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The Red Sea resort of Sharm el Sheikh, situated at the southern point of the Sinai, has some of the world's most celebrated diving attractions around its shores. The world-famous Ras Mohammed National Park is located at the very tip of the Sinai Peninsula where deep water upwellings generate incredible coral growth, particularly on the signature sites of Shark and Yolanda Reefs.

During the summer months this area is also a hotspot for schooling snapper, barracuda, batfish and unicorn fish. Marine encounters recorded by divers on these life-filled sites also include whale sharks, manta rays and dolphins.

Head north from Ras Mohammed to the Strait of Tiran and you will find a coral garden described by scuba diving pioneer Jacques Cousteau as one of the most spectacular reefs he had ever seen. The steep-sided walls of Jackson Reef are where you will find some of the most beautiful coral cover in the Sinai region, including the famous rare red anemone. Strong currents, most profuse at the edge of Jackson Reef, attract an abundance of pelagic fish particularly during the summer months. In the less wind-swept and calm days of summer, boats are able to dive the north side of the reef. Although far from guaranteed, the chance to see the resident school of scalloped hammerhead sharks is well worth a dive in the blue water.

Wrecks are also a major pull for visitors, with one of the most famous sunken diving attractions located just a few hours' boat ride from Sharm. Voted time over as one of the best wreck dives, the *Thistlegorm* alone attracts scuba visitors from all over the world to the northern Egyptian Red Sea resort.

If you don't want to travel far to a dive site, or like the idea of half-day trips, you can opt to go local. Sharm's local reefs are excellent for training and photography, and at the right time of year throw up their own spectacular surprises. From the months of May to September it is not unusual to spot the odd manta ray or whale shark passing by as they follow the plankton.

Egypt
where it all begins

Home schooling

FIRST IN

STEVE WEINMAN, EDITOR

CORONAVIRUS HANGS OVER everything we try to do like a noxious cloud. Scuba-diving is now permitted again around the UK, largely from shore, but the fortnight-long quarantine requirement for incoming travellers casts its own pall over any hopes of a rapid return to overseas dive-sites (not that we were holding our breath).

All of which means that homeland diving is of great importance this summer. As Will Appleyard and friends discuss in this issue, divers who usually gravitate towards warmer waters can regard this not so much as a fallback as a welcome opportunity!

Another pandemic effect in recent months has been to force divers to find virtual substitutes for getting wet.

That too is reflected in this issue, as Steve Warren trawls through the amazing number of vintage diving films just a few clicks away. But I'm thinking not only about entertainment online but also of learning opportunities. Vast amounts of diver-training content have kindly been laid on for us – much of it free – and one particular contribution has caught my eye.

The "deep dive" is an expression liberally applied in almost any context by headline-writers, and by business-management experts whipping up marketable brainstorming or problem-solving strategies.

Self-styled "counter-errorist" Gareth Lock is a management expert but also a real deep diver. His company The Human Diver educates divers and others in decision-making, situational awareness, communication skills, leadership, teamwork and so on. And with his new short documentary *If Only…*, he has taken his own deep dive.

THE FILM CONCERNS a US rebreather diver in Hawaii who died after failing to turn on his oxygen supply. Open-and-shut case, we think. We know that over the years CCR deaths, even those of the most distinguished divers, have invariably been the result of human error.

However "fail-safe" modern rebreathers might be claimed to be, these machines demand to be taken seriously at all times.

But under Lock's scrutiny, along with the accounts of the victim's widow and fellow-trainees, the slip that caused Brian Bugge's death is compounded, as we are made aware of the accumulating layers of problems that led up to that point. In true business-management speak these had created a "Swiss cheese" effect, whereby only when the holes in all those slices of *fromage* are aligned does the truth become visible.

Ex-RAF flight instructor Lock believes in "just culture". He has long campaigned for the diving community to follow aviation in taking every fatal incident as an opportunity, not to cast blame but to learn lessons. **DIVER** subscribes to that view whenever we report on an inquest.

If Only… isn't perfect. The instructional failings can seem frustratingly vague (that's what you get with no blame, no shame), and at times the talking heads have to battle it out with complex graphic overlays. But it works: the message is clear enough and the emotions raw, with Brian's widow Ashley a brave participant.

She says that "every day must be a school-day when it comes to diving". That's why I would recommend that all divers – open- or closed-circuit – watch this half-hour production at thehumandiver.com/ifonly

DIVER

the magazine that's straight down the line…

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by Alex Mustard

DIVER Britain's best-selling diving magazine

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Cayman Islands arch by Scott Johnson

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English dive season finally gets going from shore in late May

RECREATIONAL DIVERS in England and Northern Ireland were allowed to resume "limited" shore-diving following a sudden announcement before the late May Spring Bank Holiday.

The easing of restrictions imposed during the coronavirus pandemic was the start of what was described as a phased return plan, outlined in new guidance published by the sport's overall governing body.

The British Sub-Aqua Club (BSAC) produced the detailed guidelines in collaboration with the Sports & Recreational Alliance and the British Diving Safety Group (BDSG), which includes representatives of the main training agencies, the UK Diving Medical Committee, HSE, Coastguard and various trade bodies.

It said that the advice addressed all aspects of implementing safe diving protocols while "contributing to the continued prevention of the spread of Covid-19".

BSAC pointed out that differing official restrictions applied under the devolved administrations had complicated the process.

At the end of May the BDSG stated that diving in Scotland was now permissible – although national governing body ScotSAC, a member of the BDSG, had fallen short of advocating any immediate resumption by the start of June.

It pointed out that Scottish government guidance remained to stay at home and that only travel within around five miles was permitted for outdoor leisure. It also emphasised the risk of diverting emergency services or invalidating insurance cover in the event of an incident.

No resumption of diving in Wales had been announced as **DIVER** went to press.

"We will continue to work with various agencies to monitor the situation and to advocate for a responsible and safe return for divers in all parts of the UK," said BSAC.

According to the new guidelines, divers must observe any travel restrictions in their part of the UK, stay at home if showing symptoms of Covid-19 or in self-isolation, respect the 2m social-distancing rule and commit to hand hygiene. Those who have either tested positive or been treated for Covid-19 should consult a medical specialist before considering a return to diving (*see panel*).

Conservative dive-plans are recommended, particularly because people would be out of practice.

Divers were urged to download the eight guidance documents and read them in conjunction with one another. They cover medical considerations, shore-diving, equipment, rescue & CPR, diver training, travel, small-boat and charter-boat diving.

When shore-diving, the most likely area for physical contact comes when kitting up and assisting a buddy – when closing a drysuit zip, for example. Divers are recommended to prepare equipment in advance, provide assistance "for as brief a time as possible", avoid touching any part of equipment to be breathed from by another diver, and to wear face masks when within 2m of each other. Neither should be directly downwind of the other.

While social distancing is not an issue once under water, divers are advised to build up depth progressively with a suggested 30m maximum, avoid decompression or night dives, areas of strong current and overhead environments, and to carry an independent gas source such as a pony cylinder.

Ascents should be made on a reference point such as a shot or SMB line or using natural topography.

"When followed in conjunction with their training, safe-diving protocols, and while exercising due caution and social distancing, members may now be able to resume shore-diving activities and still act responsibly and considerately towards others," said BSAC National Diving Officer Dai Atkins.

"The guidance will continue to be updated to reflect the understanding of the impact of the pandemic and changing national and devolved government rules."

It was not clear when the go-ahead would be given for boat diving.

A certain amount of scuba-diving had already resumed unofficially along sections of the English coast before the loosening of restrictions was announced. At the time the governing body and emergency services had been warning against all scuba-diving, bearing in mind the risk of incidents requiring rescue or diverting of medical resources.

The *Safe Return to Diving Guidance* documents can be found at bsac.com.

Inland sites were expected to start opening their gates to divers at various times through June once they were in a position to comply with safety requirements.

Following discussion of effective procedures at a meeting of UK Inland Dive Sites (UKIDS) at the end of May, it was agreed that the main message to divers was to avoid hanging around at the site by observing the mantra: "Arrive, Dive, Leave".

Elements that had to be considered before reopening sites included control of diver numbers, parking, booking-in, sharing facilities, kitting-up and social distancing.

Wraysbury Dive Centre near London was quick to announce its reopening, set for 15 June, publishing some 35 site rules on its website and advising divers to study them before arrival. There were to be no onlookers, food should be eaten off-site and only one group (of no more than six) divers would be allowed per school or club.

UKIDS said it expected sites to re-open at their own pace only once satisfied that their individual logistics, social-distancing and infection-control measures were adequate. ■

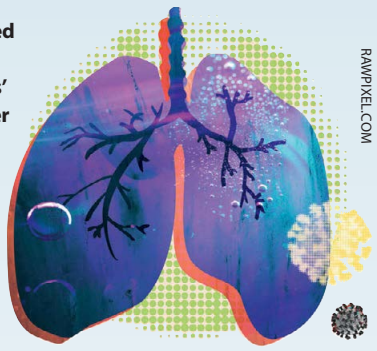
UK diving docs worry about Covid infection after-effects

DIVING DOCTORS have expressed concern that they do not know enough about how scuba-divers' lungs and heart will recover after Covid-19 infection.

The issue was discussed at a UK Diving Medical Committee meeting in late May. Depending on how the lungs heal, the coronavirus could lead to a risk of pulmonary barotrauma, say the doctors, citing evidence from *Diamond Princess* cruise-ship passengers that the lungs of those who had been asymptomatic still showed significant changes.

Coronavirus could also affect heart function, potentially leading to immersion pulmonary oedema (IPO). A report in DIVER *News* last month raised similar concerns about residual effects of coronavirus on recovered divers, and the UKDMC plans to issue guidelines to enable divers to self-assess and be aware of the potential risks.

According to recommendations already issued by Divers Alert Network (DAN), divers testing positive for Covid-19 but remaining asymptomatic should wait at least a month before resuming diving, while those with symptoms should wait three months and consult a diving medical specialist before diving again.



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Divers hospitalised for coronavirus and showing pulmonary symptoms should undergo complete pulmonary-function testing, exercise testing with peripheral oxygen-saturation measurement and high-resolution CT scans of the lungs before considering a return to diving.

And those hospitalised with Covid-related cardiac problems should undergo cardiac evaluation, including echocardiography and exercise testing. ■

Permanent closure for Cromhall...

ONE POPULAR INLAND dive-centre in south Gloucestershire has been forced to shut its gates permanently following closure of the quarry.

Cromhall Diving Centre near Wotton-under-Edge had been run for 14 years by owners Simon Chen and Maggie Alger, who have informed divers that they suffered from a string of misfortunes.

"2020 has been a bad year, with the floods at the start of the year followed by the tragedy of Covid-19, with lockdown preventing access to outdoor facilities," they said in a statement.

"Sadly, while we were preparing to reopen we have received some more bad news. We have received formal notice that means that the quarry will close with immediate effect and will not re-open. We are not aware of any future plans for the facility."

The triangular 4-hectare flooded limestone quarry had a maximum depth of 17m, a shallow beach area allowing easy access, training platforms at various depths and a pontoon.

Cromhall Quarry is one site that will not be reopening.

Over the years a number of underwater attractions had been added, including a decommissioned naval gun-turret, aircraft cockpit, several small boats and telephone boxes.

The ease of diving, additions and location near a motorway junction made it particularly popular as a training site for divers.

Cromhall Quarry is designated a Site of Special Scientific Interest for the fossils it contains, and also hosts protected great crested newts.

... as new owner sought for Simply Scuba

ADMINISTRATORS APPOINTED to Simply Scuba, a serial winner of the DIVER Award for Retailer of the Year, were hoping that the business can be enabled to continue under a new owner.

The retailer was part of the Simply Group (TSG) which includes five other Simply… outdoor and leisure brands covering swimming, beachwear, hiking, skiing / snowboarding and women's underwear. Based in Faversham, Kent, it employed 32 staff.

The company started in 1995 in a barn in the village of Chestfield as Simply Scuba Instruction, but as a diving retail operation headed by Gerrard Dennis it proved ahead of the curve in leading divers away from local dive-shops towards online buying of equipment. It also maintained a physical retail outlet at Faversham.

Underlining its popularity among divers, Simply Scuba was a DIVER Awards winner in the retail category for 10 years in a row until last year, when it came second to Mike's Dive Store.

The Simply Group's premises in Faversham.

STEVE WARREN

Potential buyers were given a week to submit bids to take over the business when the closure was announced in late April. The shop had been closed during the coronavirus pandemic, which had drastically reduced demand for new diving equipment during what was normally an important sales period.

Simply Scuba Ltd's most recent balance sheet filed at Companies House was to the end of August 2018. At that time the company reported having fixed assets of just over £423,000, up 27% on the previous year. Current assets at £1.66 million were similar to the figure for 2017, though net assets at that time showed a 38% drop to £354,400.

Whale hero spared fine

AN AUSTRALIAN FREEDIVER was acclaimed by the public for freeing a humpback whale calf caught on netting – but after telling reporters that he had been threatened with a fine for interfering with official "shark-control equipment", a fund-raising campaign was started to cover his costs.

In days some 250 people had contributed by the time the Queensland Department of Fisheries thought better of it and withdrew the fine, stating that this was because the diver had no previous record of infringements.

The experienced freediver, who goes by the name Django, said he had been out in his small boat (or "tinny") off the city of Gold Coast in the early morning of 19 May looking for manta rays when he saw the trapped whale at 8-9m.

He dived in ready to cut it free with his knife before it drowned, but with repeated dives was able to disentangle its left pectoral fin from the netting. Although the rope had bitten into its flesh the calf was able to swim away.

Before Django left the scene a fisheries rescue team, understood to have been waiting for approval to free the whale, told him that he was likely to be penalised.

The maximum fine for interfering with shark-netting is $26,700 (more than £14,000). "I thought most people would have done it – you just got to pay the price sometimes," the freediver told *7News*.

The fund-raising was started by Envoy Film Documentary, which will now return contributions. It has a new film out called *Envoy: Cull* which argues that shark-lines damage the marine ecosystem and lure sharks closer inshore than they would usually venture.

Australian conservationists said it had been unusually early in the whale season for such an incident to occur, but that up to 10 protected whales die annually through entanglements. They want shark-nets to be replaced with drumlines.

Django told reporters that the nets were in any case a waste of time – because sharks swam around them.

Maldivian Manta Ray Project Leader for the Manta Trust TAM SAWERS considers…

Covid-19's impact on marine life

SIMON HILBOURNE

Tam Sawers identifying mantas in Hanifaru, Baa Atoll last year.

WHO COULD HAVE GUESSED when my team and I packed our bags in April to set off for the southern Maldives that within days the island would go into lockdown?

We had to return to our families variously in the UK, South Africa and elsewhere in the world, leaving behind the beloved manta rays and our friends in the Maldives.

Back then team spirits had been high. We had looked forward to viewing the annual visit of the oceanic manta rays (*Mobula birostris*) and meeting members of the community in Addu and Fuvahmulah atolls.

We had been working hard with them to arrange a series of education and outreach workshops for students and the diving community.

All tourism has come to a halt in the Maldives. While the Maldivians have regulations in place to ensure sustainable tourism inside the Hanifaru Bay marine protected area each year, the lack of tourists at the start of this season will undoubtedly give the rays a much-needed break from the human pressures that the UNESCO Biosphere Reserve rangers strive to mitigate.

The lack of boat traffic also essentially translates to a reduction both in noise pollution and in potential for incidental boat-strikes. Again, a huge gain for the manta rays.

The lack of tourism will have a positive influence on the Maldives' natural environment and the wildlife therein, as it will internationally.

Manta Trust hopes that when restrictions are lifted and we can once more survey the manta hotspots, we will be able to document the effects of this extraordinary time.

Tourism is not going to return to pre-Covid-19 levels immediately and our aim is to resume duties as soon as restrictions are lifted.

We can use this initial period of adaption, when tourists are only trickling in, to assess how things changed during the "wilder" phase and monitor how marine life is affected as tourism capacity increases in the coming years.

The manta season in Baa Atoll that was due to start in May will be the first time in more than a decade that the MMRP team will not be able to conduct any in-field monitoring, record the return of the manta rays, evaluate seasonal trends in sightings or advocate for their safety.

So what are our long-term concerns? A lack of tourism in the Maldives would have devastating implications for the Maldives economy and could result in a high level of unemployment nationwide.

Our MMRP project will cease under these constraints, and we will be unable to monitor and research manta ray activities as we have done for the past 15 years.

We won't know the degree to which they are being exposed to cumulative anthropogenic impacts and we won't understand the implications this will have on populations internationally.

In an act of desperation there might be an increase in the fisheries trade. Luckily, in the Maldives the mantas have never been exploited by any big fisheries, but on an international level this is not the case.

As industries resume activities under a crippled global economy, there will certainly be more pressures on the fishing fleets and possibly on the trade in highly prized gill-plates to answer to a potentially increased demand for the "Asian health tonic".

This would have huge negative implications on mobulid populations around the world.

On an international scale we work with many projects that monitor fisheries, landing sites and trading locations to record the level of trade that exists for gill-plates.

We're still trying to gauge that level of trade but during the Covid-19 crisis can't get out to record these figures.

It's unknown at this stage whether fishing has been reduced or curtailed through concerns about the virus.

It's likely that some fleets are still fishing and that the trade is on-going, despite restrictions.

As we patiently await a return and resumption of our infield research, Manta Trust works enthusiastically to engage with members of the public. We have launched regular webinars geared to inform, educate and spread awareness of the plight of mobulids.

We have introduced a unique Kids' Club platform to encourage and inspire a conservation-aware younger generation; we are publishing reports and writing articles to share findings with governments and the public, and we remain hopeful that our efforts will have a positive influence during this period of uncertainty and concern.

We dearly hope that our manta rays are enjoying this period of peace. We trust in our Maldivian friends who are the proud custodians of their ocean environs, and remain optimistic that we'll be reunited with our flappy friends soon.

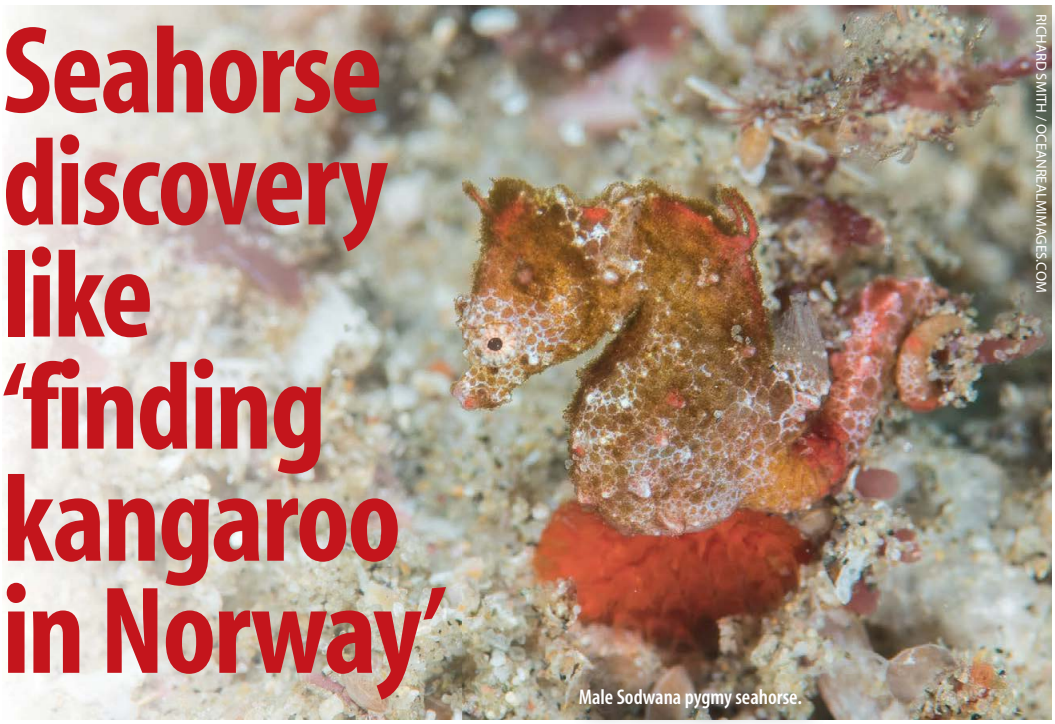
That day can't come too soon!

The Manta Trust team at last year's Manta Festival in Baa Atoll.

GUY STEVENS

To support the Manta Trust, visit mantatrust.org to view its webinars or to adopt a manta ray.

Seahorse discovery like 'finding kangaroo in Norway'



RICHARD SMITH / OCEANREALMIMAGES.COM

Male Sodwana pygmy seahorse.

A **TIP-OFF FROM** a South African diving instructor has led an international team of marine biologists to identify a new species – the first pygmy seahorse ever to be found in Africa.

Located in diving hotspot Sodwana Bay in Kwa-Zulu Natal, the tiny *Hippocampus nalu* is the first of its kind to be found anywhere in the Indian Ocean – and becomes the eighth species of pygmy seahorse to be described.

The other seven species, all but one of which were discovered this century, live thousands of miles away, mainly in South-east Asia.

Instructor Savanah Olivier was the first to notice and photograph the tiny, well-camouflaged fish during her dives. When Drs Louw Claassens and Dave Harasti arrived in the area in early 2018 in search of pygmy pipehorses, they were surprised when Olivier showed them her seahorse pictures.

Dr Claassens returned in October with UK pygmy seahorse specialist and underwater photographer Dr Richard Smith, who earlier that year had identified the Japanese pygmy seahorse (*Hippocampus japapigu*).

Guided by Olivier, who had not seen the seahorses for some months, the divers were eventually able to find a pair, a pregnant male and a female, on a rocky reef 15m down.

The two seahorses were grasping fronds of microscopic algae in what was described as a "raging surge" that was effectively "sandblasting" them.

The regular swells on South Africa's east coast contrast with the sheltered coral reef habitats often favoured by Asian pygmy seahorses, and the divers reported nearly losing them in the rough conditions.

Dr Smith described the discovery as "equivalent to finding a kangaroo in Norway" and, after finding a dark-coloured 1cm juvenile on a later dive, he concluded that there was likely to be a breeding population in the area.

The new species is thought to grow to just over 2cm – the biggest-known pygmy seahorse to date has measured 2.7cm – and is honey-brown overlaid with a white net pattern and a pinkish tail.

The female of the species…

… and a 1cm juvenile.

RICHARD SMITH / OCEANREALMIMAGES.COM

It has a short snout and a thick neck with protruding filaments.

Underlying distinctions between the African and more familiar Asian species were established through examination by other international experts. Researcher Graham Short compared them using a microscope and CT scanner, while Mike Stat carried out genetic analyses.

The team, which also included Maarten De Brauwer and Healy Hamilton, were able to confirm the Sodwana pygmy seahorse as a new species and give it the scientific name *Hippocampus nalu*.

The word *nalu* has three layers of meaning – it translates as "here it is" in the local Xhosa and Zulu languages, indicating that it had been present but unseen all along, and "surging surf" in Hawaiian, reflecting its wild habitat. It is also the middle name of Savanah Olivier.

The team believe that many other cryptic species exist in the western Indian Ocean, and say that with those such as the pygmy seahorse being highly vulnerable to human impact and overfishing, more research funding is needed to prevent them being wiped out before they are even discovered. "This should be a call to action for all divers – new discoveries might just be lurking around the next reef," said Dr Claassens.

The findings are published in the scientific journal *ZooKeys* and a 16-minute film about the original dives called *Discovering the South African Pygmy Seahorse* can be seen on YouTube. Richard Smith is set to deliver a presentation at the next NEC Birmingham Dive Show. ■

Man-on-a-mission Gregg Bemis dies at 91


The *Lusitania* entering port in 1907.


Gregg Bemis.

GREGG BEMIS, THE MAN who devoted more than 50 years to establishing the cause of the rapid sinking of the WW1 U-boat victim *Lusitania*, died in May a week before his 92nd birthday.

The American former venture capitalist became the world's oldest decompression diver in 2004 when, at the age of 76, he carried out an hour-long dive on the 91m-deep wreck. He also later dived it in a submersible on a National Geographic expedition, one of several he helped to finance.

Bemis owned the wreck of the iconic liner off southern Ireland but, suffering from ill-health, had bequested it to the Old Head of Kinsale Museum last May, as reported in **DIVER**.

Since 2011 the New Mexico-based businessman had donated many artefacts recovered from the wreck-site by divers working under licence. The bequest was to take effect either on his death or once a dedicated *Lusitania* annexe of the museum had been completed.

He said he believed that the museum committee was best-placed to preserve the *Lusitania*'s legacy.

The 240m Cunard transatlantic liner was the world's biggest ship in 1915. She was approaching Liverpool on her way from New York on 7 May when she was struck by a single torpedo from German U-boat *U-20*.

The ship had been carrying almost 60 tonnes of munitions along with 1960 passengers and crew, of whom only 760 survived.

Her sinking was condemned as an outrage around the world and was thought to have played a significant part in bringing the USA into the war.

In 1968 Bemis acquired an interest in the wreck, which lies on its starboard side 11 miles off the Old Head of Kinsale.

Fourteen years later he paid one dollar to become its sole owner, with full salvage rights, over which he would later clash with the Irish government.

Describing it as "the second most famous wreck in history after the RMS *Titanic*", he had long expressed his determination to establish the cause of a second internal explosion that occurred soon after the torpedo strike, causing the liner to sink within 18 minutes.

He might have failed to complete that mission in his lifetime, but he was also committed to keeping the *Lusitania* story alive and exploiting to the full its value to Irish tourism through the museum.

Ireland's government had placed a national heritage order on the war grave in 1994 to ensure respectful, transparent investigations – causing Bemis later to claim that the licensing conditions attached had frustrated his divers' bids to learn more about the sinking.

Technical diver Eoin McGarry found four million rounds of small-arms ammunition on the wreck in 2008, and in 2016 retrieved one of the ship's telegraphs.

Since his friend's death he has told the *Irish Examiner* that Bemis "always wanted to find out what caused the second explosion on the *Lusitania*, and the mantle we have to take on is to find that out. We hope to get an expedition going for a forensic examination of the bow area.

"But the captain of the ship has gone – he was like a father-figure to me," he said. ■

ANCIENT DOLPHIN ANCHOR LIFTED OFF SICILY

A 2300-YEAR-OLD stone anchor inscribed with a dolphin symbol has been retrieved by divers off the north-west coast of Sicily.

The divers were dispatched by the Superintendency of the Sea, which oversees the Italian island's protection of underwater heritage. They used lift-bags to recover the small anchor from a depth of 19m off the town of San Vito Lo Capo on 23 May, and took it to their base in Palermo for conservation.

Local diver Marcello Basile, who originally found the anchor, had warned the Superintendency that somebody had attempted to move it.

The anchor dates back to the Hellenistic-Roman era (4th-3rd century BC) that followed the death of Alexander the Great and during which Greek culture flourished throughout the Mediterranean.

It features a central box section, with the dolphin depicted in relief on one of the flukes.

The dolphin, a symbol associated with the goddess Aphrodite Euploia, was supposed to help sailors to navigate safely and prevent shipwrecks. The symbol was still used for good luck on Mediterranean fishing-boats up to the 20th century.

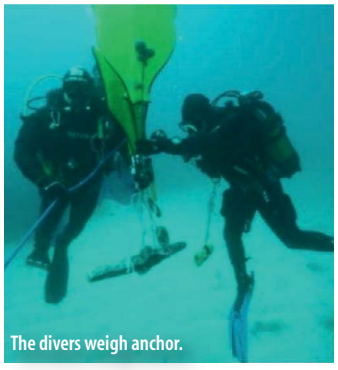
Many artefacts such as the anchor reported to the authorities by divers around Sicily have been left *in situ*.

Apart from a network of local divers keeping an eye on maritime relics, the Superintendency of the Sea uses devices such as movement-detecting anti-theft buoys to monitor these sites. ■

SUPERINTENDENCY OF THE SEA


The lucky dolphin symbol on the 2300-year-old anchor.

SUPERINTENDENCY OF THE SEA


The divers weigh anchor.

Greece lowers guard on scuba

LONG-STANDING restrictions on scuba-diving in Greece were finally reported to have been lifted by the country's parliament in May, as it bid to maximise visitor numbers in the wake of its success to date in limiting the spread of coronavirus.

A bill aimed at promoting tourism in such fields as leisure diving has effectively removed all diving depth-limits other than in restricted military-exercise areas.

Greece's underwater archaeological sites could until now be visited only if accompanied by qualified archaeological divers, who tended to be hard to find.

Now such dives and, more importantly, those on shipwrecks more than 50 years old, are permitted, although a dive-guide from an authorised Greek dive-centre or club should still be present.

Stringent curbs on recreational diving in Greece were first lifted amid much fanfare in 2006, but the move left a swathe of regulations controlling wreck and archaeological diving, and confusion about what was permissible.

Last year the Ephorate of Underwater Antiquities department of Greece's Ministry of Culture and the Ministry of Tourism, conscious of the success of underwater-heritage marketing in other Mediterranean countries, announced that four ancient shipwrecks would become the country's first "underwater museums" in the summer of 2020.

Greece's dive-centres and sites currently remain closed under coronavirus restrictions, with calls from the industry for clarity on when they will be able to reopen to capitalise on the easing of restrictions on cross-border travel.

The country itself is set to accept tourists from 29 other nations in mid-June, though the list does not include travellers from the UK – who are in any case unable to take non-essential flights – because of its continuing struggle with coronavirus.

WW2 landing craft found 100 miles away from expected position

A COLLABORATION BETWEEN two British universities has resulted in the identification off north Wales of a World War Two landing craft that had been recorded as sinking more than 100 miles away.

Marine scientists from Bangor University's School of Ocean Sciences carried out multibeam sonar scanning of a 90m-deep wreck-site off Bardsey Island last year from their research vessel *Prince Madog*.

The wreck appeared to be that of a Landing Craft Tank, and subsequent archival research by marine archaeologist and historian Dr Innes McCartney of Bournemouth University suggested that it was almost certainly *LCT 326*, which was lost 77 years ago.

The Mk III LCT had been built in Middlesbrough and launched in April 1942. LCTs were designed to land armoured vehicles during amphibious operations, with many later taking part in the 1944 D-Day landings.

On 1 February 1943, *LCT 326* was heading south with the 7th LCT Flotilla on a transit cruise from Troon in Scotland to Appledore in Devon, under the watch of HMS *Cotillion*.

The flotilla had left Troon the previous day but was making slow progress in heavy weather.

It passed the Isle of Man on 1 February, and examination of National Archives documents by McCartney revealed that *LCT 326* was last noted as remaining with the convoy at 6.30pm on that day, just north-west of Bardsey Island.

A WW2 Landing Tank Craft.

