit and not feeling built for the cold, the notion of diving in single-digit temperatures in my present gear alarmed me.

As it did my friend Rachel who, as a coldwater-phobe, was adamant that neither hell nor high water would get her dusting down her regs until things warmed up.

We simply did not trust that we could be warm and happy in moderately cold waters. We needed concrete advice.

I sought it from Richard Walker, not only one of the most experienced Global Underwater Explorers (GUE) rec and tech instructors, but also an instructor evaluator as well as government liaison on its advisory board and a scientist with a PhD in the physics of blood-flow.

Anything Richard didn't know about diving and warmth would hardly be worth knowing, I felt.

First came a thorough assessment of our existing gear via email and phone, and a discussion of our fears of being too cold.

Beliefs in what we can and can't achieve can easily become grooved in. Richard counteracted this by suggesting often neglected practical steps intended to boost our comfort while helping to prevent decompression illness, hypothermia and loss of clear thinking.

WE WERE EACH measured up for a state of the art Santi BZ400X undersuit, and advised that an old collarless 5mm hood like mine would offer scant insulation.

Years-old neoprene and undersuits that compress under water will do little, and if a hood fails to protect the neck area, heat can be lost quickly where the carotid arteries run close to the skin, carrying

a fifth of our cardiac output.

Richard suffers the same cold-hand circulation issues as me, and advocates dry gloves that not only allow dexterity (unlike that constricted feeling with thick neoprene) but can be bolstered with the use of silk liners.

Ditto for feet, where a wicking base-layer and woollen socks like those used for walking will withstand compression.

Richard explained that even the best gear will fail to work optimally if we are not rested, hydrated and nourished.

Neglecting these requirements in very cold conditions will exacerbate fatigue, chills and the rate at which we lose heat.

In an email two days before diving, Richard reminded us to stock up on carbs (glycogen) with plenty of water, not only to make the blood less viscous but also to replace sweat lost in keeping warm.

Extra insulation worn before diving



every factor reduces the likelihood of getting cold quickly, and how ignoring any one can take a diver quickly to the deep discomfort / danger zone.

Start warm, kit up warm with a thick undersuit that does not compress (to create more distance between your skin and the cold), deal with extremities, hydrate and use a thin wicking layer to prevent that clammy feeling.

And no prizes for the length of our two dives. We were to signal to Rich on a scale of 1 to 5 how we felt as each progressed.

WE EDGED INTO the water. For me, the sinking feeling would not come. Rach was not yet in her Santi undersuit – as a control – so while she patiently waited with Christine at the surface (not ideal) we added 2kg in my pocket. Nothing. More in my weight-pouches. No.

I finally clambered out and Richard gave me a weight-belt with a whopping extra 6kg. I was flabbergasted that two new layers of thermals would require that much offset! To be expected, he explained.

The dive was wonderful. We followed the plan and swam to a taxi, over the angel and inside a plane. At 12m I checked 8°C on my computer. I felt as warm as toast.

Twenty-five minutes later I was still as cosy but had over-added air to my suit rather than use my BC, so

became too positive on the (sneaky) slope up and could not dump fast enough.

On the second dive I found the perfect balance and Richard had us both perform an effortless hover at each metre of ascent.

Rachel suffered a drysuit leak on her first dive so did get cold but, like a trooper, rewarmed and donned the Santi. "When I got back in I didn't feel cold at all," she said.

Mind you, she had been wearing a heated vest too! According to Richard, if you don't cut corners you shouldn't need one, and it should never be a substitute for proper exposure protection.

The day was a marvellous lesson in physiology, practical steps and refinement of skills from an instructor so expert, relaxed and convivial that we let him get away with "goggles" and "flippers"...

For this and other courses, contact Richard via wreckandcave.co.uk

and during surface intervals causes moisture-loss, so dehydration and a less-efficient central heating system can ensue. And hold the booze!

We met Richard and his partner, cave-diver and professional dive medic Christine Grosart, at Vobster Quay for a comprehensive briefing.

As we stood in the cool sunshine, I was mildly corrected for not wearing my thick hoodie sweatshirt and visibly feeling it. Rule one: Don't set out unnecessarily cold.

Take every measure possible. That means shelter, hydration, warm hat, gloves and thick socks, plus a snack not too heavy on sugar – healthy proteins and carbs.

Chomping down the sweets can bolster the initial dive rush but the crash can cause cold, clammy dizziness and mild hypoglycaemia – not a good mix.

Richard used a graph to show how

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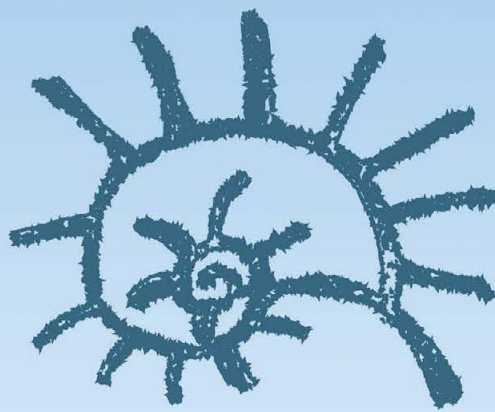


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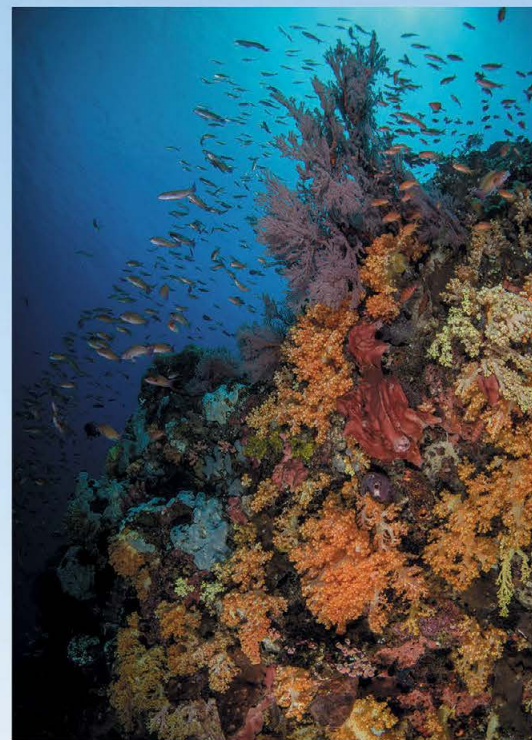


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