IMPERIAL WAR MUSEUM

The Admiralty at the time had recorded the vessel as sinking near the Isle of Man, as the result of bad weather or collision with a mine.

It will now be expected to correct its records, because the wreck was found 25 miles further south from the last sighting off Bardsey, in almost perfect line with the flotilla's course.

Although the wreck was broken in two parts lying 130m apart, its dimensions of 58m by 10m matched those of a Mk III LCT. Key features such as the distinctive landing gangway and stern deckhouse were also recognisable from the scan.

The vessel is thought to have foundered in the heavy seas – though a mine could not be ruled out – and had probably broken just forward of the bridge.

The scanning was part of the Bangor-led SEACAMS2 research project, examining the effect of shipwrecks on the marine environment in relation to development of renewable energy off Wales.

"Wrecks such as *LCT 326* and their associated physical and ecological 'footprints' can often provide us with preliminary insights on the nature and properties of the surrounding seabed without having to undertake more complex, challenging and expensive geoscientific surveys," explained lead researcher Dr Michael Roberts.

"The wreck of *LCT 326* is one of over 300 sites in Welsh waters which have been surveyed by the *Prince Madog*," said Dr McCartney.

"The aim of this particular piece of research is to identify as many offshore wrecks in Welsh waters as possible and shed light on their respective maritime heritage.

"This aspect of the project has resulted in many new and exciting discoveries relating to both world wars, of which *LCT 326* is just one example."

13-year-old diver recovers leg for surfer

Sebastian Morris with the recovered prosthesis.

SCUBA-DIVERS HAD come out of their brief lockdown in Florida when a 13-year-old came up from a dive with a surfer's missing leg.

Sebastian Morris found the prosthesis on 9 May while boat-diving with his father off the state's Gulf coast near Panama City. The young diver saw a shiny object, thought "it might be treasure", as he told CNN, but struggled to pull it from the sand. His father helped him to get it free before they realised what it was.

The Morrises recovered the leg and set up a Facebook page in a bid to trace its owner.

Within days they had connected with local army veteran and surfer Carter Hess. He had lost the artificial limb after being wiped out by a wave in early April, and without scuba gear his efforts with friends to locate it had failed.

Delighted to be reunited with his missing leg, Hess took Sebastian and his mother for dinner at one of Florida's now reopened restaurants, as well as giving the youngster a reward. They hope to go diving together in the future.

Camera pioneer Kurt Schaefer dies

A PIONEER IN THE development of underwater photography has been lost with the death of Austrian diver Kurt Schaefer at the age of 97.

Schaefer first went swimming in the Mediterranean on a family holiday to Croatia in 1930, watching marine life through a glass-bottomed box. His father was an amateur photographer and film-maker.

Schaefer was studying to become an engineer in Vienna in 1942 when he was conscripted by the Nazis into the army. Stationed at an airbase on the Italian coast as a radio-operator, he would snorkel while off-duty.

Inspired by the books of fellow-Austrian scuba pioneer Hans Hass, in 1943 he set out to design a camera that would not, as previous models had, require a separate waterproof housing with limited camera control.

"Very soon he discovered that by melting spare aluminium parts from repaired aircraft and using a mould he could obtain metal ingots," says camera expert Andres Claros, who runs the Barcelona Underwater Camera Museum (BUCaM).

He has what is thought to be the world's biggest collection of historic underwater cameras and housings.

"Schaefer took his father's double 8mm Kodak movie camera and built an aluminium housing for it. He checked it under water with good results, but in an air-raid some weeks later the housing and part of the camera-case sustained bomb damage.

"It was impossible to repair, but Schaefer was smart enough to be able to make a new aluminium mould in which he included the remaining parts of the camera with others he had made himself. He'd come up with the first amphibious movie camera!"

Underwater film was not available during the war to test it, but by 1946 Schaefer had developed the Marina 8 camera. It flooded at 4m when tried in the Danube but by the following year he had perfected it in the form of the M8/2. Though patented only in 1954, it would be hailed as the first modern amphibious underwater film camera.

Schaefer had met Hass during the war and agreed to collaborate on developing underwater cameras. While studying architecture in Vienna in the post-war years he built a number of innovative housed and amphibious Leica 35mm stills and Siemens 16mm and Bell & Howell 35mm film cameras, and Hass used the equipment to shoot his seminal film *Under the Red Sea* in 1951.

BY COURTESY OF ANDRES CLAROS

Schaefer with his M16 camera on an expedition in 1951.

INTERNATIONAL SCUBA DIVING HALL OF FAME

That year Schaefer carried out underwater research in Alpine lakes, as recorded in his film *Traces of Antiquity*, and in 1952 was cameraman on a Mediterranean marine-biological expedition.

He would go on to make a number of underwater films in the Mediterranean from his boat *Teresa II*.

In the sea-caves of Sorrento in Italy in 1952 he used underwater spotlights he had developed himself to shoot *Lights Under Water – Wonders of the Sea*, which became one of the first underwater colour films.

"He was also the first person to use flashguns directly under water," Claros told **DIVER**. "Not wanting to emerge to change the bulb after every shot, one day he thought, why not put it in a housing? He started using the flashgun directly under water, and it worked. He was also an early designer of diving devices including snorkels and fins.

"Probably the best-known camera Schaefer ever made was the underwater housing for Leica that Lotte Hass used for many years," said Claros. "He made only two units, one for Lotte and the second for BUCaM in 2018 when he was 95 years old.

"This was despite having had two consecutive arm fractures – he must have been the oldest underwater camera constructor in history!

Claros had first met Schaefer in Barcelona in 2014, when he had built a second M8 specially for BUCaM.

"We spent three days with him and learnt a lot from his life and creations," he said. "Despite his age, he had gone on looking for the perfect underwater camera until 24 May 2020, when he was taken to the eternal workshop – where he will finish his dreamed-of camera."

Apart from at BUCaM, many of Schaefer's cameras, housings and prototypes are in the Aquazoo-Loebbecke Museum in Dusseldorf.

BY COURTESY OF ANDRES CLAROS

Schaefer works on the M16 / Leica camera with housed flashgun, around 1950.

SIXTEEN SEAHORSES ON ONE UK DIVE AS LOCKDOWN

THE SEAHORSE TRUST

Spiny seahorse.

THE UK'S ENDANGERED spiny seahorses have recolonised their former stronghold of Studland Bay in Dorset – that was the conclusion following a survey dive in late May by a team from marine-conservation charity the Seahorse Trust.

The seahorses had gone missing for the past two years, but the single dive revealed 16 of them, including pregnant males and even a juvenile born this year. It was the most found on one dive at the site since the trust began monitoring Studland in 2008.

Seahorse survey dives are carried out under Marine Management Organisation (MMO) licence by Seahorse Trust founder and executive director Neil Garrick-Maidment and the trust's volunteers.

It is illegal in the UK to actively seek seahorses, or to disturb them in any way, without an MMO licence.

Garrick-Maidment attributes the seahorses' return to the reduction in people, boat traffic and associated noise and anchors in the area resulting from pandemic restrictions.

"The ecology of the site has made a remarkable recovery," he says.

"The food-chain has recovered, giving seahorses plenty of food to eat and, crucially, somewhere to hide.

"The seagrass has started to repair itself, and the spiny seahorses have taken advantage of this."

LAURA CARRILLO / SAS-INAH

The Manuel Polanco wreck site.

Likely British wreck found off Mexico's Yucatan coast

DIVERS HAVE INVESTIGATED the remains of what is thought to be a late-18th/early-19th century ship off Mexico's Yucatan peninsula.

The timber hull has disintegrated but an Admiralty-pattern anchor, 2.5m cannon and cast-iron ballast have been found, suggesting that it was a British sailing vessel.

Underwater archaeologists from the Subdirectorate of Underwater Archaeology at the National Institute of Anthropology & History (SAS-INAH) carried out the initial survey of the Manuel Polanco Wreck, named after the fisherman who came across it.

The remains are encrusted in coral and the archaeologists believe that the vessel's crew failed in a last-ditch bid to avoid running aground by dropping the anchor on the move.

Chinchorro Bank, which lies off Quintana Roo on Mexico's Caribbean coast, is sometimes referred to as *Quitasuenos*, or "Dreamcatcher", because of the number of vessels that have come to grief there.

The Manuel Polanco Wreck lies in a shallow area where currents are particularly strong, and has become the 70th wreck to be found in the Chinchorro Bank Biosphere Reserve.

In the 1960s and '70s Polanco found several wrecks in the area while fishing, including two of what are now the best-known sites, 40 Cannon and the Angel.

Now in his 80s and retired, he works with archaeologists to conserve underwater cultural heritage.

In the 1990s he showed an amateur archaeologist called Peter Tattersfield the remains of a ship to which he referred as "El Ingles".

Tattersfield recently mentioned the site to the SAS-INAH, which set up an expedition led by its researcher Laura Carrillo Marquez.

Polanco's son Benito, a boat captain, was able to follow his father's directions to take the divers out to the site, but the team were able to carry out only two exploratory dives before Covid-19 pandemic restrictions intervened.

A return trip is planned once these have been lifted, in an effort to confirm preliminary impressions of the ship and learn more about its specifications and cargo.

LURES THEM BACK TO STUDLAND

The spiny and the UK's other native species the short-snouted seahorse have had protected status since 2008, following data-collection and campaigning by the Seahorse Trust.

Last year Studland Bay was made a Marine Conservation Zone (MCZ) in recognition of the importance of its seagrass habitat and seahorses.

"The question is how we go forward," says Garrick-Maidment. "We do not want boats and divers banned, but the seahorses and seagrass do need their legal protection enforced.

"We now need the MMO and Natural England to enforce the Wildlife & Countryside Act and MCZ and put in place measures such as environmentally friendly moorings."

"The seahorses need protection to stop them being disturbed again as Covid restrictions are lifted, and to stop them vanishing from this legally protected site."

Freda's Diver Dishes

You might remember that in my March column I gave you a pilau rice recipe, which I said would be part of a kedgeree dish later. Well, here it is. This particular dish uses jackfruit, which is believed to be indigenous to the rainforest of the Western Ghats of India.

Like many classic recipes in modern British cuisine, kedgeree has come to us from overseas. It originated in India, as a rice and lentil dish called *khichari*. Whether you are a fully fledged plant-based eater, a flexitarian or a red-meat reducer, you will love my take on this dish! It is packed with protein to fuel you for your dive and help boost your immune system.

Jackfruit Kedgeree

Feeds two divers

Ingredients

1 tin of jackfruit; 2 cloves garlic, crushed; 1-2 tbsp olive oil; half a lime, squeezed; 1 level tbsp chickpea flour; 1 level tbsp pea protein powder; 1 tsp cumin powder; 1 tsp coriander; 1 tsp turmeric; 1 tsp Aonori seaweed (dried); 4 cardamom seeds, crushed; sea salt & pepper; 80g frozen peas.

Method

Drain the tin of jackfruit, slice the fruit thinly, place in a container with a lid and add all the ingredients, apart from the peas. Mix together until the jackfruit is well-coated. Marinade for several hours.

Then refer back to my March 2020 column and follow the pilau rice recipe described there.

Once you have put the rice into the oven, place a deep non-stick frying pan on a medium heat, add the marinated jackfruit and fry gently.

Five minutes before the rice is ready, add your frozen peas to the cooked jackfruit, mix them through and continue to cook.

When your rice is ready, add the cooked jackfruit and stir through. Or, if you prefer, serve it at the side of the rice, with a wedge of lime and edible primrose flowers.

Top Tips

This is another great dish to have when you return home from your dive – as long as you marinade the jackfruit before you go. Served cold, it also makes a great lunch option and a welcome change from a sandwich between dives.

Referring back to the original pilau rice recipe, in the dish pictured I replaced the almonds/pistachios with cashew nuts and used brown basmati rice. Remember, if you use brown rice, you need to cook the dish for an additional 15 minutes or so.

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

Rainbow coral creating 'sunscreen'

RYAN GOEHRUNG / UNIVERSITY OF WASHINGTON

Colourful bleaching acropora corals in the Philippines.

SOME DIVERS MIGHT have noticed that instead of bleaching white in response to ocean warming, certain corals put on a dazzling rainbow display of colours. Now scientists from Southampton University believe they have discovered how and why.

Their research indicates that the phenomenon is a sign that the corals are putting up a fight to survive – and stand a chance of succeeding.

Corals carry symbiotic algae embedded in their cells, but a temperature rise of 1°C above the usual summer maximum can be enough to break down that relationship. If the algae leave, the coral's white limestone skeleton shines through its transparent tissue and the coral can die because that tissue is no longer protected.

The mystery was why some corals emit a multi-coloured glow instead of bleaching white.

Researchers at the university's Coral Reef Laboratory conducted a series of experiments in their aquarium facility, and found that these corals were producing their own "sunscreen layer", designed to encourage the protective algae to return.

"Our research shows colourful bleaching involves a self-regulating mechanism, a so-called optical feedback loop, which involves both partners of the symbiosis," said Coral Reef Laboratory head Prof Jorg Wiedenmann. "In healthy corals, much of the sunlight is taken up by the photosynthetic pigments of the algal symbionts.

'When corals lose their symbionts, the excess light travels back and forth inside the animal tissue – reflected by the white coral skeleton.

"This increased internal light level is very stressful for the symbionts and may delay or even prevent their return after conditions return to normal.

"However, if the coral cells can still carry out at least some of their normal functions, despite the environmental stress that caused bleaching, the increased internal light levels will boost the production of colourful, photo-protective pigments.

"The resulting sunscreen layer will subsequently promote the return of the symbionts. As the recovering algal population starts taking up the light for their photosynthesis again, the light levels inside the coral will drop and the coral cells will lower the production of the colourful pigments to their normal level."

The researchers believe that the corals that undergo colourful bleaching will have experienced mild or brief ocean-warming disturbances rather than extreme events.

And they say they are encouraged by recent reports suggesting that the phenomenon occurred in parts of Australia's Great Barrier Reef in the recent mass-bleaching event of March and April, because it offers hope that these corals have increased prospects of recovery.

However, the scientists emphasise that only a significant global reduction of greenhouse gases and sustained regional improvement in water quality can save coral reefs beyond the 21st century.

Their research is published in *Current Biology*.

#DiveStrong is a Covid response initiated by training agencies TDI/SDI to help divers show global solidarity with the under-pressure diving trade. They say more than 200,000 divers have posted their videos and flown the dive-flag online – visit tdisdi.com/divestrong

Ocean Hero Seems a sound idea – switch your default search engine to Ocean Hero and for every five searches it claims to recover an ocean-bound plastic bottle for recycling. In April, it says, nearly 1.4m bottles were collected through five million searches, oceanhero.today

Early Learning Who better to teach instinctive in-water skills to divers' offspring than freediving instructors? The sport's world governing body has launched its AIDA Youth Programme for children from six to 15 – might be worth checking out when the time comes

Cocos-Galapagos Swimway Two iconic dive locations 500 miles apart, but this ambitious plan would link them into the world's first bi-national marine protected area. Costa Rica and Ecuador both now say they're well up for it – but will we see action?

Puzzling tank heist in Caymans

IN THE CAYMANS ISLANDS a strict national lockdown and a nightly curfew have been imposed since March and scuba has been banned – but that didn't prevent the theft of 60 air-cylinders from a dive-centre.

The tanks, valued at around US $12,000, were stolen from a dock outside Cayman Diving in George Town, Grand Cayman, apparently during the night of 14/15 May, according to the *Cayman Compass*.

"If someone happens to see their neighbour with 60 scuba tanks in their garden that they didn't have before, please give us a call," said Cayman Diving's owner Mark Williams, who offered a $1000 reward for their recovery.

Williams was surprised by the audacity of the theft, reckoning that drivers of the one or more vehicles needed to carry the loot risked being stopped by police for breaking the curfew.

It was possible that the crime had been a daylight robbery, with any witnesses assuming that the tanks' removal was authorised, but that still left the question of motive.

"Who wants 50 or 60 scuba tanks unless you want to start a dive-shop – and who is doing that right now?" asked Williams.

FRUSTRATED IN PARADISE

It's dreadful I tell you, just awful!

Imagine you were away on a dive trip when The Virus struck. Somewhere the drinks are plentiful, the vis amazing and the marine life wonderful. Somewhere like the Cayman Islands, famous as a diving destination and one of the must-visit places on any Caribbean cruise.

Ah, yes, cruises and The Virus. We've all heard the stories. The ship drops anchor and the passengers head ashore, and as most Covid cases are asymptomatic they take The Virus with them unbeknowing.

Before you can say Yellow Jack it's running free on the island and the only way forward is a lockdown.

This, unsurprisingly, means that diving is halted, but so is transport back home to Blighty, reports my Caribbean informant. Stuck in scuba-diving paradise without being able to dive. Spending day after day staring out across the deep blue sea under the hot Caribbean sun and knowing that some of the best dives in the world are tantalisingly unavailable.

And then the day comes when the restrictions start to be lifted! Except that the Premier Alden McLaughlin won't allow scuba-diving because, and I quote "people share masks and snorkels and there is lots of saliva".

Can't argue with that, can you? Well, you can argue about sharing masks if you use your own kit, and most divers I know couldn't find a snorkel with both hands, but spit is definitely unavoidable, so he's right.

Except the local dive pros suggest everyone uses defog stuff for masks these days, and spitting is simply no longer done.

Of course there are suggestions of another motive, whispered after dark when drink may have been taken, that the government was taken to court as the local dive trade fought to stop the building of a cruise berth that could potentially ruin the island's marine ecosystem, and was now getting its own back on the divers.

Surely not! Though it does seem odd that you can now swim or snorkel but still not dive, and snorkelling, in my experience, involves even more spit than diving, regardless of what dive-centres might claim.

Anyway, life goes on, stuck in one of the best diving destinations in the world yet unable to dive.

See what I mean about awful?

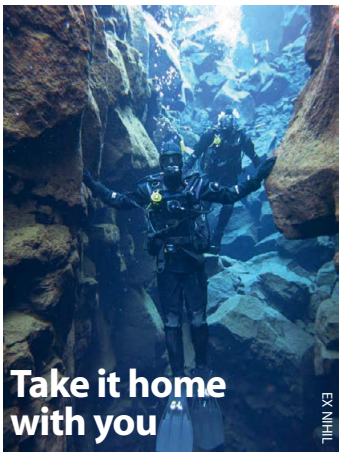
Dry spells

Actually, the lockdown marked the longest continuous period in my life without a dive since I first learned to scuba. I know it was only for a few months, but you know what? While I can appreciate the frustration of being in the Caymans and, unable to dive, I'd have happily settled for a quick dip in my local inland muddy puddle. What about you?

CMAS also reacted to the lockdown and the inevitable break in diving by releasing some safety and coaching guidelines for divers getting back in the water to try to avoid accidents from the scuba-rusty.

Which is great, except that in my experience many divers do just their annual scuba holiday and don't dive in-between anyway, so a three-month layoff will be as nothing.

Still, every little helps.



Silfra in Iceland is right up there in any list of must-do diving and snorkelling destinations, allowing you to dive in water so clear that it makes gin seem cloudy while touching both the American and European tectonic plates at the same time.

Such is the popularity that you book not only a dive but a time-slot as well, so it'll be a bit of a conveyor-belt experience, but that's OK.

What is not OK is litter, and local divers have been using the lockdown to remove rubbish from the site for the benefit of all. Thumbs up for that.

Dead cool

Of course, some things have been unchanged by the outbreak, like the constant urge to update dive-gear by inventing something that combines all the drawbacks of current kit with loads of innovative features that aren't especially useful.


YANKODESIGN

Enter the D-Mask, a full-face mask that seals round your forehead, cheeks and chin and has built-in headlamps, head-up display and bone-conduction comms and syncs to your smartphone.

It looks the business, mind you, ultra-modern and dead cool, but I confess to losing interest at the point at which it was suggested that I could use it alone or "take the oxygen bottle for scuba-diving" (though elsewhere it did suggest an air-tank, to be fair).

Mind you, the oxygen bottle might be more realistic. I can see no way to equalise other than to use an old-fashioned nose-clip worn under your brand new D-Mask.

Tornado first

Over to Australia: scientists recorded a terrific underwater disturbance that one likened to an underwater tornado, saying he'd never seen anything like it before.

Well, the planet is two-thirds ocean and as they say more people have walked on the Moon than have seen the bottom of the world's deepest oceans, so don't sweat it, eh?

There'll be loads of stuff out there none of us have seen yet. It's one of the things that keeps us coming back to dive again and again.

There's the rub

For example, did you know that lobsters can rub their antennae together and make a squeaky noise audible two miles way? Presumably only to other lobbies, mind.

When I next get back in the sea I will have a listen, but if it's that high-pitched I won't hear it anyway, what with the long-term effects of scuba on my hearing

Mystic employment


PATRICK HERRON / MYSTIC RIVERWATERSHED ASSOCIATION

Seven hundred and forty-seven, seven hundred and forty-eight…

I have a new must-do job. Well, they don't know it yet but I wanna be a Mystic Herring Counter!

Every year, apparently, herring swim up the Mystic River in Massachusetts to spawn, and volunteers count how many of them are travelling.

Well, sort of. Volunteers used to stand in the water and count the herring they saw headed upstream for 10 minutes in every hour, and then extrapolate to get a total. It was some 789,000 last year, massively up from the measly 200k they counted back in 2012.

This year the pandemic has stopped the volunteers, and cameras were installed so that fish could be counted on screen from the comfort of your sofa.

I'm in! Imagine the reaction when somebody asks what you do for a living and you tell them you're a-mystic herring counter. Awesome!

Locked down in Spain, WILL APPLEYARD shared dreams of UK diving through social media. So where will your first post-pandemic dive be?

TEMPTED BY TEMPERATE SEAS

LOCKED DOWN FOR MORE than two months in Spain, my interest in fabulous photographs of faraway lands and oceans waned. Temporarily I closed my Instagram app and, besides, at that time those destinations were off-limits anyway.

Rather than scroll, I began to live in the present and be thankful for my health and exercise, keen to remain fit for whatever adventure might await on that far-off horizon.

As spring became more established in southern Spain, my thoughts wandered toward what summertime might offer me in the UK. I began to daydream about exploring some quiet Cornish shore-dive or other, jumping on a boat destined for a site along the Jurassic coast, and mused over exploring a wreck or two.

Digitally, across various social platforms I began to connect more often with folks that I hadn't spoken to in a while – I guess we all did more of that.

I caught up with many champions of our wild and temperate seas, keen to discover more about what drew them into the underwater world around the UK coastline. For some DIVER readers, the idea of diving anywhere even remotely close to the UK will give rise to those "what do you see down there?" questions or simply "Brrr!".

For me, however, thinking of these temperate seas generates thoughts of a nutrient-rich ecosystem, remote island exploration, exciting wartime wrecks, colourful jewel-anemone-splattered reefs, easy beach-diving, diver-enveloping shoals of fish, piles of spider crabs, seals, blue sharks and big barrel jellyfish.

I could yarn for pages about my favourite temperate sea-diving experiences and I will allude to a few here, but I have back-up in the form of a selection of UK diving enthusiasts, plucked from my social-media contacts list in a bid to convince non-believers to explore what we have at home.

Sharon Odam, whose club is Diving Dreams, contacted me to share some diving career-defining moments from a day spent off north Devon at Lundy Island, where the Bristol Channel meets the cool clear water of the Atlantic.

"We set out [for the island] on a drizzly Bank Holiday Monday morning," she began. "The skipper assured us that the weather would clear.

'We were sceptical, but by the time we were halfway there the sky was clearing. Then we spotted them, a pod of dolphins coming to join us. They played in the wake of the boat for about 10 minutes before getting bored with us. Amazing.

"We moored up next at the mv *Robert*

Above: An afternoon shore-dive, complete with rainbow.

Right: Seals off the Welsh coast.

[a popular Lundy wreck]. As we went down the shotline the wreck came into view. The visibility was about the best I have ever seen in the UK – a totally amazing dive. What a fantastic wreck!

"We then went on to Lundy Island and, after a spot of lunch, the seals that had all been sitting up on the rocks watching us started slipping into the water, so we thought we'd better go and join them.

"We spent the next hour playing with them. They're the most inquisitive creatures and so much fun. I still have the teeth-marks in my fin to prove it."

ON THE SOUTHERN SIDE of Devon, Plymouth-based diver Liz Yates nominated one of our most famous WW2 relics, the US Liberty ship *James Eagan Layne* just off Whitsand Bay: "My dad first dived it in 1985," she explained, "and in his logbook he used one word to describe it: 'Beautiful'.

"I was lucky enough to have good sea conditions and brilliant visibility on my first dive on the *JEL*, a bit more weathered and battered by the time I dived it but still beautiful, with wreckage to explore and plenty of sea life."

I've been there myself in recent years and enjoyed some of the finest visibility I've ever experienced on a UK wreck-dive.

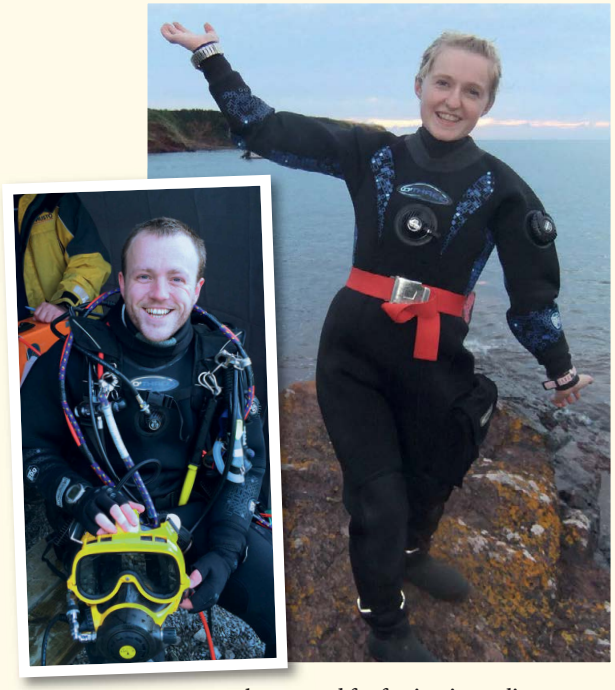
The wide-open holds are easily penetrable for any experience level and fish are widespread on the wreck. Lying just below 20m on the seabed and beginning a few metres below the surface, it's a go-to for a first-time UK wreck diver and merits many more visits after that.

"My dad drew me in with his stories of diving in local waters and around the world," says Liz. "I try to dive all year round, and won't let a little cold stop me, especially now that I have a heated vest."

She took up the sport in 2016, mostly with her club and dive-boat charter *In Deep*. The coasts of Devon and Cornwall will always be exciting to dive, but there's plenty more to see elsewhere in the UK.

Also inspired by his dad's diving stories was my Wales-based buddy Lloyd Jones,

LLOYD JONES



Top: Inside the *James Eagan Layne*.

Above from left: Lloyd Jones; Angharad Rees.

always good for fascinating online underwater wildlife film footage.

"My father is a diving instructor and as a child I was always fascinated by his local club's old films from the Red Sea. I loved joining them on trips to west Wales, socialising and listening to members' stories of marine life and misadventures.

"I've always had a passion for videography so my father decided to introduce me to the underwater world and its marine life. With the help of fellow underwater videographers JD Scuba and Ollie Putnam Cinematography we're hoping to create a series of short videos highlighting the Welsh coastline later this year, titled *Wales: Best of The West*."

What sort of critters could I expect


LLOYD JONES


LLOYD JONES


LLOYD JONES

to find if I joined Lloyd for a dive in Wales? "Curled octopus. One once darted between me and my father and knocked the mask off my face, inked me and raced off into the blue.

"My father didn't stop laughing all the way to the surface, and neither did I."

Unexpected underwater scenarios run in the family, with Lloyd's partner and diver-buddy Angharad Rees chipping in with another tale:

"One of my favourite dives was Martin's Haven in west Wales on New Year's Day; one of my first few dives in the UK. Being brave, wearing a semi-dry (in 4°C water, may I add) my buddy and I decided to just dive around the bay in the shallows. Thinking I'd been kicking my buddy throughout the dive, I turned to find a seal pup playing with my fins.

"The little chap had been following us the whole dive and playing with our equipment. A moment to warm any heart!"

Martin's Haven is part of the Skomer nature reserve, and I plan to join Lloyd and Angharad on a dive there as soon as the world is well again.

I love introducing warmwater divers to my favourite UK dive-spots when conditions are at their best. One such introduction was with my partner Ana, now locked down with me so on hand to provide input.

Her only previous diving experience had been in Malaysia.

"My first experience in UK territory was a drift-dive at Old Harry Rocks, where we saw a smooth-hound and a large ray – very exciting as a first experience," she said. "However, the challenge was to get used to all the extra gear that I was wearing compared with warmwater diving. I felt like an astronaut!"

Smooth-hounds, members of the shark family, are often over 1m long. They love the fast-flowing water at Old Harry Rocks and are regularly seen there by divers, but are still a startling sight on a UK dive.

Gaining more experience, Ana found the right equipment to become comfortable diving in temperate seas and has since enjoyed more than 100 dives around the UK. She has gone on to take that equipment to dive in colder climates too, on the fringes of the Arctic Circle.

Above, clockwise from top left: Diver with a barrel jellyfish; head of a cat shark; a bobtail squid's eye.

Below, clockwise from left: Ana Rancaño with a cuttlefish on a reef; preparing to dive in the snow; on the boat out in balmier conditions.

FURTHER WEST from Old Harry Rocks, Chesil Cove on the west side of the Isle of Portland provides just one richly diverse corner in which to discover stacks of interesting species. Regular diver there Colin Garrett messaged me about some of his highlights.

"I must have done maybe 150-plus dives at Chesil Cove and along the beach," he told me. "I simply love this place as a shore-dive. I've seen such a variety of amazing creatures, from the yearly arrival

of John Dorys, 4-5ft-long anglerfish, cat sharks, smooth-hounds, rays of all variety, triggerfish [grey triggerfish cross the Atlantic to reach the UK each August], curled octopus, cuttlefish... the list just goes on and on."

Colin has created a YouTube channel to share his sightings, a facility that kept me entertained during that long period indoors. The cat shark he mentions (*aka* the dogfish) is a lazy little creature, with beautiful spotty markings and big eyes, found on seabeds all around the UK and easy to approach.

There are several types of ray, which lie camouflaged on the sand, among rocks and beside the reef and can be easy to spot. And one of my most memorable underwater experiences happened from a RIB 16 nautical miles off Penzance with a group of friends one warm June morning.

With no land in sight and a flat sea we spent nearly two hours in the water snorkelling with five slender blue sharks we had encouraged to the boat using chum. A nibble from one of these epipelagic creatures is unlikely but we had covered our flesh with neoprene to deter any such investigation.

The skipper directed us to "keep our eyes on the creatures at all times" while in the water, but in reality they were the ones keeping an eye on us. Horizontal on the surface with perhaps 100m of water below me, I tracked two sharks as they moved stealthily together before swimming out of sight into the gloom. Then the pair would reappear exactly where I didn't expect them to be. This is their territory.

I met Debra Lilley on a liveaboard in the Red Sea many years ago and swapped details with all the guests on the trip, as one does.

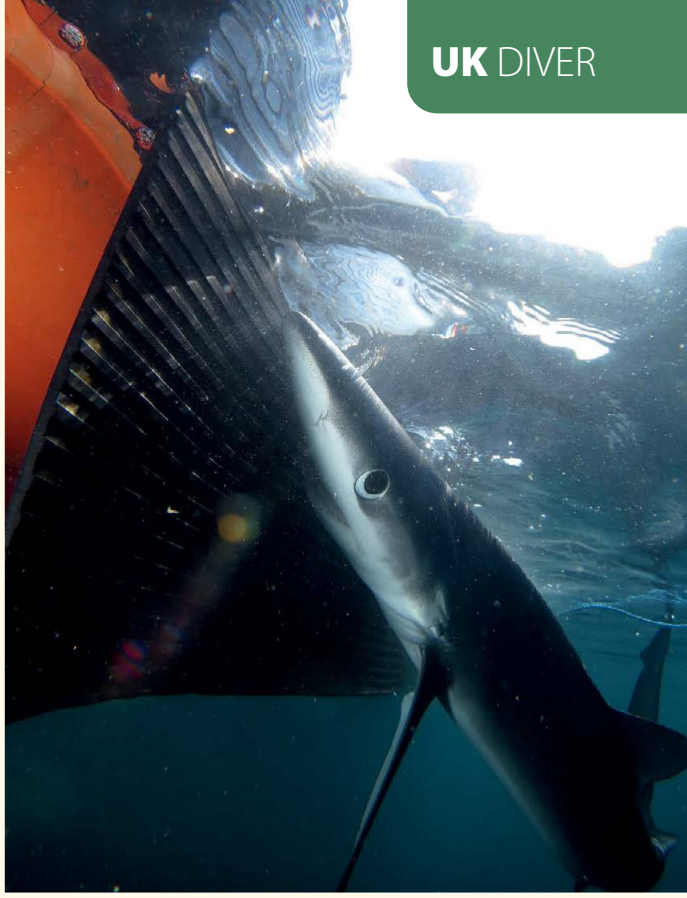
She popped onto my screen to tell me why she enjoys diving her local coastline in Northern Ireland: "My favourite dive-site is Rathlin, a small island of just 6sq miles and a population of about 140.

"The North Wall, about 20-200m, is the most beautiful site. The colours from the sponges, squirts and anemones are a blanket of perfection. We're blessed with nudibranchs and several species of crab and, look carefully, you will spot lobsters and an amazing kelp forest."

DIVING IS NOT THE ONLY reason to visit, says Debra. "Another reason for loving Rathlin is the surface interval between dives. Rathlin is populated, and has a lovely pub where we can go for lunch. How many pubs do you know where turning up in wet dive-gear is the norm? Its Irish stew and wheaten bread is excellent."

Debra signed off by saying that: "I do most of my diving here through Seasearch – citizen science at its best. It organises dives with local shops and we record what we observe."

Heading way up north, accomplished underwater photographer and friend Jason Brown pinged me a note to tell me about his favourite places to dive among the scuttled WW1 German fleet at Scapa Flow, in the Orkney Islands.



Above, from left: Debra Lilley's favourite location is Rathlin Island; blue shark off Cornwall.

Below, clockwise from top left: Dorset dive-boat heading out to a wreck on a flat-calm July day; wetsuit v drysuit – some divers prefer to go wet; spider crab at Chesil Cove; view of the cove.

Jason, dripping with diving qualifications, told me: "For any photographer with a lust for rust, Scapa Flow is hard to beat – where else in the UK can you dive the remains of once-mighty WW1-era battleships bristling with weapons of war?

"While the battleships draw all the attention, I prefer the smaller cruisers. They might lack the big guns of the capital ships but they make for far better dives and – dare I say it – better photographic subjects. They landed on the seabed the right way up, so a lot more of their superstructure is on show.

"The battleships 'turned turtle' and rolled over when they sank, hiding most of the interesting stuff. The cruisers also benefit from having sunk in shallower water, which means nice long dives even without the benefit of nitrox!

"If I had to pin down which single Scapa wreck is my favourite, it would be the SMS *Coln*. It lies in just 22m at its shallowest point and is still surprisingly

Left, from top: Jason Brown; Ali Worsley.

Right: Conger eel in a boiler hole on a wreck.

Below, from top: Diving on the *Coln* at Scapa Flow; surface interval on a Plymouth boat.

© JASON BROWN

JASON BROWN

intact. What makes it special are its cavernous swim-throughs – there's nothing quite as thrilling as swimming through the lower decks of a WW1-era warship!"

I met Ali Worsley while camped on the beach at Porthkerris in Cornwall a couple of summers ago. Her enviable lockdown

location was in the French Alps and we conversed online about her time diving at St Abbs on the UK's east coast, near the Scottish border. I'm ashamed to say that I still haven't been diving there, but Ali has convinced me to go this summer.

"Diving in St Abbs should be compulsory," she says. "It might be far north if you're a southerner but it's well worth the trip. If you stay in the village it's easy diving, a five-minute stroll at most to the harbour wall for loading.

"Many of the dive-sites are a stone's throw away, so if it's choppy you can easily bear it – plus the sites tuck into inlets, so there is shelter. Despite being close they're quite varied; walls, huge granite boulders, knife-edge rock lines to follow and sandy beds.

"The marine life is awesome – lots of squidgy stuff, and a good amount and variety of fish. Lobsters, squat lobsters and crabs are in abundance – you could almost get bored of them!

"The real highlight if you're lucky is to spot a wolf-fish. Drop below 20m, nose into every nook and cranny and you could be in for a treat!"

Diving at St Abbs really is a rite of passage for UK divers, which is why it has been bumped up my list.

Further south-east, my friend Alex Gibson told me about one of his first UK diving trips to the Farne Islands with Billy Shiel's Boat Trips from Seahouses.

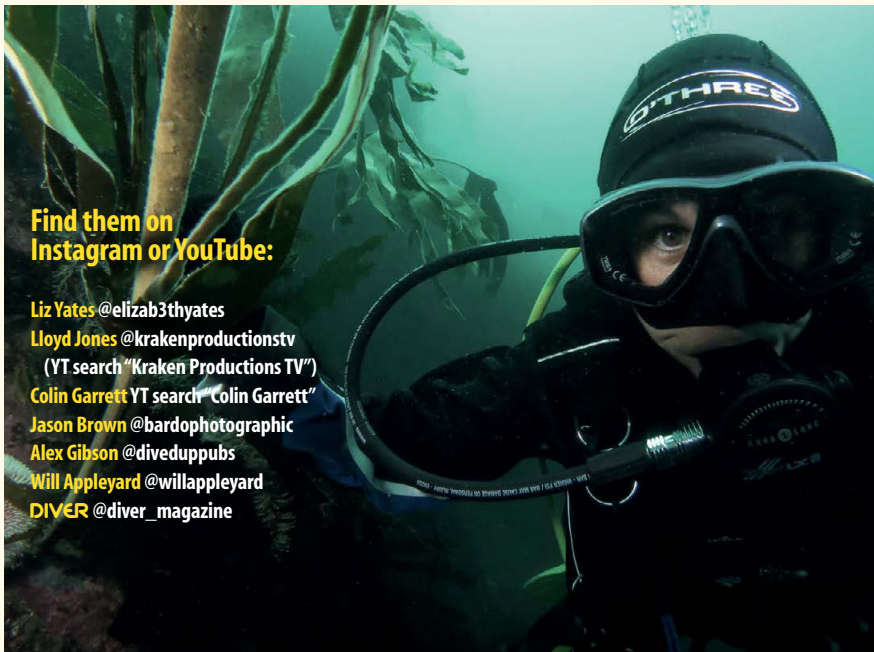
"I remember it well; it was my first underwater encounter with seals," he said. "Although that was brief it was truly exciting seeing large, fast, agile animals in our own waters. I immediately wanted more.

"I also remember being pleasantly surprised by the amount of colour all over the rocks – yellow, pink, orange, green, purple and more. A lot of that algal, spongiform, bryozoan and seaweed growth is easy to dismiss because it doesn't stand too high or form interesting structures (as coral does), but without it there would be a lot of grey and in the right light I think it's beautiful."

SO SOCIAL MEDIA finally seemed to hold some real significance for me during this time of confinement.

Besides its normal function of showing off our enviably adventurous moments and our best photographic work, at this point I think it was able to bring divers together in a positive way.

And, although we can't wait to start travelling to the ends of the Earth once again in search of that road less travelled, remote places and pristine seas, perhaps consider that real adventure is often hiding in plain sight, and closer to home than we might think.



Find them on Instagram or YouTube:

Liz Yates @elizab3thyates
Lloyd Jones @krakenproductionstv
(YT search "Kraken Productions TV")
Colin Garrett YT search "Colin Garrett"
Jason Brown @bardophotographic
Alex Gibson @diveduppubs
Will Appleyard @willappleyard
DIVER @diver_magazine

> All life is part of a complex relationship
> in which each is dependent upon the others,
> taking from, giving to and living with all the rest.
>
> *Jacques-Yves Cousteau*

We will all be back in the water soon, stay safe and well, from us all at O'Three.

Photo courtesy of Rick Ayrton

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RED SEA MYSTERY WRECK

Stand by for action: there's a new shipwreck in the Red Sea. It is a bit deep.

Report and photography by JESPER KJØLLER

A FEW YEARS AGO, using a combination of advanced diving technology and trusty old wreck-finding methods, I was part of a Red Sea Explorers dive-team that successfully discovered a virgin shipwreck in the Strait of Gubal.

It would take another two years before conditions allowed us to go back to shoot good images from the 80m-deep wreck, believed to be the Brazilian steam-powered sailing corvette *Almirante Barroso*.

Wow! I can't believe our luck. We had anticipated a ripping current, but the thick rope dropped by the crew on our mothership *Nouran* is falling straight down into the unusually clear water.

Did we really break the code, and figure out how to time the dive in relation to the tidal charts and weather forecasts?

Filled with anticipation, I let myself fall through the water column a few metres away from the rope, and for a moment even contemplate preparing my camera, unfolding the strobe arms in the tranquil environment on the way down.

But then, at around 50m, I notice the rope begin to shiver and shake. I discover a sharp bend on the line below me, indicating that the current is picking up further down.

I realise that I've drifted too far from the rope now, so I keep the scooter at full speed and fin as hard as I can. I tuck my head between my arms to be more streamlined, but I'm not moving closer, and the current is really powerful now.

I know that I must not overexert myself to avoid carbon dioxide build-up – hypercapnia is the rebreather diver's number one enemy.

Now I can see the contours of the wreck. Down on the seabed, the hull of the wreck will create shelter from the current.

My buddy Daniel Schelvis, smarter than me, has been holding onto the rope during the entire descent. Neither does he have the added drag of a big camera.

ALMIRANTE BARROSO was a mixed sail and steamship built of timber and steel in Rio de Janeiro. She was launched on 17 April, 1882 in the presence of Emperor Dom Pedro II and Admiral Francisco Manuel Barroso da Silva.

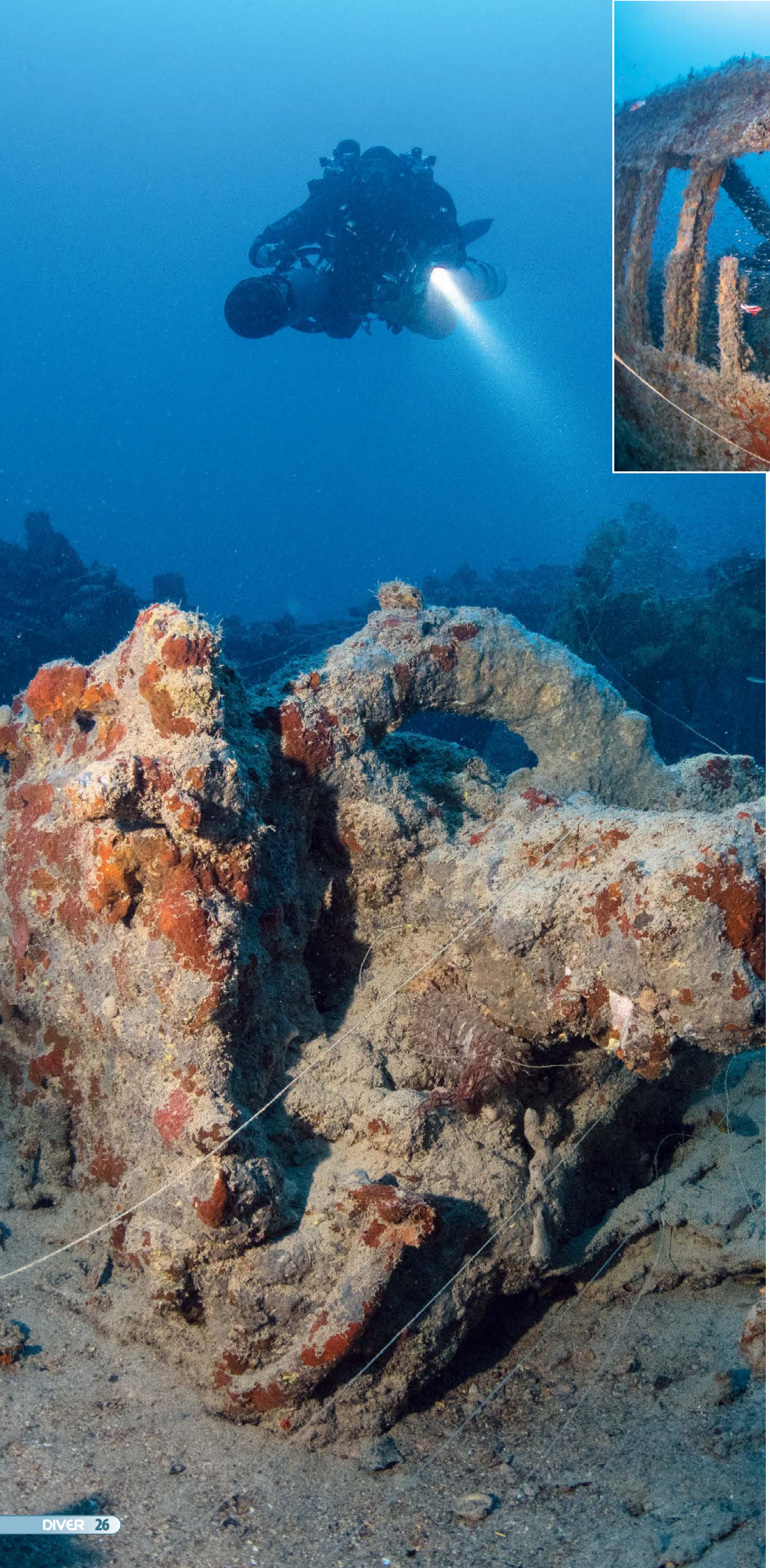
The second Brazilian Navy ship named after war hero Admiral Barroso (1804-1882), she was wrecked after striking a reef near Ras Zeith during a circumnavigation voyage on 21 May, 1893. A British gunboat rescued the castaways.

SPECIFICATIONS: Displacement 2050 tons; length 71m; beam 11m; draft 5m; 2170hp engine; 1.625sq m sails; speed 12 knots.

Left: *Almirante Barroso* served as a training vessel for the Brazilian Navy.

Above, from left: Getting ready observed by Red Sea Explorers' mascot Antar the dog; Jesper jumps in.

Below: The two anchors in front of the impressive stern section.



I am confident that he is in control and that he will continue his descent along the rope, so I decide to scooter straight down towards the ocean floor at 80m rather than fight this unforgiving current.

As soon as I am sheltered behind the wreck, I can quickly make my way to the ship with the scooter at full speed along the seabed to reunite with Daniel.

We arrive at the wreck at the same time, but through different means.

Lesson learned: Do not lose the rope!

Smoking Gun

The downline is just a few metres in front of the bow of the wreck, where the two large anchors are lying. Perfect drop!

Daniel immediately positions the video-lights to illuminate the bow and anchors, and assumes a good position for modelling. We have had a couple of days to practise the technique and communication on easy wreck-dives in Abu Nuhas and on the *Thistlegorm*, so we can work fast and efficiently.

Visibility is excellent, and the ambient light is good even if we are deep, and it's only around 10am. The current is a small price to pay for clear water.

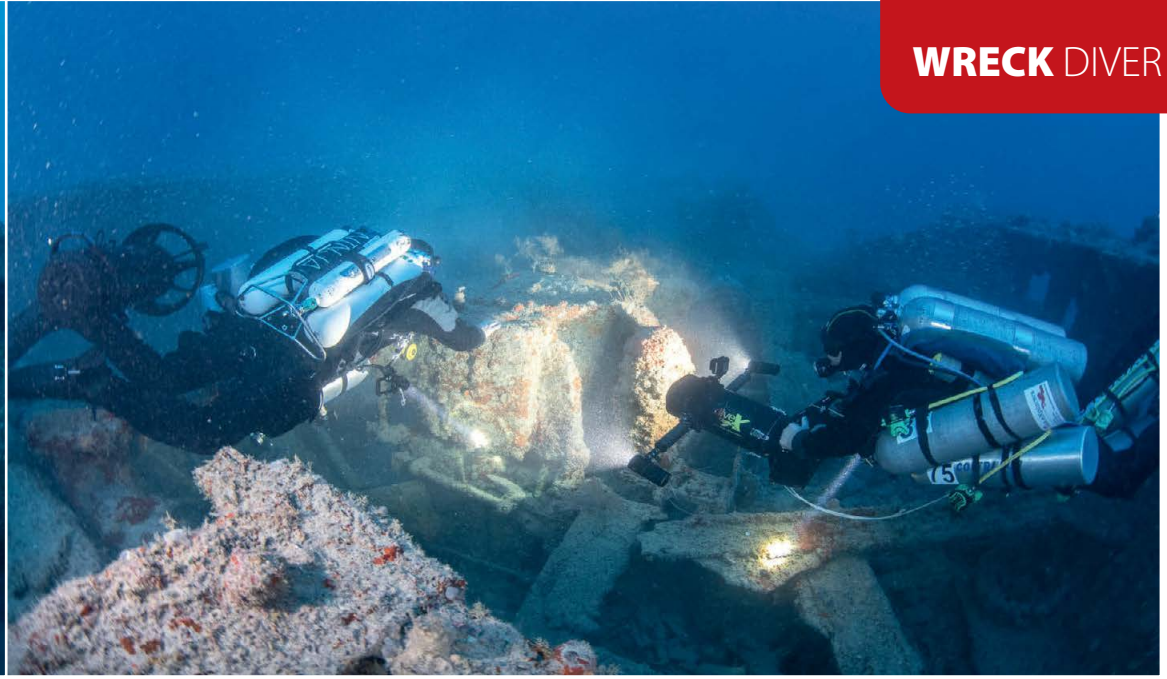
After the shots at the bow, we venture inside the open hull to explore and shoot more images.

The other half of our dive-team, prominent Italian GUE instructors and wreck-explorers Mario Arena and Stefano Gualtieri, are already immersed looking for clues to support a 100% positive identification.

We believe that the wreck is the *Almirante Barroso*, but still need the smoking gun to prove it.

Mario, one of the most experienced wreck-explorers on the planet, knows where to look.

A boilerplate with the name, a serial number on an engine part, or a ship's bell would be the typical things to look for, but he draws a blank.



Occam's Razor

Scientists often refer to a problem-solving principle called Occam's Razor when trying to figure out complex problems.

It suggests that the simplest solution to a problem is most likely the right one, so when presented with competing hypotheses, one should select the one based on fewest assumptions.

The *Almirante Barroso* went down in 1893, and we have found a wreck that looks like her from that period. If not the *Almirante*, there must be a similar ship missing and the *Almirante* must lie elsewhere in the vicinity.

Occam's Razor suggests that we have found the *Almirante Barroso*, but we still need to prove it...

I ask Faisal Khalaf from Red Sea Explorers about the identification process. "None of the items found on the wreck thus far provide 100% identification," he tells me.

"However, the size, location, and different characteristics of the wreck make us quite confident of its identity.

"For example, there is damage to the hull where the rigging used to connect. Items such as pulleys and blocks used in sailing rigs are further evidence that she is a tall ship.

"The question as to where the superstructure has gone is answered by the fact that this is a sailing ship

Above, from left: Some of the port-side plating has gone, revealing the ribs of the hull; the Italian divers seek clues around the engine.

Left: Daniel Schelvis poses above a winch.

Below: The massive oven and stove where the galley was before the decks collapsed.

WRECK EXPLORATION PROJECT

Red Sea Explorers has been exploring and protecting the wonders of the Red Sea for the past 15 years as one of Egypt's most popular and successful liveaboard dive operations.

Its Wreck Exploration Project dedicates a couple of weeks every year to finding and exploring new shipwrecks.

Those unable to do long, demanding decompression dives at depth are still invited to participate as support divers – a good way to gain experience as a technical project diver, redseaexplorers.com

with limited or no superstructure.

"The missing parts were likely made of wood that has since disintegrated.

"Our mission now is to continue to document and catalogue all the parts of the wreck for further research.

"Using different technologies, such as photogrammetry and video documentation, we aim to keep a thorough record of what was discovered.

"We will also search for items that might be buried in and around the wreck," says Faisal. "This is a long-term project, and lots of dives will be conducted on the wreck as part of the Wreck Exploration Project [*see panel*]."

Old & New Methods

The Egyptian Red Sea is one of the planet's most dived. You might think that all its secrets have been revealed; all areas fully explored.

On the other hand, it is one of the world's busiest sailing passages, so small wonder that many ships have ended up on the bottom of the Strait of Gubal since the 1869 inauguration of the Suez Canal.

Most of these lost vessels lie outside recreational-diving depth range, and it takes a lot of dedication and effort to locate them. So finding new Red Sea wrecks is a rare occurrence.

Most new wrecks are found with modern technology, but Egyptian law prohibits the use of side-scan sonar. So Faisal reverted to old, trusty methods and teamed up with local fisherman Hamdi.

He had a small handheld GPS with hundreds of promising positions where his colleagues had lost trawls, or noticed resistance when pulling in their nets.

The fishermen were promised 2000 euros for every position that turned out to be a virgin wreck and, so far, half a dozen have been located.

The fishermen have an impressive knowledge of the positions and can describe details of the wrecks purely based on the pieces of debris pulled up by their angling tools.

The wrecks might be found using old methods but they are dived with new technology. When diving in deep water surrounded by huge container ships in a busy shipping lane, it's essential to use the safest, most reliable gear.

We use trimix-based CCRs and powerful underwater scooters – two technologies that have recently reached a level of maturity, making it possible to carry out safe exploration of areas inaccessible 10-15 years ago.

Pictures Or It Didn't Happen

I'm thinking back to our inaugural dive on the wreck in February 2018. The first bid to reach it was aborted, the current at the bottom making it impossible. After 20 minutes scootering at full throttle against a ripping current, while following a horizontal line on 65m, we had to give up.

I was desperately holding onto the line with my left hand and operating the scooter with the right. We were moving slowly but with great effort, and it became clear that it was not sustainable.

We never reached the wreck but the sonar image on the bridge of *Nouran* was so tempting and alluring that it was decided to make another attempt later the same day, hoping that the current would have lessened and conditions improved.

Above, from left: The cargo is still unknown - the holds seem empty; the stern is relatively intact, so the collision with the reef probably occurred somewhere else.

Below: The dive-team in the planning stage with, from left: Mario Arena, Jesper Kjøller, Faisal Khalaf, Stefan Gualtieri and Daniel Schelvis.

We still didn't know what awaited us. A wreck? A lost container? A hull-shaped reef? Or maybe just MV *Sand* – the largest wreck in the world.

Imagine the thrill when we reached the bottom at almost 80m and discovered that the shotline was just a few metres from a structure that turned out to be the wreck of a large steamship.

Unfortunately the visibility was terrible, and because of the difficulties experienced on the first attempt I had left my big camera system at the surface.

We had only a scooter-mounted GoPro to document the dive, and you can hear our joyful screams on the video.

The marine life on the wreck was spectacular. There was very little protection against the strong current on the sandy bottom around the site, so the wreck offers a shelter that makes the marine-life thrive.

The hull was filled with glassfish chaperoned by enormous grouper and lionfish. Giant trevally were roaming the area, even visible on the sonar. No wonder the area is an attractive fishing-ground!

We were ecstatic about our new discovery, but had only sparse GoPro-documentation, so we wanted to go back.

It would take two years until I had the opportunity, and in the meantime a few other dives had been made, with a handful of artefacts recovered.

Mystery Wreck

Lots of questions need to be answered. Where are the cannon? What was the cargo, and where is it?

Maybe the ship was turned upside-down before landing upright on the seabed, and everything spilled out?

Which reef did it hit, and is there a debris field leading to it? The most essential discovery remains: irrevocable proof that the mystery wreck is the *Almirante Barroso*.

All these questions will be answered during the ongoing wreck-exploration weeks planned every year.

WHO, WHAT & WHERE

2018 DIVE-TEAM: Faisal Khalaf (Lebanon), Jesper Kjøller (Denmark), Sameh Sokar (Egypt), Igor Siryk (Ukraine) and Michel Salsmans (Belgium).

2020 DIVE TEAM: Mario Arena (Italy), Stefano Gualtieri (Italy), Daniel Schelvis (Spain) and Jesper Kjøller (Denmark).

EQUIPMENT: JJ-CCR in GUE configuration; Suex scooters; back gas 12/65; bail-out gas 12/65, 50% and 100%.

LOCATION: The wreck sits in a flat sandy area north of Gubal Island, west of the Traffic Separation Scheme at the mouth of the Gulf of Suez. Windy surface conditions make it tricky on the surface, and the proximity to a busy shipping lane makes ascent on the line vital.

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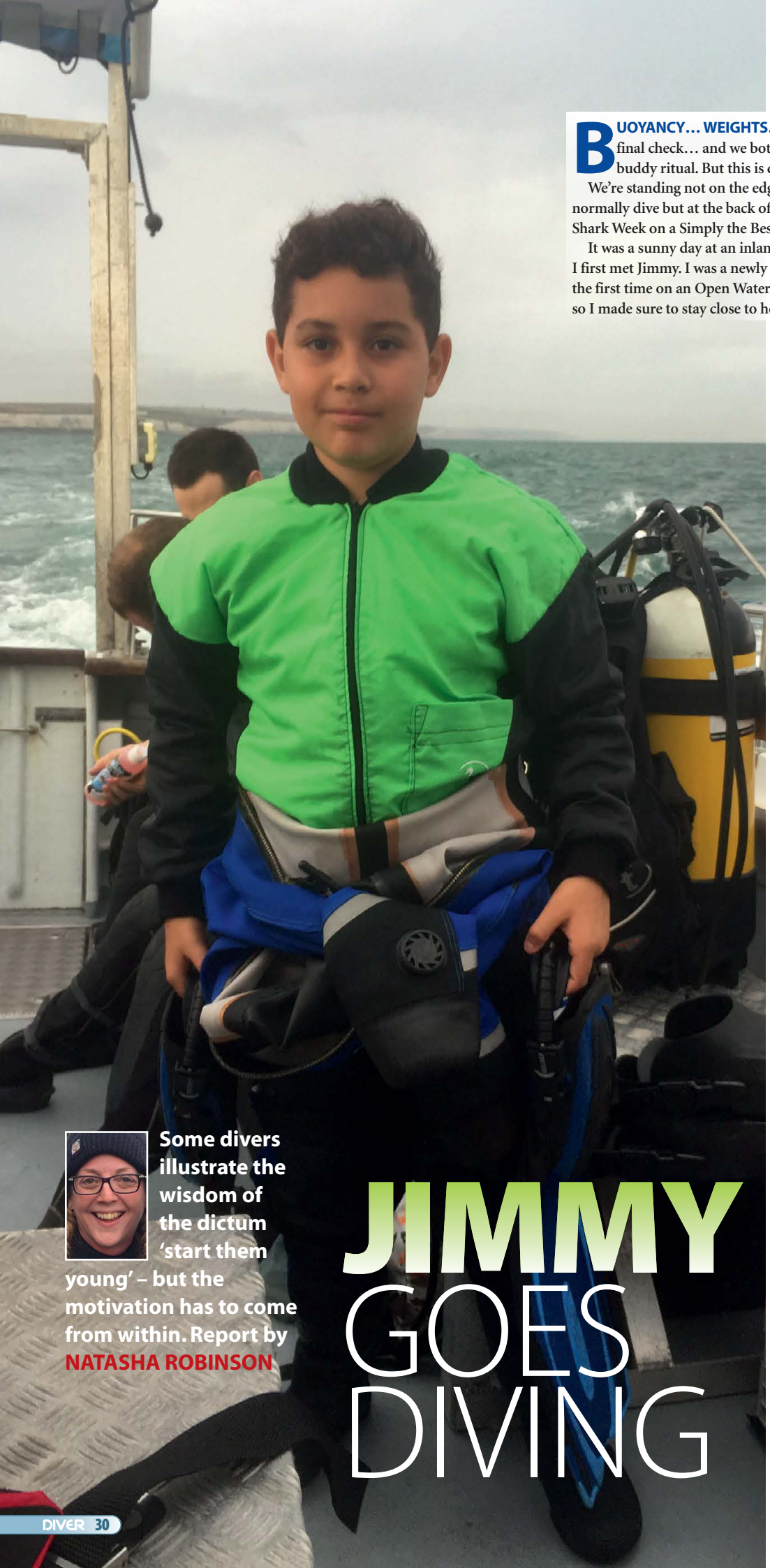


Some divers illustrate the wisdom of the dictum 'start them young' – but the motivation has to come from within. Report by **NATASHA ROBINSON**

JIMMY GOES DIVING

BUOYANCY... WEIGHTS... Buoyancy… weights… releases… air… final check… and we both do our usual twirl as part of our pre-dive buddy ritual. But this is different.

We're standing not on the edge of the muddy puddle in the UK where we normally dive but at the back of an Egyptian liveaboard at the start of Shark Week on a Simply the Best itinerary.

It was a sunny day at an inland training site in September 2015 when I first met Jimmy. I was a newly qualified Dive Master, divemastering for the first time on an Open Water Diver course. We hit it off straight away, so I made sure to stay close to help him through his dives.

I retain a vivid memory of him clad in 7mm wetsuit, gloves and hood, hardly able to move. His buddy Harvey, from the confined-water part of the course, towered above him. Jimmy Sanchez-Reeve was just 10 years old.

Our surface intervals gave me an opportunity to get to know Jimmy better, so I asked why he was learning to dive.

"When I was only seven I was out shopping with grandma. We walked past the dive shop and I dragged her inside to have a look. They showed us around the shop, classroom and the onsite training pool. I was really upset, because I was too young to try a dive.

"But I went on and on about it until I was given a Bubblemaker session for my eighth birthday. I loved it so much that I made my mum sign me up for the PADI Seal Team there and then!'

The fact that Jimmy had completed his Master Seal shone through during the Junior OWD course. For someone so young his confidence and mastery of skills was brilliant, and you couldn't help feeling for the poor grown-ups on the course experiencing the usual nerves.

AFTER TWO DAYS and four dives Jimmy and Harvey passed the course and were super-keen on having a pleasure dive in the lake, but PADI standards insist that they needed a dive professional.

Being so newly qualified I was a little scared to learn that this meant me, but I agreed to accompany them on their first dive as qualified divers.

The plan was to dive the bus. Unfamiliar with the location of all the site's underwater attractions, I took directions from another diver on which buoy to descend. We swam out confidently and descended on the bus… well, ahem, the shipping container, as Jimmy still likes to remind me!

We lapped the container several times, regularly checking in with each other and using our torches as the vis was not the best. I turned to give the OK signal again but I was on my own. Deep breaths.

I peered through the gloom to try to make out fins, bubbles, anything. But nothing. OK. Search for one minute, then surface. That was a very long minute.

I was terrified that I had lost someone else's child on his first dive but surfaced to find to my relief that our new divers had

followed their training and were bobbing around looking for my bubbles.

While I calmed down over a cup of tea we chatted. I asked Jimmy what he had enjoyed most about his course?

"Other than meeting my 'buddy for life' (Harvey) and loads of other really nice, friendly people, I enjoyed every part of it," he told me.

"It opened up the underwater world to me, even if we couldn't see much in the lake. The container was really interesting – much better than the bus we were looking for but couldn't see!"

Since that day Jimmy has gone on to complete his Drysuit, PPB, Underwater Navigation and Equipment Specialist courses.

When the weather is good he will often be out on the dive-boat that the Oceanview dive-club organises out of Brighton Marina on Thursday evenings in summer.

When Jimmy was still only 11 I was called on to be his "dive-professional" again so that he could participate in a dive. We had a great time seeing flatfish, spider-crabs and shoaling pollack, not losing each other and catching up on how his diving was going.

"Being a diver means I get to bug my mum into letting me dive wherever we go on holiday," Jimmy told me.

"I was so lucky – my next dive opportunity once I was qualified was in the Maldives. It was great, and so different to the UK dives I'd done.

"The water was warm and crystal-clear. The fish were beautiful and I got to play on a sunken jet-ski. I've also dived in America now – a lake in Oklahoma that was beautiful and clear, but Texas was worse than a UK inland site for vis, though a lot, lot warmer."

OVER THE NEXT few years I regularly bumped into Jimmy and Harvey in the pool on club-nights, me practising with my camera and they practising their skills, perfecting their trim and buoyancy and modelling for me.

My skills had also progressed and I became an Open Water Scuba Instructor at the end of 2016. Fast forward to July 2017 and I'm standing in the car-park at the NDAC site near Chepstow, ready to complete Jimmy's Junior AOWD course.

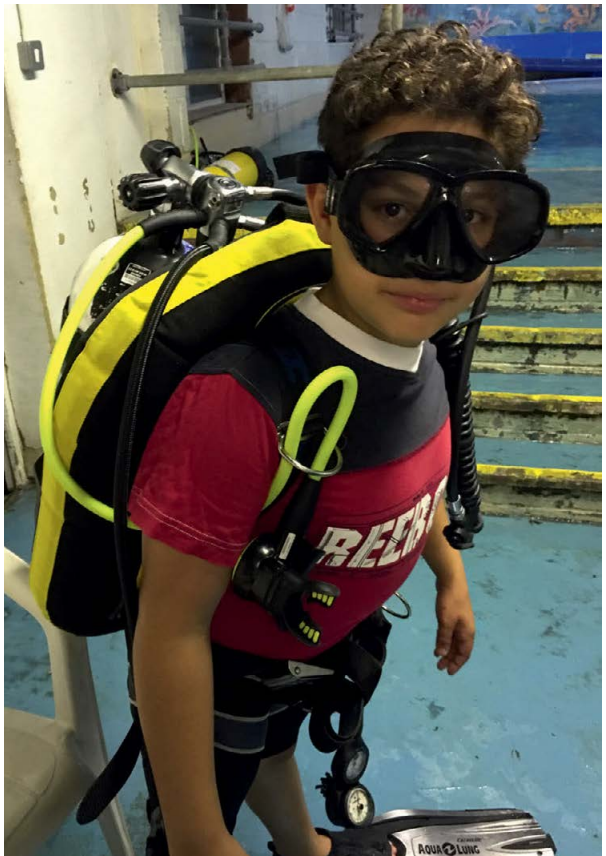
With all the specialities he had already achieved he needed only to complete Wreck Dive 1 and Deep Dive 1 to qualify.

Jimmy was only 12 but his position in the water was beautiful. Flat, neutrally buoyant and moving effortlessly, he made a great role model for the more mature students I was teaching that weekend.

Above, from left: Jimmy early in his diving career with his buddy Harvey; celebrating Easter at a very chilly NDAC.

Below: Club-night pool practice.

Left: Getting ready to dive on the Thursday-night club boat trip.



Of course, he smashed his skills and knowledge reviews. As a new instructor I was so proud to be able to record Jimmy as my first JAOWD. Our diving progress seemed to be in tune.

Over a celebratory hot chocolate we chatted about why he had decided to take the longer route of achieving his Advanced Open Water Diver course by completing the five separate specialities.

"It meant I got to do more dives!" he said. "Also, because I struggle with reading the manuals it meant that I could concentrate on one spec at a time and get it properly right.

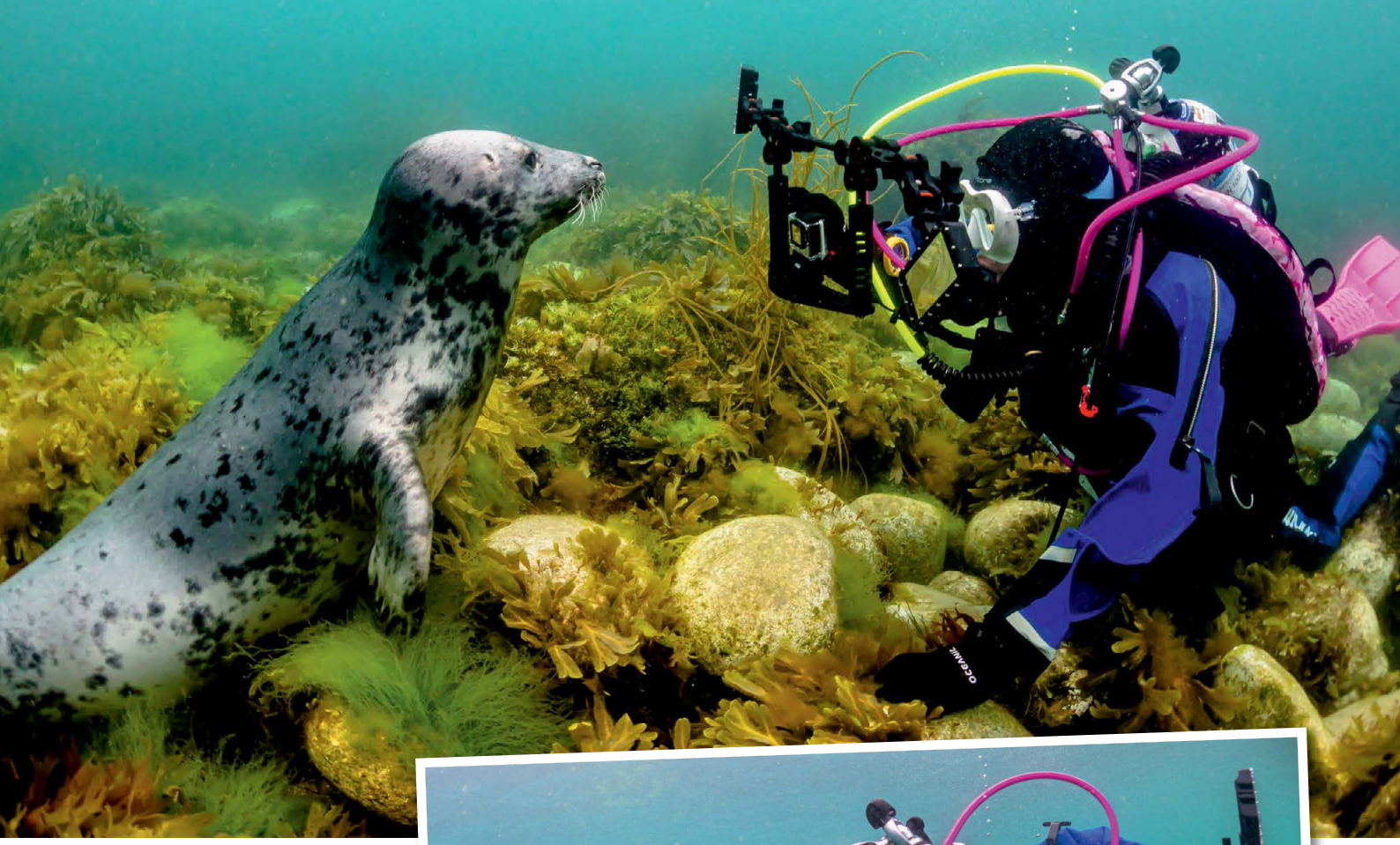
"I get lots of help to read the manuals, and watch the DVDs over and over and over and then over again so I understand all the theory bits I need to get right. The hard work is worth it when I get my kit on and jump into the underwater world."

So what next? "Dive, dive, dive! I've signed up to do the EFR [Emergency First Response] and Rescue course soon. My aim is to be a Junior Master Scuba Diver before I get to 13. With 35 logged dives and hopefully passing the Rescue course, I really want to get there.

"My dream is to be a marine biologist and explore all the magnificent and beautiful things living in the underwater world."

WHAT COULD I DO but offer to take Jimmy diving to help make up the dives needed to reach the magic 50? We spent a chilly Easter weekend diving at NDAC, me trying out my new drysuit as Jimmy added to his dive tally.

On 27 May, 2018, Jimmy completed his 50th dive, his fifth speciality and achieved his JMSD qualification – all



Above from top: Jimmy among the seals at Lundy; they went for his pink fins in a big way.

before his 13th birthday. We celebrated with another dive at our favourite inland dive-site.

The plan was to navigate to the bus from the far side of the lake, but in true celebratory style we missed that bus!

I asked Jimmy how it felt to have achieved his goal. "It makes me feel empowered and that I can do anything," he said. "I want to just get out and dive as much as I can, anywhere I can.

"I want to keep practising my new skills and improving my diving."

To help keep Jimmy diving, in July last year we buddied up on a weekend trip to Lundy to enjoy four dives with seals. Maximum depth was a dizzy 10m, but why dive deeper when all the fun stuff was playing at 6m?

There was something about Jimmy's pink fins that the seals couldn't resist, which made for great pictures for me.

This was Jimmy's first proper club weekend dive-trip so on the final sail back from Lundy to Ilfracombe I asked how he had found it.

"Lundy was brilliant," he replied. "It was a little daunting at first as I was the youngest on the trip but everyone warmed to me quite quickly and I felt very much part of the group. It was a totally magical experience.

"The diving was complicated because of the surge and shallow depths so I really had to control my buoyancy but it was absolutely brilliant. The highlight was seeing my first seal swimming effortlessly through the water. It was amazing."

Which brings us back to that Egyptian liveaboard dive-deck, about to giant-stride into the Red Sea. We had both signed up for this trip 12 months ago. Jimmy's mum doesn't dive, so I had willingly agreed to take on the mantle of "responsible adult" to ensure that he could go on the trip.

This meant that I would be his buddy and take responsibility for him on the dive-deck as well as in the water.

WHEN WE ARRIVED late on Friday night the dive-crew and guides didn't really know what to think. Some of the guests also looked puzzled as to why a 14-year-old lad was on this trip, and why I had agreed to spend the week with him.

Having dived with Jimmy for the past four years I had no such reservations. I knew that his in-water skills would match or surpass those of other divers on the trip and that we would have the best fun!

I decided not to take my camera on our first few dives so that I could be the best, most attentive buddy, and it was the best decision I could have made.

Not because I needed to do anything complicated but I was free to enjoy the dive, take everything in first-hand and, most importantly, share in the joy of seeing the excitement on a fellow-diver's face as I pointed out his first sighting of a cornetfish or turtle!

As a JMSD Jimmy had a maximum depth of 21m, so at each dive-briefing we had to formulate what we could do.

Generally we would descend with the group to around that depth and then swim out into the blue, keeping the rest of the group and guides as a reference below us, to look out for sharks.

I was impressed by Jimmy's ability to

maintain a consistent depth in the blue with no reference other than his computer.

Dive 6 took us on a RIB ride out to the *Numidia* wreck on Big Brother Island. We back-rolled in and descended to 21m, which was level with the start of the deck structure, keeping a close eye on the guide and the rest of the group below us.

The water was so clear that you could see all the way down the wreck.

Suddenly, the dive-guide started banging furiously on his tank and pointing into the blue. Eventually I saw why he was so animated – wow! It was a whale shark passing over the deck.

I had only briefly seen whale sharks in the Maldives and had not expected to see one in Egypt. I turned to Jimmy to make sure he was seeing what I was seeing. The smile said it all. High five!

We decided to do a bit of Fish ID training, nothing official, just a bit of fun, so I drew some fish shapes on a slate.

On the next dive Jimmy tried to match the fishes we had seen to the broad classifications on the slate – with reasonable success, considering the dodgy drawings.

We enjoyed making up our own fish signals, and Jimmy took over the slate to sketch some of our subjects so that he could look them up later.

WE HAD A CRACKING WEEK, completed all 18 dives together and I had the best dive-buddy on the boat! In departures at Hurghada airport, I asked Jimmy what he had thought of the trip.

"Egypt was out of this world – I've never experienced anything like it," he said. "Spending the whole week on a boat – it's one of my dreams to live on a boat, so being able to eat, sleep and dive was the best thing ever. I wasn't going to miss a single dive!

"At first everyone seemed a bit 'why is a kid on this trip?', but they soon realised that I wasn't a bad diver! The crew were great fun and I went over the side of the boat for a swim on a few occasions.

Above, from left: Jimmy and a bus. Not *the* bus – he and Natasha have yet to find that one; SMB speciality completed and 50 dives under Jimmy's belt too.

Below: Big smiles in the Red Sea.

"They made me feel very welcome and tried to help me a lot with my kit, although I didn't need it!

"It was the first time I'd dived on nitrox too. It was a nice challenge to remember what I'd learnt on the course, how to use the analyser, updating the record sheets and remembering to change my computers before each dive. It was brilliant fun.

"The Shark Aware course with Elke [Bojanowski] was an inspiration. I learnt so many new things – like that huss are sharks. Seeing the whale shark swim over the wreck was a magical experience too, and something I thought I'd never see."

Next step? "I'm nearly 15 now, so I'd like my birthday present to be the Deep and Wreck specialities.

"PADI says you can't do those until you're 15, so I've had to wait.

"I definitely want my career to be in diving , if not as a marine biologist, something more to do with engineering so maybe a Navy diver. They get to travel the world and use diving in more practical, hands-on ways, like fixing boats.

"I'm researching the Navy. I've also started getting my fitness levels up and generally looking to keep improving my diving skills so that I'm ready potentially to enlist at 16."

Starting his diving early and progressing through the PADI training programme has seen to it that Jimmy is a very competent diver, and a confident young man who's a pleasure to have on a dive-trip. The club is very proud of what Jimmy has achieved and we look forward to seeing him on another trip soon.

I'll be keeping my diary free for his Deep and Wreck courses too – I wouldn't miss that opportunity for the world.

"Everyone at Oceanview Diving has been brilliant in helping me with my diving right from being a Seal through to achieving my Junior Master Scuba Diver qualification," says Jimmy.

"I can't thank them enough for all their help, support and encouragement."

BE THE CHAMP!

Which photographer can resist angelfish when the opportunity arises? Not that they're notably co-operative models, but ALEX MUSTARD values them whether for portraits or as wide-angle 'hero-fish'. Observation is key…

*'Keeping an **eye out for behaviour** is one of the **best routes** to unlocking **repeatability**'*

THERE ARE VERY FEW types of coral reef fish that almost every diver can recognise, but angelfish are one of the first that everyone learns.

Angels stand out because of their heavenly colours and aesthetically pleasing patterns. They are usually encountered alone, gracefully wafting down the reef, contrasting with the frenetic ducking and diving of the smaller reef fish.

Almost every diver will have come out of the water at some point waxing lyrical about the beauty of an angelfish encounter. This month we look at how to capture their loveliness in pixels.

There are more than 90 species of marine angelfish worldwide. They make their homes on coral reefs, but some species extend into the rocky reefs of the sub-tropics. Slow-moving, they rely on the complex topography of these reefs for shelter. Their upright bodies also help protect them from predators, while providing the perfect canvas to show off those emblazoned markings.

Some species, such as the well-known emperor angelfish, extend from the Red Sea right across the tropical Indo-Pacific up to Japan and even out to Hawaii.

Other species are very localised to specific island groups, such as the Clipperton angelfish.

Their colouration has beguiled many photographers. Helmut Debelius, famous for his fish identification books, even painted the outside of his house in rich yellow and bright blue in tribute to his favourite angelfish species.

So one of the first shots I seek when I meet a friendly angelfish is to tell this story, by getting parallel to its flank and filling the frame with colour and pattern.

Small aperture, flat lighting and wall-to-wall colour are the secrets of success.

IN MOST SPECIES it's hard to tell the males and females apart from their patterns, although the boys tend to be slightly larger and more elongate than the girls.

We usually encounter them alone, but most live as part of a mated pair or a harem. The East Pacific species (Kings and Clarions) do form groups or loose schools, and a few species stay together in pairs 24-7 – French and grey angelfish of the Caribbean are classic examples.

Two angels are better than one and these provide great opportunities for wide angle pictures when we can get two of these large fish in close to the camera.

Angelfish are not especially timid, nor are they endlessly curious about divers, which can make them a frustratingly fleeting subject. They rarely offer up recurring opportunities that make quality imagery more possible. Keeping an eye out for behaviour is one of the best routes to unlocking repeatability.

An angelfish that is busy feeding, such as pecking at a sponge, will often be easy to approach, or may return again to feed once we've set up the shot.

Angels also often accompany foraging turtles and can be much more friendly when with their big reptilian buddy.

Most angelfish are very territorial and the only time you see their graceful halo slip is when they spy a relative and chase off down the reef to protect their patch.

I have definitely found them much, much easier to approach when I've spotted these disputes taking place. I've heard photographers talk in the past about taking a small mirror down to fool them and attract angelfish to their cameras, but haven't tried this myself.

Many juveniles have totally different patterns from the adults, which saves them from incurring the wrath of the grown-ups. Curiously quite a few species have very similar markings to each other as juveniles. Several act as cleaners when young, and perhaps these similar markings help client fish realise that they are friend and not food.

Shooting cleaning shots with a juvenile angelfish providing the service is definitely more interesting than taking the same shots with more common cleaner wrasse or gobies. Classic examples are juvenile French and grey

STARTER TIP

Angelfish aren't timid, nor are their especially social, but they certainly can't be pressured into posing for photographs. As with all fish, it is important we observe good field skills, which start with excellent buoyancy, trim, slow movements and relaxed breathing.

Never race towards a subject, stay as still as possible, breathe slowly and let the subject come to you.

Below: A majestic angelfish photographed with an open aperture to separate it from the corals.

Taken with a Nikon D4 and 105mm. Subal housing. 2 x Seacam strobes. 1/250th @ f/3.2. ISO 250.

Pictured: Rock beauty angelfish make tight circles as part of their courtship.

Taken with a Nikon D2x and 105mm. Subal housing. Subtronic strobes. 1/250th @ f/6.3, ISO 100.

Above: Angels are perfect hero fish, completing reef-scene compositions.

Taken with a Nikon D850 and Nikon 8-15mm. Subal housing. 2 x Seacam strobes. 1/100th @ f/14, ISO 400.

angelfish in the Caribbean and juvenile emperor angelfish in the Indo-Pacific.

A few adults provide cleaning services too, and their clients are usually large pelagic creatures. I've watched king angelfish clean hammerheads in the Galapagos, clarion angelfish service giant oceanic mantas in Socorro and emperor angelfish pick parasites off sunfish in Bali. The angels aren't the stars but they do add some stardust to these pictures of great ocean animals.

Dusk is perhaps the best time to shoot portraits of angels, because this is when courtship and mating usually occurs.

Pumped full of hormones, individual angelfish have other things on their mind and are much easier to approach than just a few hours earlier in the day.

They usually move to the outer edge of the territories along any drop-off for spawning. Courtship starts with larger males showing off to females, often circling tightly around the female, with colours and fins displayed to full effect.

MID-WATER TIP

Angels rarely stray from the reef – in fact they usually swim alongside or through it. It's usually a challenge to separate them from the background or frame them against the blue.

One option is to embrace this and time your shot when they swim in front of colourful invertebrate life. Another is to shoot a shallow depth of field to make them pop out.

In harem-living species such as the rock beauty, the male might be dashing back and forth visiting different females so I stick with one female, get set up and wait for him to come back over.

Mating happens in pairs, with the male nudging the anal fin of the female with his snout, often with the female's tail fluttering in his face, as the two fish swim up into the water column.

Once on this spawning rise the fish are pretty approachable and we have the chance of getting two individuals in the frame and to capture rarely photographed behaviour.

PROBABLY MY FAVOURITE way to shoot angelfish is also the hardest to do with reliability. The simple, strong colour patterns of angels make them a perfect focal point in our wide-angle compositions. They become the main character or "hero-fish" in scenic photos.

However, this is more easily said than done, because as easy as it is to imagine where we want our angelfish to stop and pose, they have a very different view on where they want to swim!

My typical approach when I spot a reasonably co-operative angelfish is rather lo-tech – it's simply to shoot first! When we try to plan a shot in detail it's likely that the angel will soon be gone, or never swim into the area. Instead, just shoot the reef in front, concentrating on keeping the angelfish off-centre and facing into the composition.

ADVANCED TIP

Reef scenes can be transformed by including a big, colourful angelfish as a focal point. You can't predict when the opportunity will occur, but it's important to react quickly because the fish will soon be on its way. Most scenery doesn't move, so if you see a chance with an angel, always stop what you're doing and focus on the fish!

Even a relatively average section of underwater scenery will be elevated into a memorable scene by a large, attention-grabbing fish, as long as it is balanced in the composition.

The photo above is such a shot. I took a series of images of this solo French angelfish as it cruised down the reef, and the pictures finally came together as the fish swam over more colourful reef at the edge of the wall, with my buddy Diane Hill completing the composition.

This was the same dive on which I shot the photo of Diane on the cover of the November 2019 issue of **DIVER**. Sadly the angelfish didn't stay in photo range long enough to include it in the cover shot – it was off on its graceful journey. Typical angelfish!

DOWNTIME

Lockdown might be easing, but while confined to diving virtually many of us have been surprised to learn just how much golden-oldie footage can be found online. STEVE WARREN points us towards inspiration from the sport's pioneers

IF IT WASN'T SO SERIOUS, Covid-19 might seem like a plot unleashed by a Bond villain, and it's already delayed the release of 007's latest outing, *No Time To Die*. It has also, at the time of writing, made going diving for UK enthusiasts problematic.

So for those who still have time to kill, what else can we do that's diving-related? As we all know the Internet provides a bounty of material to enlighten, educate, amuse. But I'm such a super-nerd that I should get a cape and Speedos with the **DIVER** insignia splashed across them.

Diving has an intriguing history and, while the original helmet-divers date back to the 1820s, most of the big breakthroughs in technology and the emergence of sport-diving occurred during the 20th century. This was after the invention of the movie-camera, so many milestones are well-documented and, in the 21st century, most of it can be found on YouTube.

Disney's **20,000 Leagues Under The Sea** from 1954 remains the classic movie of Jules Verne's prescient book of 1870, and is still a riveting family favourite. But it wasn't the first film version – that honour falls to a silent made in 1916.

Billed as "the first submarine photoplay ever filmed", it was shot using a hand-cranked camera operated by a cameraman sitting suspended from a boat in a flexible tube ending in a diving-bell.

As Nemo's divers hike across Bahamian seabeds, I found myself wondering if they were using oxygen rebreathers or just breathing from air trapped in their hardhats, because there are no air-hoses. A helmet-diver also sits inside the giant mechanical octopus, pulling control levers for the big fight scene. **YT SEARCH 20,000 Leagues Under the Sea (1916)**

Austrians Hans & Lotte Hass are generally held to have been the first to really engage a land-bound public with the undersea world on a grand scale. Through lecture tours, books and films, the Hasses thrilled audiences from 1939.

Unfit for military service, Hans continued to lead expeditions during the war, relying on oxygen rebreathers with which his team regularly pushed safe depth-limits to document marine-life encounters around the world.

The couple's books make fascinating reading, though some now remind us of just how fast we have pillaged the seas – who today would have thought that grey reef sharks were once common in parts of the Aegean? The books are available secondhand, although I struggled to find their films online. But you can see their 1951 documentary **Under the Red Sea**, **YT SEARCH Hass Diving in the Red See**

Hans lost interest in diving early on and was largely overshadowed by the greater showman Jacques-Yves Cousteau. Cousteau's reward? Worldwide fame, two Academy awards and a succession of primetime TV series that ran from the 1960s to the '80s. You'll find some early Cousteau films online at **YT SEARCH Cousteau – Early Films 1942-1960**

18m Deep documents a spearfishing trip to the French Mediterranean in 1942, when huge grouper could be found just offshore. **Shipwrecks**, made under German occupation is, I believe, his first ☛

documentary shot with the newly developed aqualung. **YT SEARCH Cousteau Épaves (Shipwrecks)**

And **Ten Fathoms Deep** from 1952 is a short, following a Cousteau diver on a single wreck dive. **YT SEARCH Cousteau Ten Fathoms Deep**.

The Silent World is also easy to find. **YT SEARCH Silent World** An Oscar-winner for best documentary, it was co-directed by Cousteau and Louis Malle, who later directed mainstream movies including the autobiographical *Au Revoir Les Enfants* and the Burt Lancaster vehicle *Atlantic City*.

The 1956 movie includes the discovery of the *Thistlegorm*, though it isn't always an easy watch – it reflects casual attitudes towards wildlife at the time, with the killing of a whale, massacres of sharks, dynamite-fishing and turtle-riding.

However, it's a fascinating insight into early expeditions made possible by the invention of the aqualung, and perhaps it's unfair to judge yesterday's travesties by today's standards, especially when so much cruelty to marine life continues, some of it, however unintentionally, inflicted by divers.

The film shares the title of Cousteau's most famous book, though it came after it. *The Silent World*, Cousteau's memoir of the development of the aqualung and his first expeditions aboard *Calypso*, belongs on your reading list. It was first published in 1953 and *National Geographic*, which sponsored and reported on many of Cousteau's explorations, produced a special 50th-anniversary edition that's worth looking out for.

Incidentally, Malle was diving on the wreck of the famed liner *Andrea Doria* a week after her sinking in 1956. Check out his newsreel footage made for cinema audiences. **YT SEARCH Andrea Doria One Week After Sinking**

Cousteau's follow up, another Academy Award winner for best documentary, was 1964's **World Without Sun**. The core of this movie involves his experiments with living under water in the Conshelf 2 habitat off Sudan.

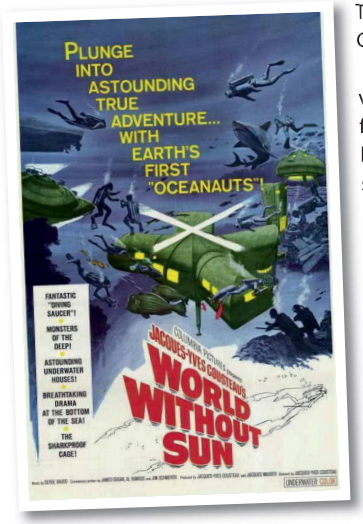
Many divers will have visited the abandoned hangar constructed for Denise, the expedition's miniature submarine. And, yes, the film predates any bans on smoking in the workplace. **YT SEARCH World Without Sun**


Cousteau set from his Britannic dives.

Ryan Spence curates a museum dedicated to Cousteau's exploits, based in Tacoma, USA. Along with original exhibits from *Calypso*, Ryan has also built replicas of Cousteau's signature yellow and black cylinder fairings, with their distinctive breastplates, from original moulds.

His website provides lots of images of his collection and details of some of the iconic equipment developed for the TV shows that did so much to popularise the sport around the world. **flashbackscuba.com**

The director of *Star Trek 11*, Nicholas Meyer, quipped that the best *Star Trek* movie was of course *Galaxy Quest*. Cousteau was affectionately spoofed by Wes Anderson in **The Life Aquatic with Steve Zissou**, an ensemble comedy starring Bill Murray, Angelica Huston, Jeff Goldblum and Willem Dafoe. There's lots of little in-jokes Cousteau fans will enjoy. **Netflix**



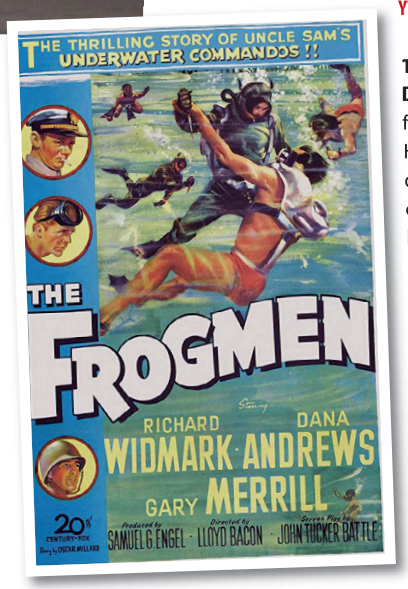
Periscope Films has a huge vault of vintage documentary films that it markets to the broadcast industry looking for stock footage to enhance history programmes. Thousands of titles cover genres ranging from medicine to aviation to the Cold War.

Some of the most interesting for divers include US Navy-made shorts such as an introduction to the Underwater Demolition Team, which became the SEALs. UDT swimmers went ahead of the D-Day landings to map and clear Nazi-laid obstructions off the Normandy beaches.

Subops: The US Navy's First Submersible Swimmers is introduced by Doug Fane, a UDT Commander, whose autobiography *The Naked Warriors* is a rollocking read.

Subops provides an intriguing insight into UDT training and operations, including entering and leaving submerged subs, which Fane did by squeezing into the torpedo tubes, trying out British one-man wet-subs and playing a musical triangle under water to see off the threat from behind the Iron Curtain.

For underwater photographers, there's a fascinating prologue with pioneer housing designer ER Fenimore Johnson, who joined the UDT to bring his unique filmic skills to the unit. **YT SEARCH Subops**



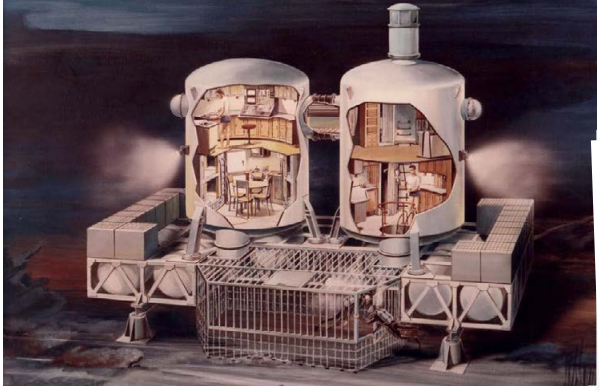
The Navy Frogmen: 1957 Underwater Demolition Team further follows the UDT through Hell Week, 30m free-ascent drills, closed- and open-circuit scuba training, hand-to-hand underwater combat and how to survive high-speed picks-ups from boats, which you surely don't learn on the Boat Diver speciality course. It requires a noose. **YT SEARCH Navy Frogmen – 1957**

A fictionalised account of one UDT unit's exploits in the Pacific during WW2 is **The Frogmen**, made in 1951 with the team's co-operation. Starring Richard Widmark, it shows one of its commanders in conflict with his men, and the diving setpieces are pretty entertaining. **YT SEARCH The Frogmen (1951)**

Another set of films tell the story of the American **Man in the Sea** programmes, ambitious projects to live under water in habitats such as *Sealab 1, 11* and *Tektite*.

In the 1960s and early '70s, living and working under water seemed a real possibility, a dream now sadly largely abandoned.

The Jules Verne Undersea Lodge in Florida is a refurbished habitat that now hosts overnight stays in a shallow lagoon for those wanting to savour the aquanaut experience. **YT SEARCH US Navy**



Sealab 1964; Story of Sealab II – Man in the Sea 2095

A funny footnote to history comes in the form of a phone call placed from President Lyndon B Johnson to Sealab II and astronaut Scott Carpenter, who was breathing helium at the time… **GOOGLE SEARCH Scott Carpenter Helium Phone Call**

Tektite 1 and 11 (*right*) saw a habitat placed 15m deep off the US Virgin islands to study human psychology and physiology, partly tied into the space programme to predict problems astronauts might face spending long periods in space and to try out solutions. Ecology missions were also completed. **YT SEARCH Tektite Habitat US Navy Saturation**

There's a fascinating interview with Laura FitzPatrick on the BBC's World Service radio show *Witness History*, who was one of the all-female team of Tektite aquanauts in 1970. **BBC Sounds SEARCH Nasa's Female Aquanauts**

Key to making these habitat dives possible was an understanding of saturation-diving. In the US Navy film **World of the Sea** Captain George Bond, the father of the technique, introduces his work and describes audacious mixed gas forays to 300m and beyond. **YT SEARCH World of the Sea US Navy**

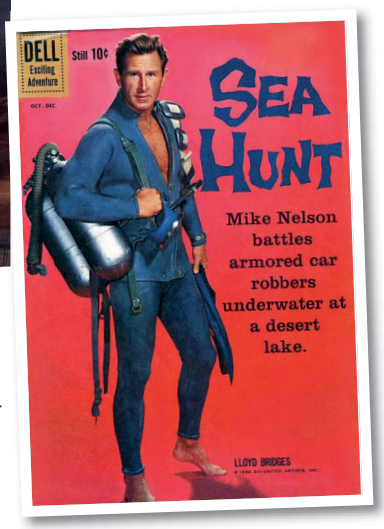
The **Old, Bold Divers Group**, set up by Keith Waugh, is a Facebook group with an active following that shares stories and pictures of diving exploits and kit, the only proviso being that it must be more than 20 years old.

There's a lot of friendly banter as members trade anecdotes about diving in homemade wetsuits before the advent of BCs and when regulators had two hoses. **FACEBOOK SEARCH Old, Bold Divers Group**

The personable Canadian Alec Peirce (*right*) began diving back in the 1950s and in **Vintage Scuba** he delights in showing off his collection of old diving kit and regaling viewers with stories of how well it worked – or didn't.

I'm always carried along on Alec's passion. Although I dive vintage kit, by the time I started diving the sport was well established, so I love hearing about the pioneering days from the guys who were in at the start. **YT SEARCH Alec Peirce Scuba**

Alec also holds what is probably the largest collection of **Sea Hunt** memorabilia in the world. This TV series starred Lloyd Bridges as Mike Nelson, an ex-US Navy frogman turned underwater explorer, scientist and detective.



The show first aired in America in 1958, ran to 155 episodes over three years and you can follow it on YouTube. **YT SEARCH Sea Hunt**

It's pure hokum and lots of fun to watch for its non-PC diving practices, outrageous plotlines and cavalier insertion of aquarium footage, such as substituting a pilot whale for an orca.

Sea Hunt created huge interest in learning to dive at the time and spawned a range of spin-off dive-gear. Alec Peirce is active in the occasional equipment rallies at which aficionados act out underwater knife fights with rubber blades, so watch a few of the episodes, then check out his **Sea Hunt Remembered** convention videos. **YT SEARCH Sea Hunt Remembered**

SHARK DIFFERENCES

ANTICIPATION... ADRENALINE RUSH... two feelings I get before any shark dive. On entering the water I'm thinking: where are the sharks? How long before I see a shark? It's inconceivable that I won't see a shark – that's the reason I'm here, after all!

While all shark dives generate many similar emotions and observations, they can also be quite different from each other, as I have discovered.

Over the past year I have travelled to Bimini and Tiger Beach in the Bahamas, and Guadalupe Island 200 miles off the Pacific coast of Mexico, along the way comparing and contrasting interactions with three of the oceans' largest and most revered apex predators – tiger, great hammerhead and great white sharks.

These destinations offer reliable opportunities to get up close to these magnificent creatures in water with great visibility. And none of them disappoint.

The first thing that strikes me is a similarity – I'm always in awe at the sheer size of these majestic giants.

This quickly becomes apparent at Tiger Beach, where it's not unusual for the first sharks you see to be Caribbean reef or lemon, which on any normal day would be cool enough.

But then a tiger enters the scene, usually within moments, and you get a sense of the awesome scale of the striped debutant that measures in at twice the length of the 2m lemon shark.

My mind resets its expectations to a new normal for the next few days. The same happens at Bimini, where nurse sharks are common.

The great hammerheads often take longer to arrive – in fact to conserve bottom-time, divers might choose to wait on the boat until the first sighting of the distinctive silhouette. Meanwhile, the motivated divemasters work to tempt in the angular giants with free snacks.

When the hammerheads show up (be prepared to wait an hour) the nurse sharks suddenly turn into a smaller, unloved distraction.

THE GUADALUPE ISLAND experience is different. There are no other sharks sharing the water with the great whites.

The first shark to show up, usually within 30 minutes, is a sub-adult male of perhaps less than 3m long – not bad, but not "great". But it doesn't take long for an adult female to show up and at more than 4m my expectations are soon satisfied.

The residents of each location are different subsets of their species. The Tiger Beach tigers

Done one shark-feeding dive, done them all? Definitely not! RICHARD CONDLYFFE has spent many hours diving with sharks and explores the similarities and differences he's experienced diving with tiger, great hammerheads and great whites…

Pictured: A tiger shark circles the feeder at Tiger Beach.

are all female, up to 4m or more in length. Some are pregnant, which adds considerable girth to their already impressive size.

The Bimini great hammerheads are mostly female, up to about 3.5m long.

In Guadalupe, the great whites are smaller sub-adult males, as well as adult females of which the longest I saw was about 4m.

A distinct difference between the Bahamas and Guadalupe experiences are the modes of protection. For the great whites, I'm in a cage, an obvious physical barrier that gives me a high degree of confidence when it comes to my personal protection.

In the Bahamas the mode of protection is my big camera dome-port. For those without large camera rigs a solid piece of PVC piping provides a vertical barrier, the alternative of choice.

My adrenaline factor with no cage is certainly higher and I find it somewhat addictive. However, my feeling of personal safety is equally high in each instance. I never feel threatened.

With no physical barrier, a detailed briefing on how to behave with the sharks and the procedures to follow is necessary and usually provided excellently by our divemasters.

This is particularly important for the tiger sharks, which can approach stealthily from behind, making buddy co-operation very important. The phrase "keep your head on a swivel" is emblazoned in my mind.

Another important part of safe tiger shark interaction is to make eye contact and not to retreat or appear to panic as they approach. Be confident and the shark will usually move away, often just when contact seems inevitable.

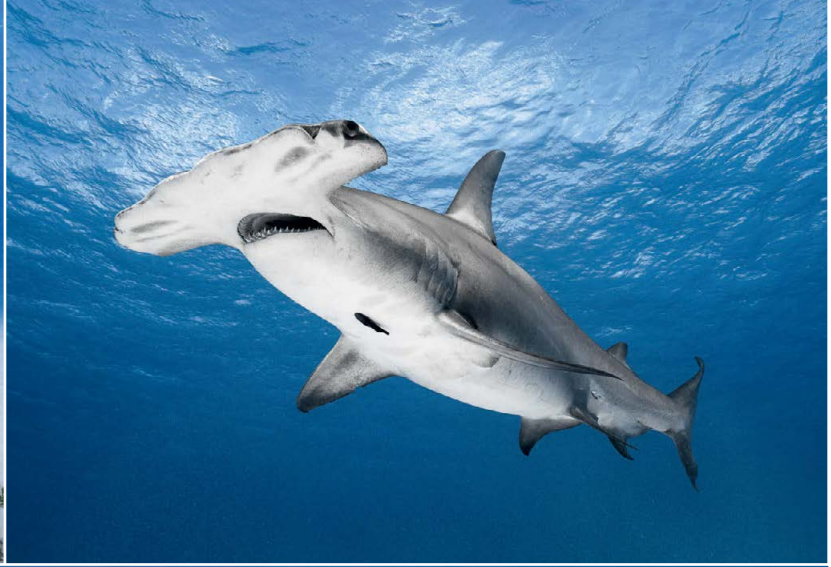
On occasion that contact is imminent, which is when you use your dome-port or piping to gently push the shark along its way as she starts her turn away from you.

When it comes to the great white cages the main advice is to make sure nothing is protruding from the cage, because the sharks might pass close by, or sometimes accidentally bump a cage.

Cage versus no-cage calls for different feeding procedures. In Tiger Beach and Bimini, the divemasters hand the approaching shark chunks of dead fish taken from a milk crate.

At Guadalupe Island on both the rear port and starboard corners of the boat, a "shark wrangler" holds a rope with a chunk of fish tied to the end.

They slap it against the water to attract the sharks' attention and, when one turns up,



"manage" the movement of the fish chunk on the surface to generate shark interaction.

Comparing the different mannerisms of each species is especially fascinating to me. I find myself building personality conclusions for each. Which is smartest? Which is most aggressive? Boldest? Most arrogant? Most confident? Most cautious?

When it comes to intelligence, observing great whites is particularly interesting. When a shark arrives near the boat it behaves as if this is a situation it hasn't experienced before, when in reality it probably has – the previous day!

Now you could argue that that's not very smart, but the learning process the great whites go through might change your mind.

The shark takes its time to survey the surroundings, for a few minutes circling just beneath the boat and around the cages that hang just below the surface.

When the initial survey is complete, it starts to make passes close to the bait, but never attempting a grab.

Once the surface is fully surveyed the shark starts making half-hearted attempts to grab the fish-chunk, which prove unsuccessful because the wrangler sees the shark coming and pulls the bait away from its jaws.

Once this has registered with the shark, it starts to hunt the bait with gradually steepening and faster ascents, leading to a higher success rate… and to partial breaches, with dramatic photographic opportunities!

Meanwhile, over in the Bahamas, the sharks are less cautious and do appear to remember the drill from the previous day.

Both the tigers and great hammerheads make beelines for the bait, but in quite different styles – the tigers moving slowly and deliberately, while the hammerheads display greater urgency, usually coming in faster to attempt to grab their prize.

I FIND THE PRESENCE each species conveys to be quite different. The tigers move relatively slowly, their bulk appearing to be a limiting factor to speed and agility, whereas in reality I think they're just being energy-efficient.

Their deliberate movements communicate confidence and perhaps a little arrogance, telling me "we own this reef" and, let's be honest, they do.

In Bimini, while their broad hammer and large dorsal fin make the great hammerheads look more awkward, they actually display far greater agility than the tigers or great whites. They twist and turn with considerable athleticism to position themselves for feeding.

I feel less intimidated by the hammerheads and, with their unique shape and movements, I find it harder to take them seriously!

The great whites, like the tigers, display a measured, deliberate swimming style, but in contrast to the tigers they display greater acceleration into the bait to increase their chances of a successful grab.

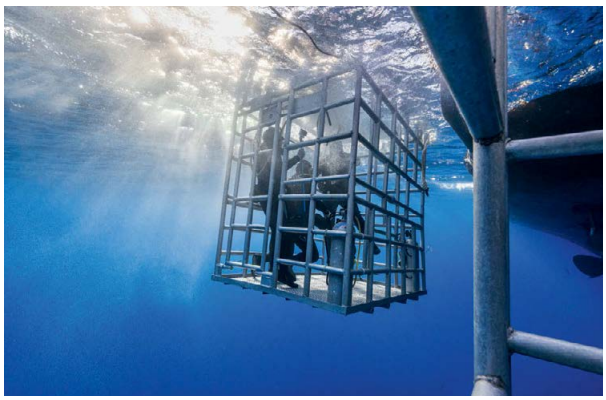
Above, from far left: A great hammerhead makes brief eye contact; another passes overhead; tiger shark rolls its eye back for protection and veers away at the last moment; a great white stretches for bait.

Left: Two tigers at Tiger Beach.

For me, the most inspiring feeling from these shark interactions comes from making eye contact. I find it particularly captivating with the tiger sharks, perhaps because there's no barrier between us and the contact can seem prolonged.

I know this shark could harm me if she wanted to, but eye contact makes me feel as if there's a level of understanding.

Now there might not be, but I want her to know how much respect I have and



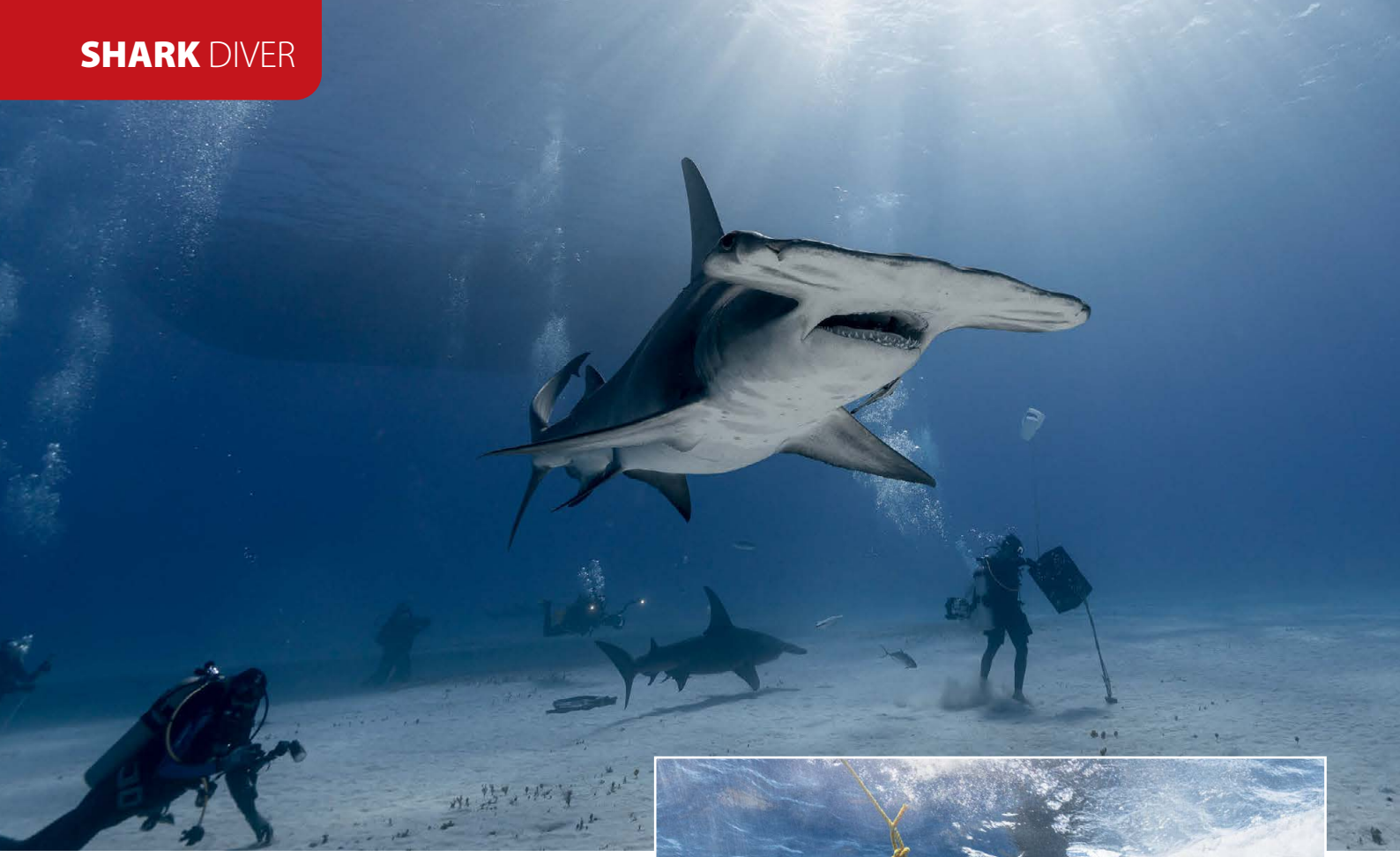
Above: White shark cage.

Below, from far left: Great white portrait; great white extending its jaw to grab bait; two great hammerheads; tiger shark below the liveaboard.

how happy I am to have this moment, and it's a great feeling.

When my eyes meet those of a great white I feel in awe at the animal's great size and myth. It's also a great feeling, but with less emotion. It's more of a fleeting glance as the shark passes the cage, and the eyes feel colder.

Perhaps the scars adorning the creature add a visual toughness that enhances that coldness? Maybe it's the presence of



the metal barrier that prevents the interaction from being more intimate?

As for the great hammerheads, I wish that eye contact was easier to create more connection to a shark that I admire, but Darwinism has made that challenging.

As the hammerhead swims its hammer moves from side to side, and no more than quick glances are afforded.

For photographers these experiences are first class. Fisheye or wide-angle rectilinear lenses are called for.

At Tiger Beach and Bimini, the potential for extreme close-up photography makes fisheye a great option. At Guadalupe Island a wide-angle rectilinear lens was often helpful because the Great Whites aren't usually as close, given the cage barrier.

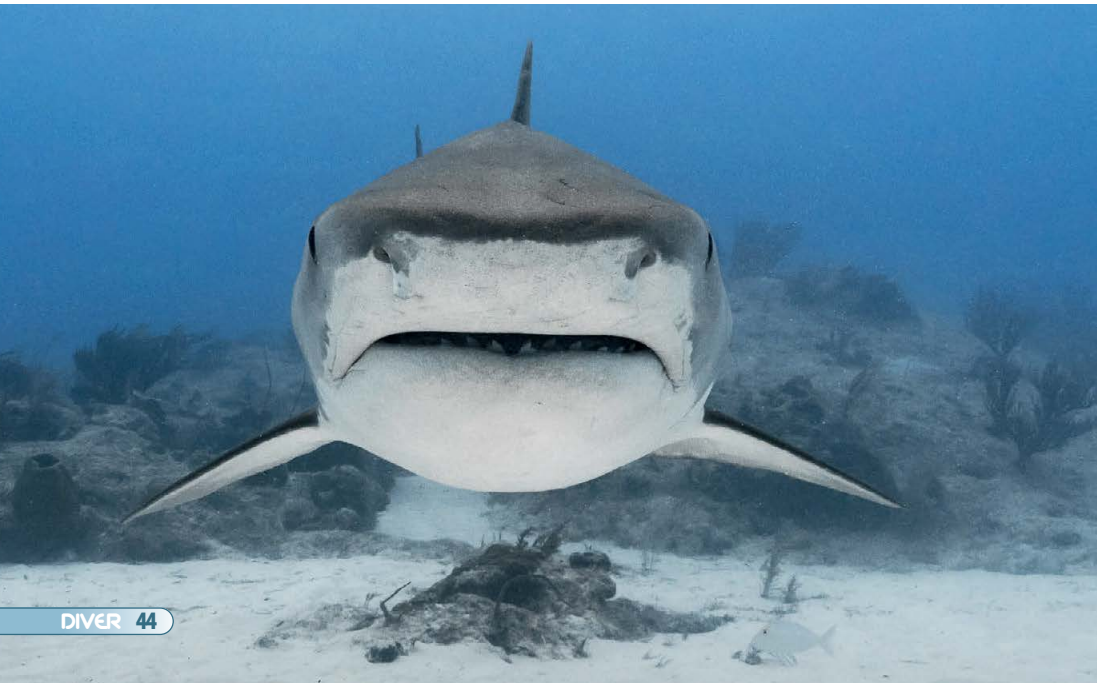
Consider leaving the strobes on the boat, certainly at Guadalupe where the surface cages are the way to go, and large strobe arms can be more of a hindrance than they're worth.

Put exposure into continuous mode for capturing more of the fast-moving action.

Sharks have survived for hundreds of millions of years, and as divers we're aware that their numbers are more threatened than ever before. I feel privileged to be able to visit these amazing creatures in their natural habitats.

Above, from top: Divers watch a great hammerhead feeding at Bimini; a great white grabs the bait.

Below: A tiger approaches.



While these three species have many distinct characteristics that generate different emotions in me, a common feeling is the need to preserve their species so that they can thrive for millions more years.

The opportunity to interact with them in the Bahamas and Guadalupe Island, where they are protected, only strengthens my belief of the importance of ensuring that these beautiful and often misunderstood creatures are allowed to thrive across their entire habitat.

Richard Condlyffe travelled to Tiger Beach and Bimini on the Dolphin Dream liveaboard out of West Palm Beach, Florida (itineraries from October-April, 24-28°C, sharkexpedition.com), and to Guadalupe Island on the Socorro Aggressor from Ensenada, Mexico (August-November, 20-22°C, aggressor.com). He says that both crews worked hard to ensure safe, exhilarating and memorable experiences.

The Little Mermaid

LOUISE TREWAVAS

THE EMERGENCY SERVICES call it "decompression leave". When you've been immersed in a major incident involving fatalities, you get a few free days to clear your head before returning to less pressurised work.

It's needed. Surrounded by death, you begin to see death everywhere.

During this pandemic I considered these rest-days more as a surface interval: time "out", before resuming. I suppose it struck me that way because my thoughts are focused around diving. I tend to see diving everywhere.

I always find diving – particularly technical diving – to be full of useful life lessons. Especially when it comes to managing your way through life-threatening situations.

The importance of self-rescue in technical diving is key. The mental strength to unpick whatever issue you might be having under water, and the stamina to work your way through it is an essential skill. It's one that you work through over and over.

Where you can't self-rescue, the drill for signalling and accepting a rescue from someone else is performed repeatedly.

I was so sad to hear of the death of technical diver Helen Rider. She put diving and divers at the centre of her world, and she always had a smile for everyone. The news that she had taken her own life is hard to bear. Harder still because she was so capable, so aware.

I can only imagine how dreadful she must have been feeling to be beyond self-rescue. Beyond feeling able to signal for help and accept assistance from others. But of course these are realistic options only if you still possess the will to live.

SOME PEOPLE THINK THAT the difference between recreational and technical diving is about equipment. It's actually about commitment.

You embark on a technical dive knowing that "bailing out" is no simple matter. You can't just swim to the surface. It could be an hour away. You can't just grab an octopus off another diver and ascend – neither of you might be able to go up without decompressing. The gas you're breathing might be toxic at depth.

So when you enter the water you're committed; you take everything you need, and only what you need, to come back alive and safe. All that equipment is a pain. You endure carrying those bail-out cylinders and running those back-up plans. It's a commitment. You love it.

As I dwelt on all of this I was drawn to re-read Hans Christian Andersen's *The Little Mermaid* – the original Danish version.

It's true Scandi-*noir*; a bleak tale of tragic over-commitment. No singing crabs in this one.

Rising from the seabed to gaze at the world above, the Little Mermaid is smitten by a prince. She gives up her voice and willingly undergoes great pain and hardship to come to the surface. She needs to be close to the prince, hoping to win his heart forever because this is her only way to stay alive.

The prince finds her lovely, but is unaware of her sacrifice or situation. She has no words to explain. Ultimately he falls in love with someone else, not knowing that this will seal her fate. Heartbroken, she chooses to return to the sea and dissolves into sea foam.

I don't know about you, but I've always found sea foam particularly beautiful.

IN 5000-YEAR-OLD MINES

The mines of Greece's Lavreotiki region have been closed for more than 40 years – but they originated an incredible five millennia ago. ERIKOS KRANIDIOTIS and friends have been carrying out the first underwater explorations

MARY FOTIADI

THE LAVRION MINES had been closed for more than 40 years when we decided that we wanted to explore their flooded chambers, shafts and tunnels, which extend for hundreds of kilometres beneath the soil of Attica. The history of these mines dates back to around 3000 BC and the Bronze Age.

The Lavreotiki region of Greece south of Athens contains at least 250 kinds of ore and mineral, though only a few in sufficiently large quantities to warrant industrial exploitation. The exceptions were argentiferous lead – galenite (lead sulphide) and cerusite (lead carbonate) – plus copper and iron ore. During the prehistoric period it was copper that attracted miners, while in the more recent past, it was silver and lead.

The earliest miners must have observed the geological formations caused by violent episodes from the Earth's distant past and, with a combination of knowledge and luck, succeeded in locating and extracting many of these minerals. Their work led to the establishment of the ancient world's first industrial city – Thorikos.

From the 6th century BC the mining gradually intensified, reaching its peak during Greece's Classical period (5th-4th century BC) at the time of the Athenian Republic.

After that it declined, and the area would fall into oblivion for centuries.

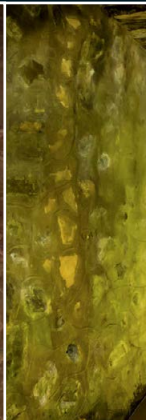
It was only in the mid-19th century

Above: Preparing to explore a sump.

Below, from left: The entrance to Hilarion; Erikos, Vasilis, Stelios and Mary Fotiadi prepare for an arduous descent to the sump.

TRIFONAS EGGLEZOS

TRIFONAS EGGLEZOS



that two men, Greek mineralogist Andreas Kordellas and Italian mine-owner Gianbattista Serpieri, realised the potential value of the forgotten Lavrion mines. Much of the ore, though it would have been known to the ancient miners, remained untouched.

The Hellenic Lavrion Metallurgical Company was established in 1864 and, with extensive installations at Lavrion port, produced silver lead from slag. Extraction continued until the late 1970s, when Greece's de-industrialisation put an abrupt end to the workings.

The pumps were shut off and ground-water flooded the deeper tunnels, preserving much of the workings intact.

Above, from top: Dry passage at Hilarion; underwater section showing the old railway tracks.

Below, from left: Gate at Mine 80; preparing to explore a submerged section of the mine.

A GROUP OF DRY-CAVERS had visited one of these mines, Hilarion at Agios Konstantinos, a village four miles from modern Lavrion, and they told us that they had seen flooded chambers there.

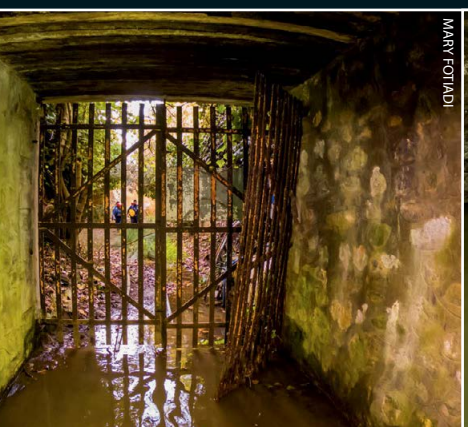
Now our Addicted2H2O team is known in the Greek diving community for cave-diving and more recently for deep wreck exploration, but there is no tradition of mine-diving in Greece.

Elsewhere in the world many mine sites can be found, some with impressive facilities to support recreational diving and exploratory dives.

In Greece, however, even the cave- and deep-wreck diving communities are limited in scope, so a historical mine presented us with a new challenge.

Local explorers knew nothing about the depth or length of these submerged mine workings, or what artefacts might remain there. We knew we wanted to be the first to film and survey them.

Soon after hearing from the dry-cavers, in May last year, my dive-buddy Stelios Stamaktakis and I met two of them at the Hilarion mine, at the heart of the ancient complex.


MARY FOTIADI


MARY FOTIADI

We entered without realising just how far in and down it would be to the sump. We were wearing our drysuits and hauling our tanks, the cavers helping us with the rest of our diving equipment.

We had to abandon the attempt after we had gone about 150m – it was clear that we would need to go in without drysuits and get further assistance to manage all the gear.

A week later we were back at the mine, wearing wetsuits this time and with another helper in tow. We had to descend some 130m below ground level and 500m in total distance from the entrance.

The route was slippery and still difficult, but we managed to reach the sump this time and prepared our gear, eager to see what we would find.

Looking down beneath the surface with our lights we could see three tunnels at the bottom of the flooded chamber. We carried out our final buddy-checks and descended.

Above and left: Submerged tunnels in Mine 50.

Bottom left: Access and movement was more difficult in Mine 80.

The mine appeared very well preserved, with strong supporting walls and timber beams that had been in place since the 1970s or earlier. We entered one of the tunnels but after some 20m were confronted by what appeared to be a stone wall and a semi-collapsed gallery, so we headed back to try another tunnel.

This one would turn out to be the central route, and the scene changed completely in there. We could see intact railway tracks, used by the miners to transport the excavated ore on wagons.

Passing through one submerged gallery we reached another, larger one with a passage supported by timber beams. The dive had gone well, but as this was intended only as the first in a series, we decided to turn back at this point. We were also being cautious in case our bubbles and finstrokes had reduced visibility behind us.

Back at the sump entrance the excitement must have been written on our faces as we described what we had seen. And at the surface we met Vassilis Stergiou, a local mine-explorer. Thrilled about the project, he shared interesting information about the mines and soon become an invaluable team-member.

WE MOVED ON to the Plaka region, the second-largest mine complex in the area, with extensive workings dating back to the 19th century. Its tunnels and shafts extend more than 100m deep, with the deepest more than 300m down.

We fully explored the underwater chambers at two of these mines, Adami No 2 and Mine 145. Numbering tunnels had been a useful tool for the mining company as it registered new sites.

An extensive working was the many-branched Central Mine Tunnel 80, which had its own power station to provide electricity and functioned mainly in the 1950s. It was abandoned because of an influx of water, leaving heavy machinery and wagons that can still be seen.

Especially in its lower section access and movement proved very difficult, especially after the first 500m. Erosion caused by the humidity was extensive.

Stelios slipped during a difficult part of the descent, and it was a miracle that he escaped without serious injury.

At the lowest level, another surprise awaited us. Vasilis, Maria and Kyriaki, three of the support team, had visited the mine a few weeks earlier to evaluate the dry section. But now, at the sump, the groundwater was as much as a metre lower than it had been earlier, revealing

MARY FOTIADI

two previously hidden flooded chambers.

As Stelios and I descended the silt was so bad that we had to feel our way to find the first chamber, but after 20m it cleared and we were able to push further inside the mine. As we progressed our bubbles caused fairly large chunks of gravel and silt to rain down on us throughout most of the dive.

We pushed as far as we could before returning to explore the other flooded section, which turned out to offer two different routes.

This part of the submerged gallery had strong support walls, but once again poor visibility meant that we had to feel our way through many parts of the dive, and we also managed to get tangled in the line on occasions.

It's in these extreme situations that one appreciates the importance of good training and experience accumulated from previous dives.

OUR QUEST continued with a survey of Mine 23 of the Plaka region, and ended in a tiny, semi-collapsed submerged chamber with an opening too small to allow further progress.

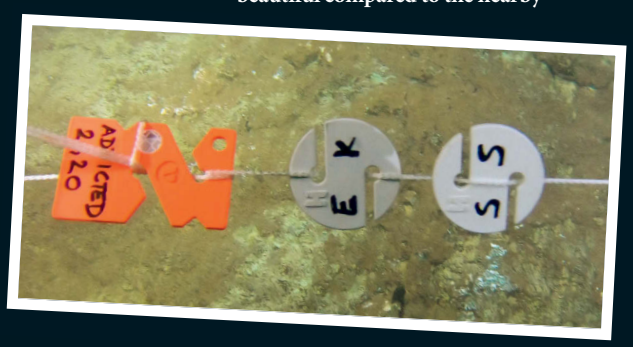
Then there was Mine 50, part of the same ancient Hilarion complex that we had visited on our first exploratory dive. It had been reopened in the 1870s following discovery of the ancient Hilarion-Berezekos well.

Above: Getting underway in Mine 80.

This well, 37m deep and 1.3 by 1.3m square, had been cut into the slate and marble rock in ancient times to ventilate the galleries. The need to keep finding new minerals had resulted in further deepening of the ancient well and later its galleries to create Hilarion.

Both Mine 50 and the Hilarion mine revealed remnants of historical activity. Railway track, timber structures and small artefacts such as an iron mining bucket had been left in place.

The dry part of Mine 50 was very beautiful compared to the nearby Hilarion mine. Because of the high humidity, especially near the flooded section, metal and metal-oxide formations had created a colourful spectacle for the visitor, with aragonite, copper hydroxides and malachite just some of the many minerals found in the gallery.



The flooded area was not that big but it was particularly beautiful. We reached the end of the gallery within 60m and found, to its right, a second much smaller gallery that ended in a small chamber. We explored the area thoroughly.

Hilarion is very promising and remains partly unexplored. But under the guidance of field archaeologist Maria Fotiadi and mines expert Vasilis we have now explored six Lavrion mine sites.

Every time we venture into this vast complex of tunnels we encounter difficulties, but that is the beauty of exploration. You never know what awaits around any corner.

With the support of the Xdeep Exploration Programme we plan to continue diving, filming and researching – and to present the results at TekDive USA 2021. Find out more at addicted2h2o.com/mine-exploration

SHOOTING FROM **THE HIP**

It might sound crazy, but not looking through your camera's viewfinder or LCD screen as you take photos might be your next step to creating better underwater imagery, says HENLEY SPIERS

THESE DAYS I FIND MYSELF shooting the majority of my wide-angle photos from the hip, and have become a firm believer that the benefits vastly outweigh the downsides when deployed in the right type of situation.

But first, the elephant in the room – yes, it's true, by shooting from the hip you forfeit a certain degree of control over the composition of your imagery and inevitably will make some mistakes, especially at first.

The phrase originates from a gun-fighting technique used by American cowboys, whereby you use your weapon without removing it from the holster, thereby pulling the trigger faster but with less accuracy.

However, if you commit to practising, and work through the initial errors and frustrations that inevitably accompany any new technique, you can reduce those compositional errors to a minimum.

For a start, the extremely wide-angle lenses we use for underwater photography make it easier to capture everything in the frame (note: shooting from the hip is not advised for macro photography).

With just a few dives spent testing the technique and reviewing the resulting images, you will rapidly develop the hand-eye coordination needed to orient the camera reliably to shoot the scene in front of you. It will never be a 100% hit-rate, but the imagery you are now creating should be stronger. This is why:

The golden rule of underwater photography is "get closer", and shooting from the hip allows you to do exactly that.

Wherever you are in the water column, and no matter how fast and stealthy a swimmer you might be, extending your arms and camera out will always increase your proximity to the scene.

When shooting through water with wide-angle lenses, that extra half-metre gained can make all the difference.

Less water between you and your subject means more contrast and clarity in the final image.

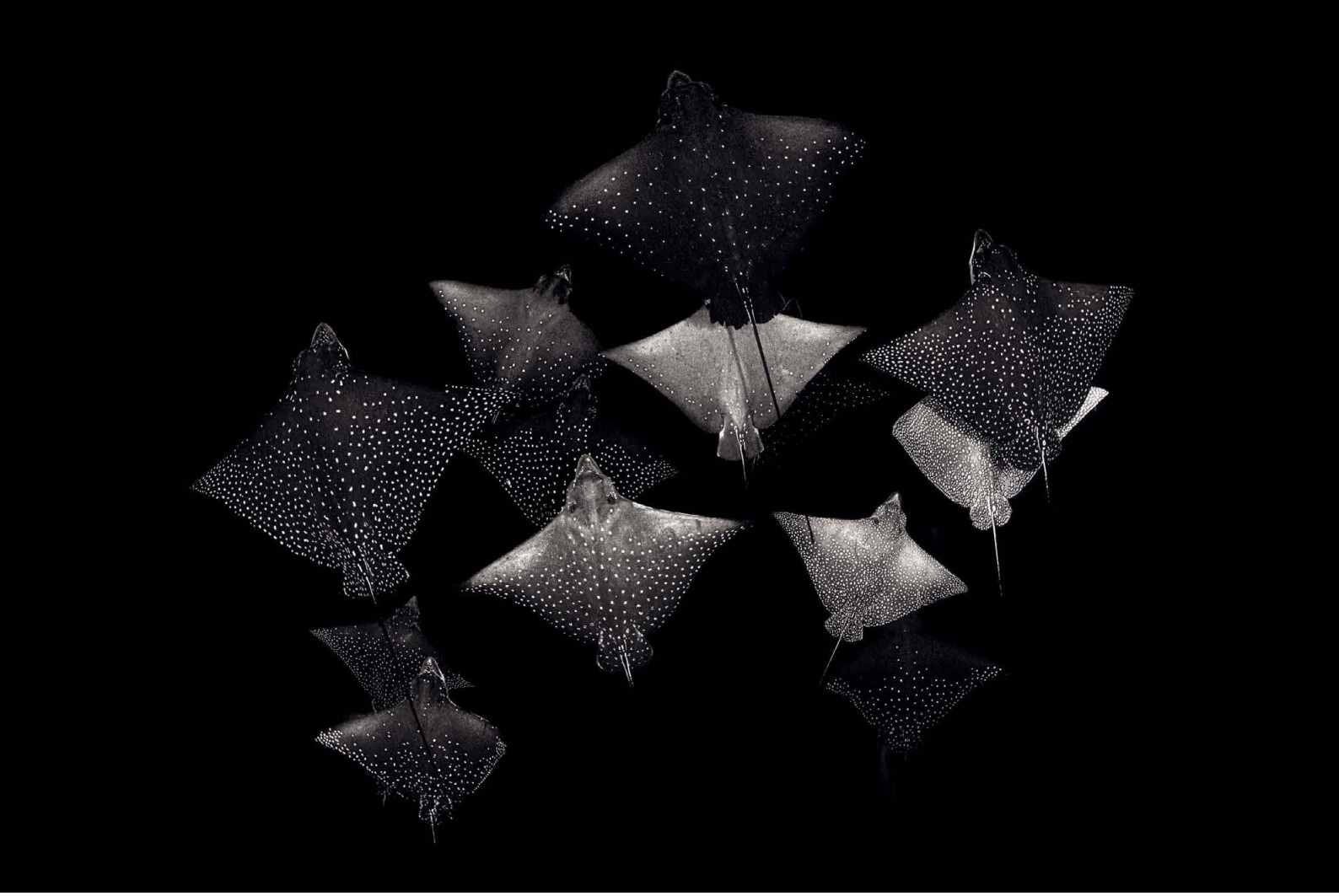
Remember, huge telezoom lenses are of no use to us underwater wildlife photographers because they will just result in a blurry, blue photo. We have to be extremely close to what we're shooting, and this is both the privilege and challenge of the medium.

As a result, we tend to use fish-eye

Above: Bull sharks.

Below: Duelling sailfins.

Left: Barnacled turtle.



or rectilinear wide-angle lenses with a very broad perspective, and the distortion from these mean that a subject just a couple of metres away can look small in the frame. Getting closer helps to fix all of that, and as a result also tends to produce more compelling photos.

Shooting from the hip pushes you into greater intimacy with your subjects, often leading to stronger imagery than if you had the camera positioned at your eye, for both technical and artistic reasons.

Above: Constellation of eagle rays.

Below: Turtle and friends.

The silver rule of underwater photography is to get lower. Things tend to look more impressive in frames with a slight upward angle, one that also serves to illustrate our admiration for these animals and environments.

Shooting from the hip makes it easier and quicker to unlock an upward angle by photographing the scene from lower down. On a busy reef, shooting from the hip by lowering your housing is also an effective way to get a shot in a tight space without causing damage to the surrounding structures.

Now rules are made to be broken. Sometimes the traditional upward angle does not tell the best story. Even then, shooting from the hip allows us to test and shoot unconventional angles with greater comfort and effectiveness.

For instance, as schooling spotted eagle rays passed by on a dive in the Maldives, I visualised an image looking straight down onto them, highlighting their shape and unique spotting patterns.

Struggling to keep up, even when swimming at full pelt, it was only by holding my housing out at a perpendicular angle to the rays that I could achieve the image in my mind's eye.

A FREQUENT COMMENT MADE by non-shooting divers is that we underwater photographers have lost sight of enjoying the experience and encounters under water, because we are too consumed with getting "the shot".

Before I ever picked up a camera, it was an opinion that I shared, laughing as colleagues exchanged stories of the underwater photographer who had dived the same spot for three days running as he waited for octopus eggs to hatch (something that doesn't seem so funny or unreasonable now!).

Even today, I will admit that viewing a scene through a viewfinder or small LCD screen is not the same as enjoying it

purely with your eyes. People might level the criticism that shooting from the hip is like shooting with your eyes closed, but I would argue that in a sense I am actually capturing images with my eyes wider open than before.

Shooting from the hip enables me to be more in the moment, with my camera as an extension of my eyes and brain.

Looking over the top of the housing, I can still enjoy the sheer beauty of the underwater world and have moments that transcend photography.

I do believe that emotion transmits to art, and so this does benefit my photography too, although it is difficult to quantify this aspect!

I see a clear advantage in terms of capturing the peak of the action by shooting from the hip, because monitoring the rapid movements and behaviours of aquatic life can be tricky through a viewfinder.

Shooting from the hip and observing over the top of my housing, I can more easily track the action, moving my camera along with it, ready to pull the trigger when I feel the decisive instant coming.

Shooting from the hip might seem counterintuitive, but it's a tool I would highly recommend adding to your underwater photography skill-set.

It can have many applications, but especially thrives when photographing fast-moving big animals.

To optimise your chances of success, make sure that your camera is set to continuous shooting, and don't be afraid to hold that trigger down.

Go ahead and indulge your inner cowboy, step away from your comfort zone and give shooting from the hip a try on your next dive.

Above left, from top: Sea-lion pup; sea-lion roar.

Above: A marlin strikes.

Below: A striped marlin.

Below left: Torpedo ray.

GET THE MOST OUT OF DRIFT DIVING

Go with the flow is the obvious advice, but SIMON PRIDMORE says that a little more knowledge can work wonders for confidence. This article first appeared in 2016.

"THIS ISN'T DIVING, it's flying!" were the first words out of her mouth as she removed her regulator, eyes still wide and heart still pumping after an adrenaline-fuelled ride along a kilometre or more of Bali's north-eastern coastline.

She had been carried along across a seabed teeming with life by the waters of the Indonesian Throughflow flooding the Lombok Strait on their way from the Pacific to the Indian Ocean.

This is drift-diving, letting the prevailing ocean current take command of the direction and speed of your dive.

The prospect of diving when a current is running is often a major source of diver anxiety. This concern is understandable, as a current puts the ocean firmly in charge, and many of us feel ill at ease when we are not in control of what is happening to us.

However, with the right skills and a little experience, dives when a current is running can be some of the best of your life.

WHERE AND WHY?

The places where you will typically encounter current while scuba-diving include reef walls parallel to the shore, exposed and submerged seamounts in channels between islands, and passages through fringing reefs.

Quite apart from the excitement, the main reason you want to dive in places like this when there is a strong current is the fish! As water movement through channels and reef passages increases, everything comes in from the blue.

Huge schools start to congregate, clinging together close to reef walls and mid-ocean pinnacles for shelter. Then predators come in to feed on them.

Seascapes that are quiet and relatively lifeless at times of calm water can turn into phenomenal action-filled aquatic circuses when the current picks up.

Above: Big fish huddling together, sheltering from the flow.

CURRENT SIGNS

From the surface, the tell-tale signs of a strong current are whirlpools interspersed with suspicious patches of calm. A wavy line of calmer-than-usual water running parallel to the coast is a good indication that there is a current running along the shore.

Under water in the tropics, you know that a site is current-swept if there are plenty of gorgonian fans and sea whips there. The more water that moves past these corals and brings them nourishment, the larger they grow.


GARRY BEVAN

If you see them permanently bent like trees in a high wind, you know that currents there are often very strong.

GOING WITH THE FLOW

On a drift-dive, the best advice is to go with the flow, resist the instinctive urge to use your fins for anything more than balance, tuck your arms in and enjoy the ride.

The ability to anticipate, quick reactions and good control of your buoyancy and positioning in the water are useful qualities if you want to stay on course and avoid damaging either yourself or the reef.

A good drift-diver needs to be something of a slalom skier and know how to adjust speed and turn smoothly.

Make yourself as streamlined as possible and secure and tuck in all hoses and accessories, because you will be moving fast close to an uneven surface and you don't want anything to get caught up as you pass.

Wear a full-length wetsuit with neoprene on your arms and legs to protect yourself from harm if you do brush against anything.

FOLLOW THE EXPERTS

To get the best idea of how the current is running, look at the fish. After all, they are the experts. When there is no current, the fish, large and small, will be milling around all over the place.

In a mild current they will all be facing the same way, into the current, and the stronger the current becomes the closer to the reef they will go.

As the current increases in strength the little fish will be spread out flat and close to the coral, waving their tails like crazy to stay in position.

When it gets really strong they will be down in and among the coral structures, and even the big fish will be hovering very close to the reef.

If you want to take a break from the current during a drift-dive, use these big fish as your guide. You will find them behind large rocks or outcrops where they can shelter from the flow.

If you are a photographer, this is your opportunity to get up close, as they will be reluctant to move out of their hiding-place.

STAYING STILL

When you have found a hotspot on the reef or wall where there is lots of action, you will want to stick around and not allow the current to carry you away immediately. So you need to find a way of staying in place.

Finning like crazy against the current will tire you out quickly. Instead, you can grab hold of a solid bit of rock; first making sure that it really is a rock or, if you have one, you can deploy your reef anchor, also known as a current hook.

A reef anchor normally consists of one or two lengths of cord passed through the eye of a blunt-ended curved piece of stainless steel that looks like a large fishing-hook. A clip is attached to the other end of each cord.

The idea is that you wedge the hook into a crevice in a reef, snap the clip(s) on to your BC's D-ring(s) and let go so that you can just hang in the current, held in place by the anchor, effortlessly enjoying the view.

Don't be discouraged if you find it difficult at first to find your balance. It may take a little practice over a few dives for you to become comfortable with the technique.


TOM COLLIER

Above: From the surface, the tell-tale signs of a strong current are whirlpools interspersed with suspicious patches of calm.

Below left: Reef anchor in use.

GOING AGAINST THE FLOW

Nobody enjoys swimming against a current. It saps your energy, increases your breathing rate, generates stress and is an experience best avoided.

However, sometimes you find yourself having to do it, at least in short bursts, as marine topography is not all straight lines and smooth curves. The reef line is made up of outcroppings, ridges and canyons that can deflect and reroute the current in unexpected directions.

There are techniques to make swimming against a current a little easier when it has to be done. Along a wall, stay close to the rock and use the contours to shelter you from the main thrust of the current wherever possible.

On a rocky seabed, you can use a cave-diving technique called "pull and glide", reaching forward from stone to stone and using a single fin-kick to power each move.

Over sand, you can use a similar technique and walk with your fingers to help you sustain momentum and stop yourself going backwards.

DOWNDRAUGHTS AND UPWELLINGS

Just the mention of a downcurrent is enough to inspire fear in many divers, as they visualise themselves getting caught by an irresistible force that drags them into the abyss with no opportunity for escape.

The natural response when confronted with a situation like this where you feel out of control is to panic, but there is no need. Normally, downdraughts or downcurrents are localised phenomena that occur along reef walls: think of them as waterfalls in the sea.

When you encounter one, the first thing to do is get out of the flow by moving closer in to the wall so that its contours offer you shelter.

Once out of the stream, relax, exhale, take a few deep full breaths, check your air supply, depth and decompression status, look around you and plan.

Look to see where the big fish are hiding, or if there is a place where the sea-whips are not waving around. It is not a good idea to fight a downcurrent. It is a struggle you cannot win.

Right: Reef anchor *aka* a current hook – the term reef hook is used less these days.

GARRY BEVAN

Read more from Simon Pridmore in:

Scuba Confidential – An Insider's Guide to Becoming a Better Diver

Scuba Professional – Insights into Sport Diver Training & Operations

Scuba Fundamental – Start Diving the Right Way

Scuba Physiological – Think You Know All About Scuba Medicine? Think Again!

Scuba Exceptional – Become the Best Diver You Can Be

All are available on Amazon in a variety of formats.

The oft-quoted tactic of inflating your BC to counteract its efforts to carry you down is potentially dangerous, because the current might suddenly release you from its hold and you will find yourself on a runaway ascent to the surface – which will do you much more harm than the current could do.

Unless you have spotted a place further along the wall that seems calm, usually the best advice is to swim laterally out away from the reef towards the blue.

If you find yourself being carried a little deeper initially, stay calm and keep swimming. Before long, you will emerge from the pull of the downcurrent and can return to a calmer section of the wall or begin your ascent.

Think of upwellings as reverse downcurrents. The same advice applies. First move into the wall out of the flow, relax, think, observe and act calmly.

DON'T GET CARRIED AWAY

Because drift-dives can carry divers over long distances, loss at sea is a real risk, and it is essential that you choose the right operation with which to dive and are equipped to make it as easy as possible for the boat crew to find you at the end of your dive.

GOIN' BACK

Divers like BRANDI MUELLER are drawn back to Roatan in the eastern Caribbean again and again, and if you're wondering why, here's the answer

THERE IS SOMETHING comforting about returning to a place. There is familiarity and the comfort of already knowing the routine and what to expect. Having made a yearly journey to Roatan, Honduras for more than five years, I love arriving back at Turquoise Bay Resort and seeing faces I recognise.

It's charming to be met with kind smiles and "welcome backs" from resort staff and dive-crew. But it's not just the lovely atmosphere and great service that keeps me returning. The diving provides everything I want from my holiday, including healthy reefs with lots of fish, fun underwater caverns and structures, as well as sharks and wrecks.

There's plenty to photograph, and with each trip I get better at capturing images of the destination (even though no two dives are ever the same.)

When I first started diving in Roatan I was most surprised by the caverns and the unique underwater topography that has created phenomenal swim-throughs.

I recall my first dive at the famous Mary's Place, which was like diving through a canyon. Entering through a slot in one area there were large walls on either side, wide enough for only one person in most places. There would be some ascending and descending needed to continue the way through.

Sponges and coral jutted out from the walls to create colourful navigational hazards. It was like an enjoyable game of dodging tube sponges and black-coral bushes while paying close attention to fin-kicks to be sure not to damage

anything behind, with fish also swimming through the space.

It gave me the feeling of trying to move through 1960s bead curtains without touching the beads.

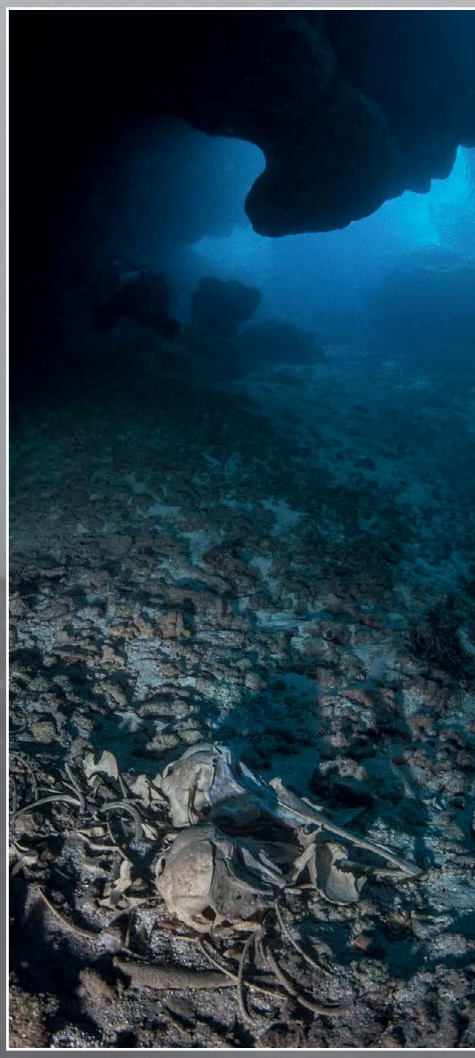
It wasn't until my second trip that I visited Dolphin's Den, a shallow cavern with the deepest point at around 10m.

The story goes that the dive-site got its name from dolphin bones often found inside, as if the dolphins made their way to this beautiful cathedral-like cavern, which can be packed solid with tiny glittering baitfish, at the end of their lives. As with many dive fables I never quite believed the story (but liked the idea of it.)

Back in Roatan last autumn, our dive-guide gave the site briefing I had heard many times before, and said that we could see dolphin bones inside.

I smirked a bit and made some comment along the lines of: "Yeah right, and I bet we'll see a whale shark in there too," but he said that there really were bones in the cavern. He didn't know how they had got there, but it had happened a few months before after a storm.

I was still suspicious, and though we did find the dolphin bones inside the cavern I remained that way –but they were great for photos.



Pictured: Divers on the *Odyssey* wreck.

Above right: Dolphin skeletons in Dolphin's Den.

Right: Peacock flounder.

THERE ARE AREAS of Dolphin's Den where light-beams dance on the walls and floor, and once those beams would have lit up millions of glassfish, but this trip was later in the year and the glassfish were already gone.

We found a few green moray eels with their heads protruding from gaps in the rocks, as well as crabs and lobsters that scurried when we shone our torches on their dark hiding spots.

It's possible to swim the length of the cavern, starting at the entrance on one side closest to shore and exiting near the drop-off wall on the opposite side, heading towards open ocean.

Spending a few minutes swimming close to the wall we saw a few juvenile spotted drums and a lettuce sea-slug before turning to head back into the cavern to exit and return to the boat.

The macro marvels of Roatan are abundant if one looks hard enough. Having dived Dolphin's Den many times in the past I decided to spend one dive outside the cavern with my nose in the seagrass. The permanent boat-mooring is surrounded by seagrass and the cavern is a five-minute swim away.

Even while swimming quickly over the area to get to the cavern I had seen interesting tiny life before, but had never slowed down to check it out (and there's nothing worse than having a fisheye lens on the camera and finding a pipehorse.)

As everyone else took off in a hurry to spend as much time in the cavern as possible, I stayed right under the boat, slowly examining the seagrass bed as it swayed slowly from side to side.

The mesmerising movement entranced me, until I noticed something moving outside the normal flow. I got closer. A juvenile slender filefish had been trying to blend in perfectly with




the seagrass, swimming with the same motion, but had got out of sync for a moment, and I had spotted him.

After a few minutes spent trying to telepathically tell the filefish to stop moving so that I could get a photo, I continued scanning the seagrass for hidden marine life.

Also giving up his camouflaged hiding spot, a peacock flounder glided over the area and stopped, blending in once again. These funny-looking fish make me smile, their sideways face like a Picasso painting.

Getting low, I took my photo from an angle directly at the flounder's face. It would never look at me with both eyes, only one. The other was always scanning for predators behind it.

In some spots it was more sandy than grassy. A tiny female bluethroat pike blenny looked up from the sand.

It seemed as if only minutes had passed, but an hour had gone by and the other divers were returning to the boat.

There is always so much to see under water, and so little time.

ANOTHER FAVOURITE canyon-like dive site nearby is Underground. Large rock walls rise up from the sand almost to the surface, but create pathways for divers like a maze.

Much of the diving around Roatan is calming, easy and peaceful. Turtle and eagle rays slowly swim past divers without paying any attention.

Purple seafans sway back and forth,

Top, from left: Female bluethroat pike-blenny; hawksbill turtle; juvenile slender filefish.

Above: On a shark dive at Cara Cara.

Below, from left: View of the reef; inside *El Aguila*; bow section and mast of the wreck.

and if there is any current it's usually mild and only helps to make a dive even more relaxing, with even kicking unnecessary.

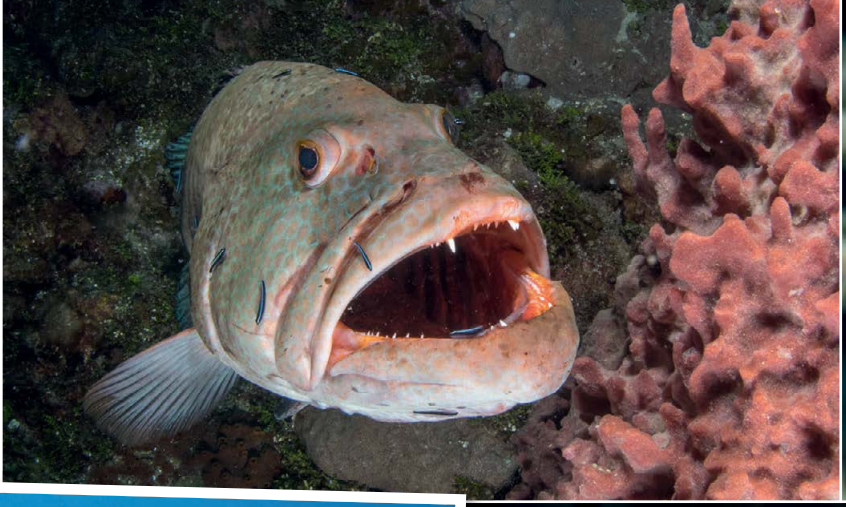
But there are also a few dive-sites off Roatan for those seeking a bit more of an adrenaline rush.

At a dive-site on the south side called Cara Cara, which translates to Face to Face, it's sharks with which divers come face to face. For many years a dive operation has been offering shark snacks to the female Caribbean gray reef sharks in the area, and more often than not the ladies show up for snack-time.

A natural rock amphitheatre-like structure has made the perfect viewing-point, and divers kneel with their backs to the rock before the sharks show in front of them. A bucket of fish is used to entice the sharks, which get their snack as the finale.

During this time the sharks, always female, swim around the area, perfect for close-up shark shots. Once the food is gone they linger a bit and still come quite close.





Among the other highlights of Cara Cara are the Nassau grouper that try to sneak their way between the sharks in a bid to grab their own snacks. It's also common to see the well-fed grouper hovering in midwater covered with cleanerfish and getting a spa treatment.

While sharks swirl overhead the grouper sometimes come right up beside the kneeling divers and seem to watch the shark show themselves: "Hey, what are we watching right now?"

The Odyssey shipwreck is an artificially sunk freighter on the north coast of Roatan that sits between 12 and 40m. The central section has mostly collapsed, but the intact superstructure makes for an exciting multi-level penetration for divers with training.

The ship was 25m tall so provides different deck levels to explore from either outside the wreck or climbing up level to level through stairways within the wreck. Colourful coral and sponges grow on it, and I've seen schools of purple creole wrasse darting all around it.

As at so many dive-sites in Roatan, huge Nassau grouper, as friendly as puppies, hang out and there are lots of other fish around.

To really see the extent of the 91m-long ship, several dives are needed.

Further west is the *El Aguila* wreck (the *Eagle*) which was a freighter that sank in 1989 but was salvaged and resunk for divers in 1997. Sitting in the sand around 30m, the shallowest part of the wreck, which is divided into three sections, is at around 20m.

Above, clockwise from top left: Nassau grouper being cleaned; sharpnose puffer; parrotfish sleeping during a night-dive.

Below, from left: Indigo hamlet; longsnout seahorse; yellowheaded jawfish; octopus seen on a night-dive.

The bow still sits upright and the mast still stands, making for good photo-opportunities while looking at the wreck head on. Parts of the bow interior can be explored, including a chain-locker.

The middle section is mostly collapsed onto the seafloor and the stern sits on its side but has some areas that can be accessed. Fish-life is abundant around this wreck, including friendly grouper and many types of angelfish. In the sand past the stern is a huge field of garden eels, and often sting rays can be seen.

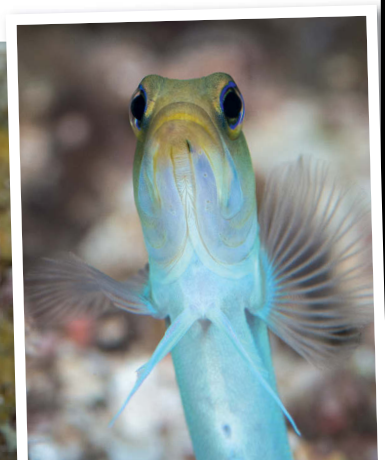
The *El Aguila* sits near a reef with sections as shallow as 3m, so I love ending the dive on the reef, spending time looking for fish and other macro critters.

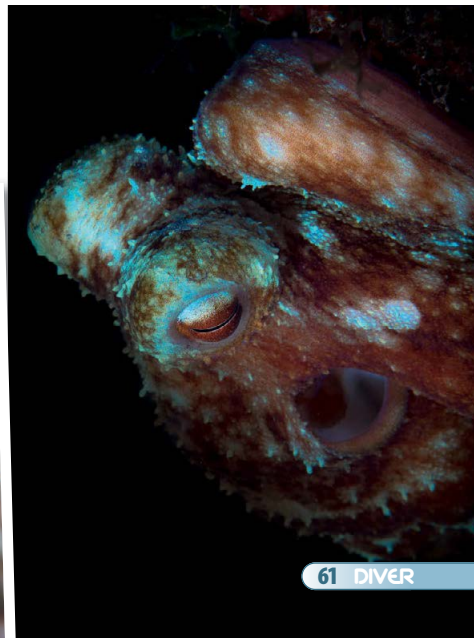
Indigo hamlets are a favourite of mine with their rich blue colouring. Yellow-barred hamlets are common there too.

DIVE-SITES CLOSE to the resort are excellent for night-dives, and I try to do a few each time I'm there. Keeping shallow and slowly moving around the reef, there is always a lot to find.

I love the sleeping parrotfish that build themselves a cocoon of mucus every night (which will pop and wake them up if a predator tries to attack them). On one dive arrow-crabs were out walking the reef, and small coral polyps reach out their tentacles to collect food after dark.

Finding a colour-changing Caribbean reef octopus is always a highlight on a night-dive. Another master of disguise, the octopus can blend in perfectly with





its surroundings, but with my light I saw the bright turquoise and dark reds which gave away the location of one.

Ignoring me and my light, it continued on its way, spreading itself over coral heads while trying to suck up food from around the coral. It continued this slow dance from coral-head to coral-head.

Whenever my trips to Roatan are nearing their end, I wonder where the time has gone and consider my return.

The island is equally relaxing and exciting, with so much marine-life to see from the smallest gobies and hidden seashores to the sharks, turtles and eagle rays.

I had started planning my next trip before I have even left the island.

Below: A toadfish.

FACTFILE

GETTING THERE ▸▸ From the UK most flights require a stop in the USA in Houston, Atlanta or Miami. It is also possible to fly into San Pedro Sula, Honduras and take a domestic flight to Roatan on Aerolineas Sosa or CM Airlines.

DIVING & ACCOMMODATION ▸▸ Turquoise Bay Dive & Beach Resort and on-property Subway Watersports, turquoisebayresort.com

WHEN TO GO ▸▸ Year-round. With dive-sites on either side of the island, if there is wind you can usually find calm conditions. In rainy season (October-February) visibility can be lower. Hurricanes aren't usually an issue but sometimes occur August-October. Water temperatures vary from 27-31°C, with the warmer waters May-October.

MONEY ▸▸ Honduran lempiras.

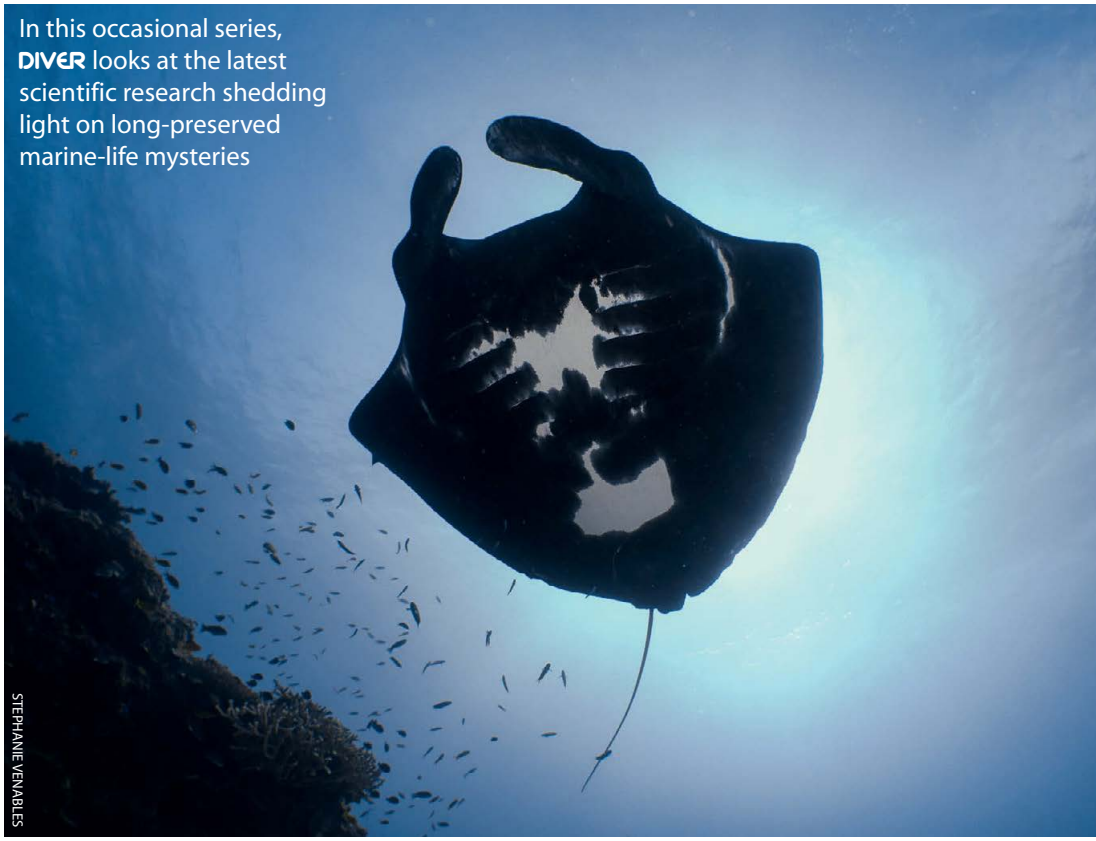
HEALTH ▸▸ Hyperbaric chamber on the island.

PRICES ▸▸ Return flights from Uk from £570. The resort offers seven-day all-inclusive packages including 15 dives from £870 plus 19% tax.

VISITOR INFORMATION ▸▸ tourismroatan.com

breakthrough biology

In this occasional series, **DIVER** looks at the latest scientific research shedding light on long-preserved marine-life mysteries


STEPHANIE VENABLES

WHY ARE SOME MANTA RAYS black? And why are black mantas so unevenly distributed around the world? A study said to be the first into black pigmentation in a marine species has concluded that it probably results from random evolutionary processes such as genetic drift.

Melanism, as the effect is called, is common in land animals but rare among ocean-dwellers. Animals with darker pigmentation of their skin or fur are known as "color morphs", and at sea it is mantas that most commonly exhibit this trait. They are the only species of ray or shark known to do so.

Most mantas have dark grey backs and mainly white undersides, but black mantas are almost entirely black except for a central white blaze on the underside that varies in shape and size, allowing observers to identify individuals.

INDO-PACIFIC

SECRETS OF THE BLACK MANTAS

Scientists from the Marine Megafauna Foundation (MMF) and the universities of Western Australia, Papua, Udayana, Murdoch and Macquarie collaborated to investigate melanism in giant mantas (*Mobula birostris*) and reef mantas (*Mobula alfredi*) in the Indian and Pacific Oceans.

They used MantaMatcher, a global database of identification photographs and records of encounters compiled by scientists with the help of recreational scuba-divers.

Black mantas were found to make up as much as 40% of populations in some locations, yet were absent in others.

"Melanism was most prominent in the Raja Ampat (West Papua, Indonesia) population of reef manta rays (40%) and in the Ecuador population of giant manta rays (16%), which is interesting considering the distance between these two regions," said lead author Stephanie Venables.

"The variation in melanism frequency across locations raises the questions of why melanism has persisted in manta rays, and why it is more common in some populations than others."

Above: A melanistic morph, *Mobula alfredi*.

Melanism in land animals has been linked to camouflage and thermo-regulation advantages, but such explanations seem unlikely to apply to mantas, especially as being darker could make them stand out more easily to their few predators, such as large sharks or orcas.

"Despite being less camouflaged, we found that predators don't appear to target black mantas more than normal-coloured mantas, as survival rates were equal," said Dr Andrea Marshall of the MMF.

The study found evidence that melanism could spread between neighbouring populations of giant manta through gene flow. Although it is passed down through the generations, the scientists have yet to identify the genes responsible in manta rays.

The research is published in *Proceedings of the Royal Society B*.

SCOTLAND

Basking shark ups and downs

BASKING SHARKS MOVE to different depths according to the season as well as the time of day, according to a recent study of the animals in Scottish waters by UK researchers.

Behaviour patterns of the world's second-largest shark species have long been a mystery, but the scientists say they have now established that the sharks spend most of the summer months at the ocean's surface and dive deeper in winter.

They believe that they could be exploring different parts of the ocean to deal with changes in food abundance.

Towards late winter and early spring, basking sharks were also found to perform "yo-yo dives" – rapid repeated transitions between deep and shallow waters. Several of the sharks studied would dive to more than 1000m, and two were tracked as deep as 1500m.

"They may be sampling the water column in efforts to detect prey, or attempting to re-orientate themselves for navigation purposes," said lead author of the study Dr Phil Doherty from the University of Exeter.

FLORIAN GRANER

Above: There is a method to basking sharks' vertical movements.

His team worked with Scottish Natural Heritage, MarAlliance, Manx Basking Shark Watch and Wave Action to monitor the movements of 32 satellite-tagged basking sharks. The tags gathered data on depth, temperature and ambient light levels.

"We found that the sharks spent most of the summer near the surface of the water, occupying the top few metres during the day, moving down to depths of 10-25m at night," said Dr Doherty.

Such "reverse diel vertical migration" had previously been observed in other big plankton-eaters the whale and megamouth sharks.

Dr Doherty said that in winter the basking sharks "did the opposite, spending most of their time between 50 and 250m, but more often shallower during the night". Plankton tends to remain near the surface in summer months, but to move deeper in winter.

The researchers hope to use the study to help identify "depth hotspots" of basking-shark activity.

The sharks are classed as "threatened" species and the north-east Atlantic population is "endangered", so understanding their diving behaviour and preferred depths could help reduce the risk of bycatch by commercial fisheries, and inform conservation measures. The study is published in *Marine Biology*.

USA

Overhearing whispering whales

NORTH ATLANTIC RIGHT WHALE mothers dial down their normal loud calls when communicating with their calves – to avoid attracting predators.

The discovery has been made by a US research team working in the whales' calving grounds off Florida and Georgia.

Right whales have few predators, but while small their calves can be vulnerable to orca or shark attacks. Mothers can effectively hide their young from sight in murky waters, but that could leave predators to hunt for them by sound.

The team led by bioacoustics specialist Susan Parks from Syracuse University included researchers from the National Oceanic & Atmospheric Administration (NOAA) Fisheries and Duke University.

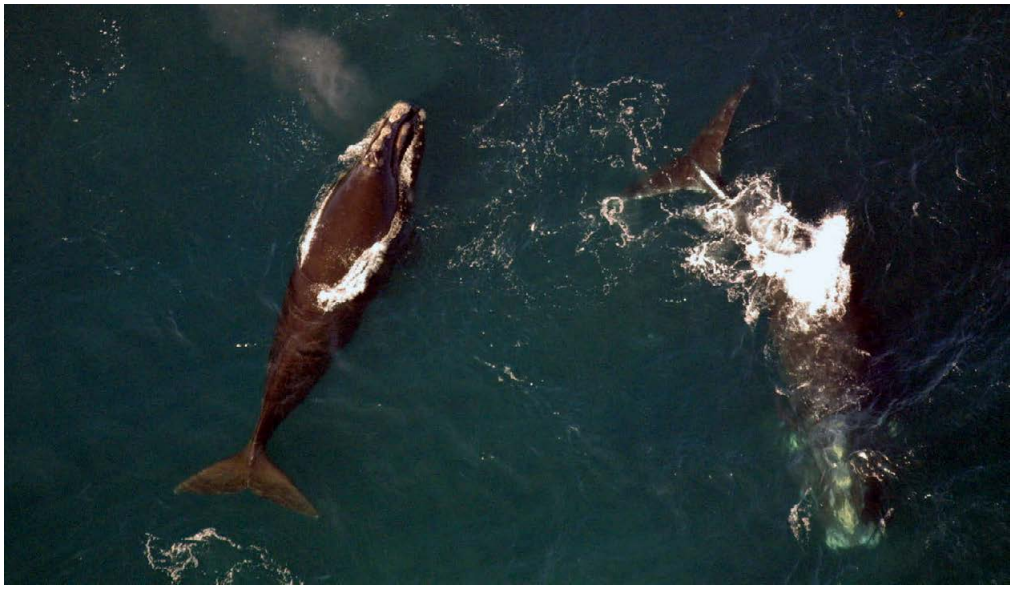
Sound-recording tags were attached to the whales using suction cups. Data was collected not only from mother-calf pairs but from older juveniles and pregnant whales for comparison.

Mothers with young calves were found to drastically reduce the habitual loud, long-distance signals used to communicate with other adults, producing instead very soft, short grunts audible only between the pair. The sensitive recording devices rendered the sounds audible for the first time.

"These sounds can be thought of almost like a human whisper," said Parks. "They allow the mother and calf to stay in touch with each other without advertising their presence to potential predators in the area."

North Atlantic right whales are among the most endangered whale species, with numbers down to some 420. They have a low birth-rate and, aside from orca and shark attacks on their young, face the risk of collisions with large ships and fishing-gear entanglement.

One reproductive female that Parks had previously studied was found dead in June in the busy Gulf of St Lawrence, and the team hope that their report, published in *Biology Letters*, will help to improve conservation efforts.



LAUREN PACKARD / NOAA

Below: Northern right whales at the surface.

FRENCH POLYNESIA

Melonhead turns bottlenose

IN A UNIQUE CASE of inter-genus adoption among marine mammals, a bottlenose dolphin has been observed caring for a baby melon-headed whale over a three-year period in French Polynesia.

"Kidnappings" by dolphins of calves of other species are regularly noted, believed to occur when females unable to raise calves of their own are driven by their maternal needs, but such "adoptions" tend to be short-lived.

What makes the case study so unusual is that the dolphin already had her own biological baby, and dolphins normally

PAMELA CARZON / GEMM

give birth to and care for only one calf at a time.

The rare relationship took place at renowned scuba-diving location Tiputa in Rangiroa Atoll.

It was monitored throughout by a team of marine biologists and divers led by Pamela Carzon of the Groupe d'Etude des Mammiferes Marins (GEMM) of Polynesia, which published its report in *Ethology*.

The dolphin (*Tursiops truncatus*) adopted the male whale (*Peponocephala electra*) when he was around a month old, and went on caring for him for three years.

The whale and the dolphin's slightly older baby daughter would compete for the mother's attention, but while the daughter was soon socialising regularly with her peers, the whale tended to stay close to his foster mother.

The daughter disappeared after around 18 months for unknown reasons, while the whale went on to adopt typical bottlenose behaviour patterns such as surfing, jumping, socialising with young dolphins and learning to communicate with other members of the community.

It was not known how the baby whale came to be separated from his biological mother in the first place.

Carzon said it seemed unlikely that it was a case of kidnapping, because the mother already had her own calf, but that he might have been initially kidnapped as a newborn by another female.

"Whereas the melon-headed whale was certainly the main initiator of this adoption, the mother's remarkably permissive personality could have played a crucial role in the process," said Carzon. "To my knowledge, the phenomenon is the first of its kind observed in wild mammals that have only one calf at a time."

Above: A mixed family – the melon-headed whale with his dolphin foster-mother and sister.

Below, from left: A humpback whale fluke photographed near Svalbard– and a whale seen breaching near Edinburgh.

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SCOTLAND

Humpbacks' own service station

THE UK PROVIDES migrating humpback whales with a welcome break, according to the findings of a citizen-science project. Last summer it matched for the first time a humpback spotted in home waters with one photographed in the Arctic – thanks to whale-watchers sharing photos on social media.

Nicknamed vYking, the whale was one of four humpbacks seen regularly in Scotland's Firth of Forth last winter.

Before 2017, the species had rarely been spotted at the location, but as sightings become more frequent it is now emerging as a winter hotspot for the ocean giants.

Using a photograph of the unique markings on the underside of vYking's tail-fluke, volunteers worked with a team of marine biologists to see if the whale had been photographed elsewhere.

Searching scientific catalogues drew a blank, but they then came across an image taken the previous summer by a wildlife photographer.

It had been shot 1600 miles away in Svalbard, the Norwegian archipelago in the high Arctic.

Excited by the connection, the scientists began to investigate other sightings and photos of humpback whales in the Firth of Forth shared by the Forth Marine Mammals Facebook group.

Humpback whales (*Megaptera noveaengliae*) are known to make long migrations between their tropical breeding and Arctic feeding grounds, and it now seems that UK waters play an important role for some of them, providing what the scientists describe as a "service station" at which they can rest, feed and break their journeys.

"UK seas are full of amazing wildlife, so keep an eye on the waves next time you're at the coast and please share anything you happen to photograph with your local wildlife organisation – it could be the start of a new discovery!" said Emily Cunningham, a marine biologist who led the study.

Sightings of whales in UK seas are now increasing after almost a century of absence caused by commercial whaling.

However, further research is needed to understand whether this increase is the result of population recovery or a shift in distribution.

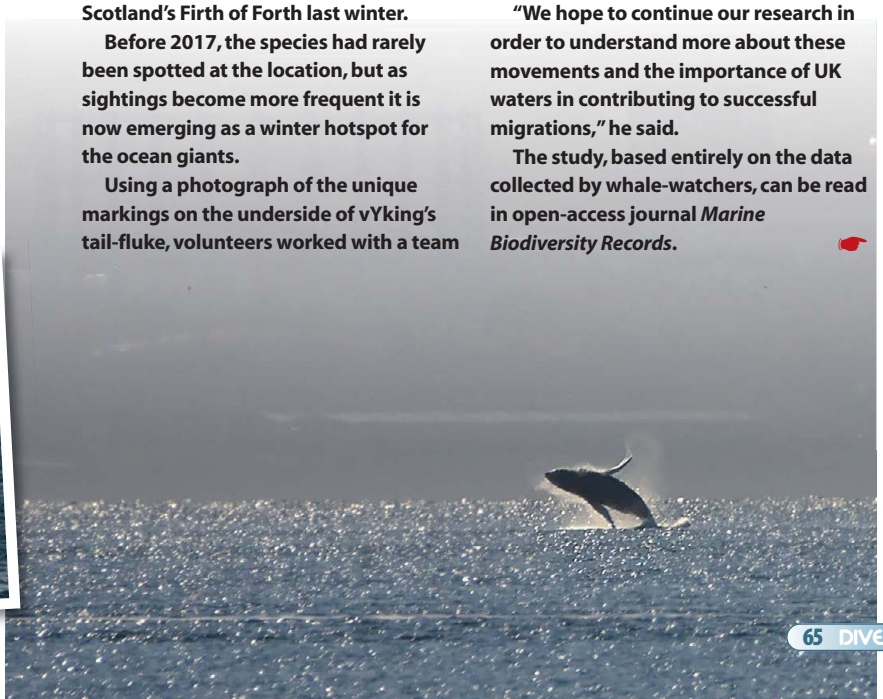
In 2018 scientists made the first match of a Scottish-sighted humpback whale to breeding grounds in Guadeloupe, and the following year an Irish-sighted humpback was matched to breeding grounds in Cape Verde.

Co-lead author Daniel Moore said that the new study demonstrated the need for effective marine conservation.

"We hope to continue our research in order to understand more about these movements and the importance of UK waters in contributing to successful migrations," he said.

The study, based entirely on the data collected by whale-watchers, can be read in open-access journal *Marine Biodiversity Records*.

IAIN RUDKIN PHOTOGRAPHY



RON MACDONALD

GEORGE BERRINGER JR

AUSTRALIA

Squid brains up there with the canines

SQUID BRAINS, it seems, are almost as complex as those of dogs.

To better understand cephalopods' ability to instantly camouflage themselves, Dr Wen-Sung Chung and Professor Justin Marshall from the University of Queensland's Queensland Brain Institute carried out the first mapping of squid brains in 50 years, using MRI techniques.

They examined the bigfin reef squid (*Sepioteuthis lessoniana*). "This is the first time modern technology has been used to explore the brain of this amazing animal, and we proposed 145 new connections and pathways, more than 60% of which are linked to the vision and motor systems," said Dr Chung.

He said that cephalopods, which include octopus, cuttlefish and squid, had complex brains "approaching that of a dog and surpassing mice and rats, at least in neuronal number.

"For example, some cephalopods have more than 500 million neurons, compared to 200 million for a rat and 20,000 for a normal mollusc".

Examples of complex cephalopod behaviour include the ability to camouflage themselves despite being colour-blind, count, recognise patterns, problem-solve and communicate using a variety of signals.

The study noted new networks of neurons governing behaviour such as locomotion and "countershading camouflage" – when squid display different colours on the top and bottom of their bodies, so that they blend into the background whether viewed from above or below. The team now wants to establish why different cephalopod species have evolved different brain subdivisions.

Their study is published in *iScience*.

CARIBBEAN

Solved: the 'stinging water' riddle

THE LONG-STANDING MYSTERY of how the "upside-down jellyfish" *Cassiopea xamachana*, which has no tentacles, manages to sting swimmers without touching them has been solved.

The species is commonly found in sheltered waters such as lagoons and mangrove forests, and water-users with uncovered skin in their vicinity have suffered from what has long been described as "stinging water".

Now a scientific team from the Smithsonian's National Museum of Nautical History, the University of Kansas and the US Naval Research Laboratory have pinned the cause on gyrating balls of stinging cells fired from the jellyfish, and have given them the name "cassiosomes".

"This discovery was both a surprise and a long-awaited resolution to the mystery of stinging water," said Cheryl Ames, museum research associate and associate professor at Japan's Tohoku University.

She, National Oceanic & Atmospheric Administration (NOAA) zoologist Allen Collins, and colleagues, had become curious about the phenomenon after experiencing it themselves in the course of their research.

They had not been sure whether their stinging, itching skin could be blamed on jellyfish, on severed tentacles of other jellyfish species, sea-lice or anemones, but observing Cassiopea collected from Bonaire in museum laboratory tanks revealed that when agitated or feeding they released clouds of mucus.

Under the microscope, the scientists were surprised to see "bumpy little balls" spinning and circulating in the mucus. Imaging indicated that these were spheres of hollow cells.

Most of the outer cells were nematocytes or stingers, while others had cilia, filaments that served to propel the cassiosomes. In the jelly-filled centre of each sphere was a piece of ochre-coloured symbiotic algae of the same sort that lives inside the jellyfish.

The team detected cassiosomes clustered into spoon-like structures on the arms of the jellyfish and found that, when provoked, thousands of them would slowly break away, mingling with the jellyfish mucus as they went.

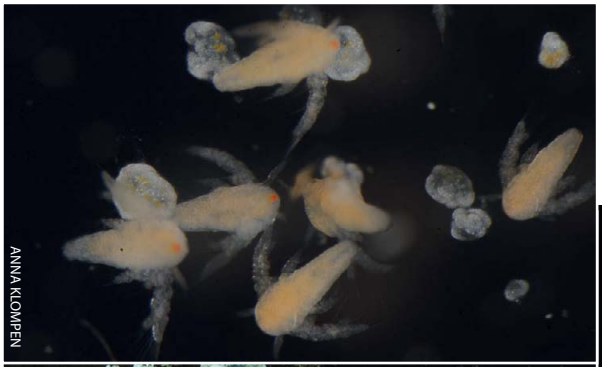
Three different toxins were detected in the mucus.

Photosynthetic algae that live inside Cassiopea jellyfish supply most of their nutrition, but it is now thought that when photosynthesis slows they supplement their diet using the toxic

Above: The bigfin reef squid – there's a lot going on behind those eyes.

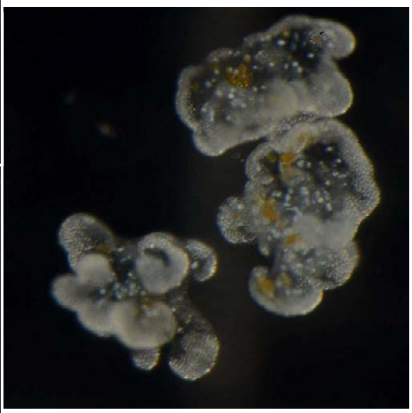
Below: Brine shrimp under attack by the stinging cassiosomes from a *Cassiopea* or upside-down jellyfish.

Below right: Seen under the microscope, the oval structures are nematocytes, and the brown cells in the centre are symbiotic algae that live inside *Cassiopea*, (*bottom*).



ANNA KLOMPEN

NATIONAL AQUARIUM



CHERYL AMES & ANNA KLOMPEN

KENNETH BALCOMB / CENTRE FOR WHALE RESEARCH

mucus, which incapacitates prey and keeps it close by. The cassiosomes turned out to be efficient killers of brine shrimp in the laboratory tank.

"They're not the most venomous critters, but there is a human health impact," said Collins of upside-down jellyfish. "We knew that the water gets stingy, but no one had spent the time to figure out exactly how it happens."

The team have now identified cassiosomes in four closely related jellyfish species and are keen to examine more. Their study is published in *Nature Communications Biology*.

NORTH-WEST PACIFIC

Menopausal orca mystery unlocked

THE PRESENCE OF FEMALE orcas that live on long past child-bearing age boosts their grandchildren's chances of survival, according to new research.

The menopause occurs only in orcas, three other species of toothed whales and humans, and it has long been an evolutionary mystery why females of these species stop reproducing well before the end of their lives. The scientists think their study might provide the answer.

They found that post-menopausal orcas made the biggest contribution to the survival of their offspring's offspring, possibly because, without direct parental responsibility, these females were free to devote their time and resources to the latest generation.

Post-menopausal grandmothers were found to have a particularly important role to play when food was scarce. Previous research had already shown that such orcas, with their accumulated life experience, tended to act as group leaders when foraging.

Marine biologists from the UK's Universities of York and Exeter analysed 36 years of data gathered by the USA's Centre for Whale Research and Fisheries & Oceans Canada on two populations of resident orcas living off the north-west Pacific coasts of North America.

These populations, which included several pods made up of multiple family groups, had a diet of Chinook salmon.

"The study suggests that breeding grandmothers are not able to provide the same level of support as grandmothers who no longer breed," said senior author of the study Dr Dan Franks from the University of York. "This means that the evolution of menopause has increased a grandmother's capacity to help her grand-offspring.

"The death of a post-menopausal grandmother can have important repercussions for her family group, and this could prove to be an important consideration when assessing the future of these populations.

"As salmon populations continue to decline, grandmothers are likely to become even more important in these killer-whale populations." Orca sons and daughters stay with their mothers for life in such populations, but mate with individuals from different family groups.

Females tend to live longer than males, which often die at around 30, and usually stop reproducing in their 30s to 40s, though they can live for many decades after the menopause.

"The findings help to explain factors that are driving the whales' survival and reproductive success, which is essential information given that the southern resident killer whale – one of the whale populations under study – is listed as Endangered and at risk of extinction," commented lead author Dr Stuart Nattrass, also from York University.

He said that drones were now being used to study "helping behaviour" between the orca family-members.

"Our new findings show that, just as in humans, grandmothers that have gone through menopause are better able to help their grand-offspring," said co-author Prof Darren Croft of Exeter University.

"These benefits to the family group can help explain why menopause has evolved in killer whales just as it has in humans."

The study is published in *Proceedings of the National Academy of Sciences USA*.

Above: A female orca breaching – sprightly for a 72-year-old granny.

Right: The red brittlestar *Ophiocoma wendtii* has its own way of seeing.

CARIBBEAN

Colour-shifts lend sight to brittlestars

BRITTLESTARS HAVE NO EYES but one species has been shown for the first time to be able to see – thanks to its ability to change colour from day to night. It is only the second-known example of vision in any eyeless animal.

An international team led by Lauren Sumner-Rooney of Oxford University Museum of Natural History established that red brittlestar *Ophiocoma wendtii* can see its way around Caribbean coral reefs. The species, which shifts from red in daytime to beige at night, was known to be covered in light-sensitive cells, and appeared to be averse to light.

The researchers ran hundreds of behavioural experiments to show that during the day the stars' coarse form of vision allowed them to distinguish areas of light contrast. This enabled them to shift to areas they believed would offer better protection from predators.

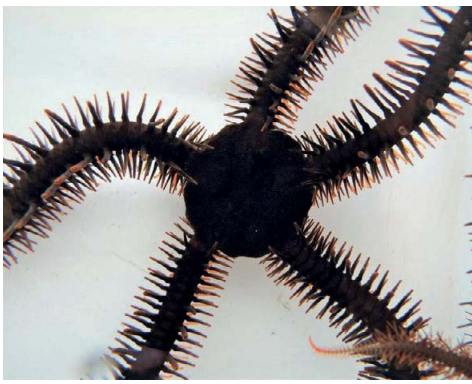
However, the team were surprised to find that the responses vanished at night, even though the light-sensitive cells still appeared active. They traced this to the day/night colour change.

A paler brittlestar, *Ophiocoma pumila*, was also covered in light-sensors but didn't change colour at night, and appeared unable to see.

Using digital models of both species' light-sensing cells, the scientists showed that during the day the pigment in *O wendtii* restricted light reaching the sensors to a narrow angle.

Without this pigment, as in *O pumila* or at night in *O wendtii*, light could reach the sensors from a far wider angle, rendering vision impossible.

The scientists planned to test a species of sea-urchin – the only other animal known to see without eyes – to see if it also changes colour in response to light levels. Their study is published in *Current Biology*.



LAUREN SUMMER-ROONEY

Ray passion

Manta Expeditions says it has a "risk-free policy" whereby guests pay nothing for the 60 days from making a booking and can cancel for free within that term.

It also has offers of 20-30% off select trips. If, for example, you fancied your chances of getting away by the peak manta season for the Maldives' northern atolls, you could get 30% off a Manta Passion cruise that takes in hotspots as well as lesser-known areas. The dates are 8-21 October and the price is US $3550pp.

For 2021 trips to the Maldives in April and May – or to Thailand or Burma in March – 20% discounts will apply.

mantaexpeditions.com

The temptations of Blue O Two

Most of the bigger tour operators and liveaboard fleets have financial plans in place now to give clients peace of mind when booking holidays.

Blue O Two is both a tour and liveaboard operator and it says you can book and pay nothing for 60 days or, if you change your mind, cancel without incurring a penalty.

It also points out that with "zero financial risk and zero commitment" you might as well take advantage, beat the eventual rush and book the perfect trip on your preferred dates, boat and itinerary. It has a point!

On top of that, the company is offering 30% off all its 2020 trips – as well as a three pay and the fourth diver goes free offer across all destinations, which can't be bad.

And for the next four years of departures (2021-2024) you can expect a limited-time offer of 20% discount on all trips and extra divers travelling free of charge on full charter bookings.

blueotwo.com

AIMING FOR SOCORRO

ARTURO DE FRIAS MARQUES

Nautilus Dive Adventures has been planning to restart its Socorro operations out of Baja, Mexico from 22 June. While we were interested in the logistics of restarting long-distance liveaboard operations so soon (see *First In*), and aware that it could be a while before UK divers can or wish to travel so far west, it is worth bearing in mind for when restrictions are lifted.

If the trip departs as hoped it will be a US $1000 special to check on all those giant mantas, sharks and dolphins while divers have been away, but looking further ahead might provide the chance to book a berth on a trip that's usually booked well in advance.

A nine-day departure on the *Nautilus Explorer* on 20 December for example costs from US $2995pp (two sharing a double stateroom)

nautilusdive.com

THOSE BIG ANIMALS AWAIT

Amos Nachoum and Amanda Cotton of the Big Animals expeditionary force have been making plans to get diving again towards the end of 2020, and if you've saved enough by spending months at a time without going out much you could consider booking.

"We're not going to go if it's not safe, and if the trip needs to be cancelled, you'll of course get your deposit back in full," says Nachoum. You can also request a full deposit refund up until a month before departure date for any reason.

So what are the choices, given access? Striped marlin in Baja, Mexico and blue whales in Timor Leste, Indonesia provide the first opportunity to get away, in October and November.

Between December and March 2021 joining sperm whales in Dominica is the temptation, and also in March dolphin superpods are disporting themselves in Costa Rica. The action moves to the Azores in April, where blue and pilot whales and tuna are on the agenda.

Check the website for prices.

biganimals.com

AMOS NACHOUM

Yap sets the right tone

It might be a remote Pacific operation but family-owned Manta Ray Bay Resort & Yap Divers has become well-known over the years.

The island of Yap was one of the few parts of the world with no Covid-19 infections when we last looked, but Manta Bay has had no guests either and has had to lay off staff.

But the operation has won even more friends with its generous offer of 20 free week-long holiday/dive packages for frontline healthcare workers nominated by other divers, to be taken after the worst of the pandemic is over.

Nominations can be made until the end of the year, and while you're on the website you might want to consider one of those packages for yourself – they start from US $1469.

Manta Bay has reduced its deposits to 10%, with the balance due 30 days before arrival and full refunds in case of a cancellation due to coronavirus.

mantaray.com

GOOGLE EARTH

Hone your shooting in Sulawesi

Two resorts in North Sulawesi, Indonesia have lined up UK underwater photographer Paul "Duxy" Duxfield to help guests improve their photographic skills later this year, while exploring the walls and reefs in Bunaken Marine Park and the macro attractions of Lembeh Strait at the same time.

The offer is to spend five nights with four days' diving at White Sands Beach Resort Lembeh and four nights with three days' diving at Bunaken Oasis Dive Resort & Spa, with extensions at both resorts a possibility.

The resorts provide full board, local transfers, three dives a day and, in the case of Bunaken free nitrox, a night dive and one spa treatment.

The package runs from 5/6 November to 16 November and costs from £3395pp, including return economy flights from the UK to Manado.

bunakenoasis.com, eco-divers.com

City of Winchester is open

The 140m *City of Winchester* wreck in southern Oman is open to divers again, exclusively for guests aboard the *Oman Explorer* liveaboard.

The wreck is that of the first British merchant navy vessel sunk in WW1, but diving there has been forbidden by the Omani government in recent years. The concession has been granted after long negotiations

Returning from her maiden voyage, the steamer was captured and sunk by the German Navy in August, 1914. The crew of the 6608-ton ship had disembarked but the cargo of tea and antlers was sunk with the vessel 30m deep near the Hallaniyat Islands, and lay undisturbed until 1986 when Omani divers chanced upon it. It was finally identified in the late 1990s by British diver Steve Dover, who wrote about it at the time in **DIVER**.

History apart, grouper, barracuda and schools of jack inhabit the wreck and dolphins and humpback whales have been known to pay it visits.

Book through Extra Divers Worldwide – a seven-night Hallaniyat Islands trip on *Oman Explorer* out of Mirbat starts at 1850 euros pp, including airport transfers.

extradivers-worldwide.com

WELL AND TRULY TESTED

STEVE WARREN goes solo again this month with some big tests of a high-performance BC and regulator, before drying off with a not-so-humble travel towel

BC
OCEANIC EXCURSION

I DO A LOT OF COLDWATER SHORE DIVES. The weight soon mounts up – thick wetsuits or drysuits for warmth, heavy cylinders for duration and enough lead to balance the suits and the dead weight of the gas I'll use.

And, at 56 and three-quarters, the out-of-water comfort of the BC that must support it all is important to me. In Gibraltar, I had just walked 500m in the Oceanic Excursion BC carrying more than 35kg. Now I stood waiting patiently for Gib time to catch up to real time.

Oceanic is one of the best-known brands in diving and has decades of experience designing and building BCs. Its Excursion is a heavy-duty back-inflation or wing-styled BC for single-cylinder diving.

The air-cell is the doughnut type, meaning that air can travel unimpeded around it whatever your position in the water. The other type of back-inflation air-cell, the horseshoe, does not connect at the bottom, so air can't move freely between the lower air-chambers when you're head-down.

Some technical divers prefer this, because it leaves space for stowing light-canisters, for example. There is no outright winner except in the eyes of the user.

The Excursion provides a lot of features including weight-integration and incorporates high-end niceties, such as a padded harness and an array of steel D-rings.

The Design

The air-cell is made of 1600D Bioflex, proven to be highly abrasion-resistant and long-lasting. Concealed, snag-free bungees run between the backpack and air-cell to help deflate the BC and keep the unused parts of the wing snug and streamlined when only partially inflated.

There's a full-length plastic backpack with a single camband and a nice built-in handle for manhandling your set out of the water. The harness comprises shoulder-straps with squeeze-release buckles; a chest-strap with two choices of height positioning to avoid interference with a drysuit inflator or to maximise comfort, again with a squeeze release; and a cummerbund with overlaid waist-strap with another squeeze-release buckle.

Dotted around the BC are three large pre-bent D-rings mounted in fixed positions on the shoulder-straps, two medium-sized D-rings at the back above your hips, a smaller one above each of these, yet another small one above each pocket and a final medium pair hung from the lower edges of the Excursion.

As well as the nine D-rings, two zipped pockets sit on top of the weight-pouches, so there are many choices for attaching and storing your accessories.

Releasable weight-pouches slide into the BC waist-panels. These use Oceanic's QLR4 quick-release system – just tug on the grab-handles and the pouches fall away. Trim-weight pouches sit on the cam-strap.

QLR weight-release and accessory pocket with knife-mount.

Buoyancy control is provided via the usual direct feed/oral inflator, a rapid exhaust valve, a shoulder-dump and a single bum-dump.

In Use

Back in Camp Bay, I had shrugged off the BC after about 15 minutes of standing around, waiting for other divers to arrive.

I wondered how many Ibuprofen pills it would take to offset the pain I fully expected to harden my neck and shoulders after the dive. But it never happened.

Even through my 7mm jacket and longjohns, I could feel the padding in the Excursion's lumbar support nestling into the small of my back, shifting much of the weight onto my hips.

Combined with well-cushioned, wide upper shoulder-straps, the BC proved very comfortable for long treks to the shoreline and up and down flights of steps.

I first measured how high above the water the fully inflated Excursion would float me. If

you're caught at the surface out of air and aren't packing a snorkel, riding up and down in a short chop can mean that you swallow water.

The Excursion did its job well, putting 15cm between the water and my lower lip – about standard for most recreational BCs I've so far tested. The test was done with a full cylinder, however. I was carrying around 4kg of air that I wouldn't have at dive's end, so this was a worst-case exercise.

At the start of a dive, the Excursion holds you plenty high enough out of the water to talk to your buddy or students or float with your mouthpiece out to save air while awaiting stragglers. Surface stability was great, as it supported me vertically.

A BC that face-plants you at the surface is a hazard – you can exhaust yourself trying to keep your head up and mouth out of the water.

Under Water

The team keeping us waiting were from the Rocks Department of the Environment Diving Section, run by my friend Clive Crisp. He had invited me to join a seabed survey in preparation for scuttling a new shipwreck.

Once his team had dropped buoyed shotlines from their cruiser, I would make a sweep search of the area.

Nicky Martinez, who has helped me on many Diver gear tests and has often worked with the department, would video the location.

Clive could then discuss the findings topside to ensure that there were no structures or marine life that might be damaged or displaced by the sinking.

On the bottom in 20m or so, and having set up the survey equipment, I spent a few minutes checking the Excursion's underwater stability.

To do this, I got neutrally buoyant just off the bottom to see if the BC held me horizontally. One that pitches you head-up makes your fins more likely to contact the seabed and kick up the silt. It also reduces your streamlining, so you work harder to swim and burn more air.

The initial static test showed the Excursion to be an accomplished performer, with no tendency to pitch or roll.

The BC would now be put to a real-world test. I had reeled out from the shotline, laying out a distance line to the edge of visibility. Keeping the line taut, I circled the shotline.

Nicky had chosen to stay just behind me, videoing as we went. So that he could film through clear water, I needed to stay high enough above the seabed that my finwash wouldn't lift the sand.

I would need to swim fast to cover ground within our time-limits, which gave me the impression that, as coldwater BCs go, the Oceanic was creating very little drag.

Moreover, the 15-litre steel tank I was using would never be my first choice – with some BCs, such cylinders had rolled me as I swam, destabilising me, which is exacerbated by fast finning. However, there was no roll using the Excursion.

With so many stainless-steel D-rings, there is lots of scope for neatly managing a lot of accessories, such as reels, DSMBs, power-packs and lights. The zippered pockets can be reached easily and will take folding snorkels, medium-sized torches and a full-sized DSMB.

There are grommets for attaching a knife on either pocket.

Controls

In the shallows I went through my usual BC safety checks. These test the ability to bring an unexpected buoyant ascent under control and ascertain how easy it is to jettison the BC's main weights.

I began by testing the controls. The mouthpiece has the usual pipette for oral inflation, then differently shaped buttons to deflate and inflate the jacket. At 10m, the Excursion filled in about 8sec.

Next, I wanted to confirm that either the rapid exhaust dump built into the oral-inflation hose shoulder or the toggle-operated pull-dump opposite could vent air faster than the direct feed could supply it on maximum flow.

Should a direct feed jam open, this is important to allow you to control your ascent speed. The Excursion performed flawlessly.

To simulate bringing an out-of-control full-blown buoyant ascent under control, I hung onto a bit of wreckage in 10m, fully inflated the Oceanic and let go. The shoulder-dump stopped the ascent in a distance of about 1.5m; the rapid exhaust in twice that distance.

These exercises confirm that the Excursion can be safely braked should you lose control of your ascent under the worst imaginable conditions.

That said, stopping distances were a little longer than I'm used to with Oceanic BCs.

This might be because the BC I was using was a size too large for me, which can interfere with how efficiently air migrates to the dumps.

My expectation is that the real stopping distances would be around two-thirds of these distances.

When I tested a different Oceanic BC, the Biolite, which was the correct size for me, the stopping distances were much shorter.

This underlines one reason to choose a BC that fits – and that is especially important for kids, who should not be put into oversized BCs to allow for "growing room".

The bum-dump worked well, with an easily found toggle. I'd prefer the toggles to be in hi-vis colours to make them more obvious to another diver who might need to locate them quickly.

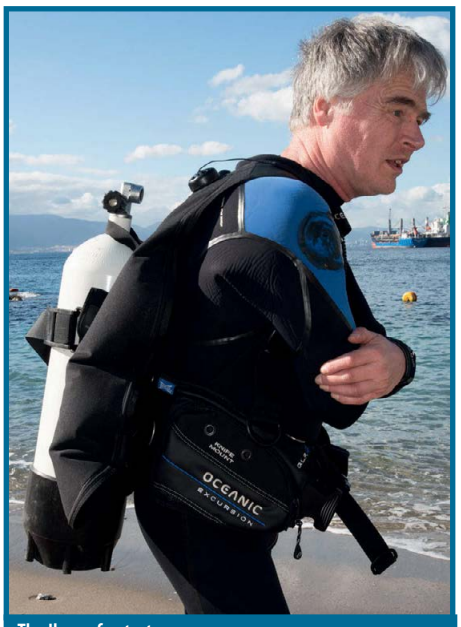
The QLR4 system makes emergency weight-jettisoning very straightforward. Just pull firmly on the handles and the weight-pouches fall clear. It's almost instant and uncomplicated, and I like that. Again, I'd prefer the handles to be hi-vis.

Conclusion

The Oceanic Excursion is a very good, workmanlike BC, aimed at the serious diver. Its ruggedness inspires confidence that it will survive a lot of hard diving.

Both on the surface and under water it performs extremely well, combining comfort with adept buoyancy characteristics.

The array of D-rings and usable pockets lends it to carrying cameras, lights and the other accessories experienced divers tend to need as they undertake more specialised activities. Highly recommended. ■



The Ibuprofen test.

SPECS

TESTER ▸▸ Steve Warren
PRICE ▸▸ £440
SIZES ▸▸ SM / MD / LG / XL / 2XL
BUOYANCY ▸▸ 17kg or 23kg (XL / 2XL)
WEIGHT ▸▸ 4.2kg (L)
DUMP VALVES ▸▸ 3
CONTACT ▸▸ oceanicworldwide.com

REGULATOR
SCUBAPRO **MK25 EVO/ S620 TI**

SCUBAPRO WAS FORMED IN THE USA IN 1963. Its founders were drawn from entrepreneurs who had, in the '50s, done well working for other scuba equipment manufacturers and now wished to break out on their own.

One was an Italian count, Gustav Dalla Valle. The other, Dick Bonin, had deployed with the USN Underwater Demolition Team, forerunner of the Navy SEALS.

Early on Scubapro recruited top engineers such as Dick Anderson, equipment technician on Disney's *20,000 Leagues Under the Sea*, to develop its own line of regulators. They tested these against their competitors' models by making air dives to 75m off the California coast, in the brazen suck-it-and-see spirit of the times.

Subsequently, many key innovations that have greatly improved regulator ease of breathing have come out of the Scubapro labs.

Two of the most important are found in the Scubapro Mk25 EVO / S620Ti regulator. This combination sits towards the top of Scubapro's regulator line-up. It's not only functional but designed to appeal to those who like to feel a flurry of pride of ownership on the dive-deck.

In many ways it illustrates the continued development of design principles Scubapro established decades ago. Its original balanced-piston first stage, for example, was introduced in the 1960s, the adjustable cracking-effort second stage in the '70s and pneumatic balancing in the '80s.

Scubapro can fairly claim the resulting Mk V piston first stage, adjustable second stage and pneumatically balanced G250 second stage as classic regulators.

So, more than a quarter-century after the G250 topped the US Navy Experimental Diving Unit's regulator test charts, is the Mk25 EVO first stage and S620Ti second stage pairing another Scubapro icon in the making?

First Stage

Scubapro contends that a balanced-piston first stage can deliver higher volumes of gas more rapidly than balanced-diaphragm models, but says this difference is normally noticeable only on very deep dives.

Many technical divers favour diaphragm-driven regulators, so this point is probably moot. Besides, Scubapro offers balanced-diaphragm first stages for those who prefer them. It takes a mix-and-match approach to first and second stages, so the combo tested here is only one of those on offer.

The first-stage main body is made from chromed brass. There are two hp and five mp ports, four of which are arranged around a swivel. The fifth is mounted on the end of the first stage. It should provide the easiest inhalation under high demand because the air flows straight out of the piston opening and into the hose, rather than turning a corner, which disrupts the air flow.

However, the other four ports equal each other in performance, so you can use any of them for your primary and safe second.

Scubapro uses standard 3/8th mp outlets. Its regulators consistently score highly on breathing-machine tests because its hoses have wider internal bores than some other 3/8th whips, which isn't obvious from the outside. This helps speed flow-rate.

The hose is Kevlar-lined inside for durability. It's not a flexi type, so it won't coil up as well.

A piston first stage is simpler than a diaphragm model, which requires two springs to the piston's one, for example.

The piston is basically a hollow tube linking two air chambers. The first chamber is filled with high-pressure air from your tank. At the start of your dive, the pressure inside it could be as high as 300 bar.

The hp end of the piston sits on a seat that seals the piston's opening, much like putting your fingertip over the top of a straw. The other end sits in the second chamber, which contains mp air. The air in this chamber is only around 9 bar above the water pressure surrounding you as you descend and ascend.

Between the two chambers is a free-flooding space through which the piston runs. It contains a spring that has to try to force the piston off its seat in the hp chamber so that air can flow through it to the mp chamber.

This spring is set to an opening force of about 9 bar, which maintains the correct gas pressure in the mp chamber. It exerts a constant opening force so it can't account for changes in pressure as we change depth and, even in shallow water, would make inhalation very difficult. The imbalance would be similar to that caused if you tried to breathe through a very long snorkel.

Water enters the space around the spring. The end of the piston in the hp chamber has a very narrow opening, but where it connects to the mp chamber it's surrounded by a large disc. Water pressure acting on one side of this disc works with the spring to boost its opening force in line with increases in depth.

On the other side of the disc, inside the mp chamber, the air pressure acting on the disc's dry side is sufficient to overcome the opening force exerted by the spring and water. It keeps the piston closed and the air supply to the second stage shut off until we inhale.

Inhaling causes pressure inside the mp chamber to drop and the joint opening forces of spring and water lift the piston off the seat, allowing air to flow from your tank through the MK25 EVO and along the hose to the second stage where we can breathe it.

When we stop inhaling, pressure backs up along the hose and within the mp chamber and builds up enough to force the piston back against its seat, shutting off the air until we take our next breath.

In an unbalanced-piston design, incoming air pushes directly against the piston in the hp chamber. While the pressure in the mp chamber does not change much during the dive, the incoming air in the hp chamber changes considerably as tank pressure falls.

With this fall in pressure, the forces trying to open the valve become weaker, while those trying to close it remain much the same.

This is why inhalation becomes harder at low

The Mk25 EVO has four mp ports arranged around a swivel turret, while a fifth leads straight off the piston.

tank pressures. In the Mk25 EVO's balanced design air surrounds the piston, but doesn't act directly on it, so changes in tank pressure have almost no effect on breathing effort even when your cylinder is near empty.

Moreover, Scubapro claims that the Mk25 can pass 8500 litres per minute – exceeding the capacity of four 10-litre / 200-bar cylinders. These are the reasons balanced-piston first stages are associated with high performance.

In piston designs the piston and spring are surrounded by water, which raises two possible problems. One is from silt, probably more of a concern for a professional diver working on muddy bottoms, and the other is freezing.

For CE purposes fresh water capable of causing a regulator to ice up is regarded as that at 10°C or less. This is because air from your tank cools significantly as it drops in pressure and expands as it passes through your regulator.

In fact, the Mk25 EVO has passed CE EN250 coldwater certification, so it has been successfully tested in fresh water of 4°C at a depth of 50m, where it has been subjected to a moderately hard breathing-rate of 375 litres per minute for five minutes, during which it must not freeflow.

The Mk25 EVO uses a set of fins etched into the body that increase its surface area. The more of the first stage that's in contact with the water, the more the regulator can draw heat from the warmer water around it to combat freezing.

Being metal, the first stage conducts heat well. Internally, the spring, piston and some other parts are coated with a non-stick surface to which ice can't easily attach.

It's ice particles that can block the movement of regulator parts such as pistons, and cause either a freeflow or an air-stoppage.

Second Stage

The S620Ti is compact and lightweight, partly due to the use of techno polymer for the main body. Internally, weight is further reduced by use of a titanium valve-casing. There is some stainless-steel reinforcing that I assume also helps with anti-icing.

The pneumatic balancing is intended to minimise the first part of the breathing cycle, the cracking effort. In unbalanced second stages a fixed-strength spring is used to keep the valve closed, and this must be strong enough to hold back incoming air from the first stage even on very deep dives, to prevent a freeflow.

In Scubapro's balanced design, the spring is enclosed in an airtight tube. Air enters and helps the spring keep the valve shut until you inhale.

This air pressure can be varied with changes in depth to match changes to the pressure of air coming from the first stage, so a lighter-strength spring can be used and cracking effort is less than with an unbalanced model. It should always optimise inhalation effort regardless of depth.

Cracking effort can be diver-adjusted using an external knob. This tensions the spring pressure bearing on the valve so that it needs more effort to open. This control might be used if the regulator was to freeflow, possibly while facing into very strong currents.

There is also a dive/pre-dive switch. This shuts off the venturi to prevent freeflows when the regulator is not in your mouth. Once you've cracked the valve and got the air flowing, the venturi routes the air around the second stage to create a vacuum that holds down the diaphragm, keeping the valve open for you with little lung effort. It should only ever be set to pre-dive when out of the water or snorkelling.

Cracking effort, ease of keeping the gas flowing, gas volume and the speed at which it is supplied are all components of the inhalation cycle, and measured during work-of-breathing machine trials as part of the CE certification process. However, exhalation effort also has to be included and, with the S620Ti, Scubapro claims that a new exhaust-valve and tee has improved this as well.

Freezing in second stages can occur when water caught in the casing or moisture in your exhaled air comes into contact with incoming super-cooled air from the first stage and forms ice on the valve. As with the Mk25 first stage, preventing freezing problems is done with a combination of heat-exchangers and non-stick surfaces on the valve components.

The S620Ti second stage uses titanium components in the air path, so can't be used with nitrox percentages above 40% or there would be a fire risk. This won't be a problem for recreational divers but excludes it from some technical dives.

In Use

I used the DIN version and the handwheel, which has a non-slip plastic coating and was easy to do up and remove with wet hands. The position and direction of the Mk25 EVO ports allow for versatile hose configuration.

The swivel collar means that hoses can move with you, within reason, as when you turn your head, so you don't end up with the mouthpiece uncomfortably pulling at the corner of your mouth when you look a certain way.

The second stage is light and comfortable on long dives. It's easy to clear, even upside-down, either by blast-clearing or using the purge.

The compact exhaust-T didn't catch and break the seal of my mask-skirt during the inverted tests, which are done to simulate a stressed diver accidentally inserting an upside-down reg in a sharing situation.

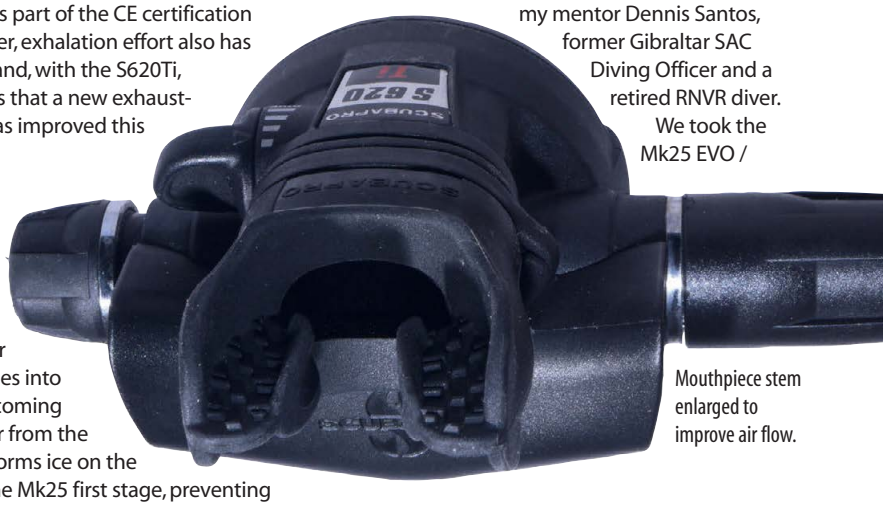
Exhaust bubbles are nicely diverted away from your field of view. You should be able to get your eye up to most SLR housing viewfinders without the second stage interfering.

I set the second-stage controls for the best ease of breathing. Inhalation was easy and smooth, as expected. Next came the important deepwater-sharing **DIVER** test.

EN250A requires that a regulator can provide air to two divers using two second stages and breathing simultaneously, replicating a typical out-of-air, safe-second assist. The standard requires that each diver breathe 250 litres per minute at a depth of 30m.

The test is done on a computerised breathing machine that can accurately measure work of breathing, with set limits to how hard the diver must inhale and exhale. Our manned test can't measure this, but gives a realistic insight into a valve's breathing characteristics.

Heavy breathing at depth is no fun and there's always the concern that you might draw a reg you can outbreathe. My buddy for this task was my mentor Dennis Santos, former Gibraltar SAC Diving Officer and a retired RNVR diver. We took the Mk25 EVO / S620Ti and its R195 octopus to a wreck at 30m and finned so damn hard I'm sure we moved it. I had the Scubapro G2 gas-integrated computer on test too, so we had a highly accurate digital pressure display to measure our breathing rate.



Mouthpiece stem enlarged to improve air flow.

Dennis and I finned for two minutes and burned through about 800 litres.

It takes time to reach your maximum breathing rate, so I think it's fair to assume that we met or exceeded the combined 500 lpm requirement at some point!

Breathing from the 620 Ti primary second stage, I didn't feel that the regulator's inhalation effort increased noticeably. It's more the build-up of CO_2 that makes you feel breathless. So, a big win for the Scubapro!

Conclusion

Given the specifications and its heritage, it's no surprise that the Mk25/S620Ti has received the top EN250A rating, so it's proven to support one diver to 50m (the EN standard tests no deeper than this) or two at 30m using an octopus, and all in water as cold as 4°C. It's also practically a given that the Scubapro far exceeds this standard.

It's certainly a worthy successor to its classic ancestors, and I'm happy to highly recommend the Mk25 /S620Ti. ■

SPECS

TESTER ›› **Steve Warren**
PRICES ›› **£619**
FIRST STAGE ›› **Balanced piston**
SECOND STAGE ›› **Pneumatically balanced**
PORTS ›› **2 hp, 5 mp**
WEIGHT ›› **1.2kg**
CONTACT ›› **scubapro.com**

TOWEL
RED ORIGINAL **MICRO FIBRE**

I LOVE THE LUXURY OF A FLUFFED-UP, soft white towel straight from the heated rail in a high-end hotel bathroom, but when diving I'm ready to rough it.

"Nice" towels are heavy and bulky to pack, competing with dive-kit and cameras for space, weight and excess baggage fees.

They often can't easily be laundered on holiday and, anyway, who wants that hassle?

So they can quickly become smelly and anti-social, or at least other people's towels can. They take ages to dry, so can become increasingly damp and uninviting as your trip goes on. And they exert a magnetic attraction for sand.

The Red Original Micro Fibre Towel provides a practical alternative. Red Original provides an impressive line of accessories aimed mostly at surface watersports enthusiasts.

The items I've tried have all been thoughtfully designed, well-manufactured and, most importantly, useful to divers.

When rolled and secured by the built-in strap, with its non-corrosive plastic snap-fastener, the towel measures only around 22 x 8cm, so it's easy to stow when space is tight.

But once opened up, it stands its ground against a normal beach towel by measuring a sizeable 150 x 80cm – enough for most people to use for changing.

It's micro-fibre, so doesn't have the feel of a sheepskin rug, and I found I tended to dab to get dry, but it's comfortable enough against your skin and dries you quickly.

The towel weighs so little when dry that I had no scales with which to measure it accurately. It is claimed to hold four times its own weight in water.

I reckon that's about right, because I soaked it in a bucket. Hanging it in the sun in the late afternoon on a warm Kent day in May, it was dry in an hour.

So if you're on a trip, you can regularly rinse it out to keep it hygienic, knowing that it'll be crisp and ready to use when you return from your dive.

The clip that keeps it rolled up also creates a loop for securely attaching it to a rail, so it shouldn't blow away.

Conclusion

I'm very happy to recommend this towel. And not just for people – underwater photographers often like to use a towel as a clean work surface. The colour will contrast with O-rings, making them easy to see, and won't leave lint on surfaces to promote camera leaks.

The material won't scratch most housing bodies, and I'd be happy to gently dab dry ports and lenses with it. ■

SPECS

TESTER ▸▸ **Steve Warren**
PRICE ▸▸ **£25**
SIZE ▸▸ **150 x 180cm**
CONTACT ▸▸ **redoriginal.com**

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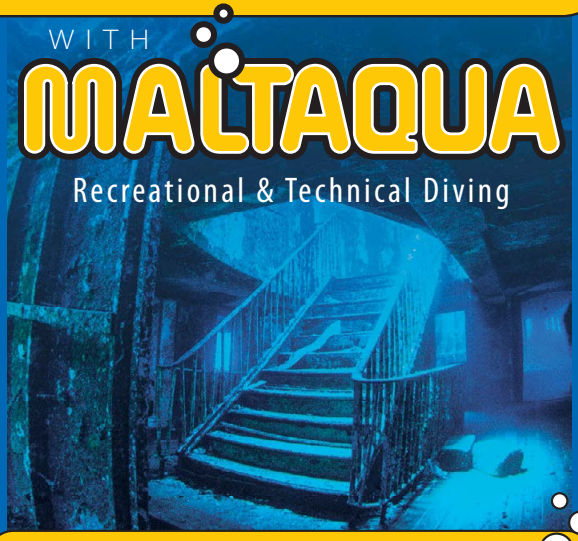

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The latest kit to hit the dive shops

Sea Dragon 5000 SL676 Light

This photo and video light is "feature-laden". It has a maximum output of 5000 lumens, a 120° wide-angle beam and boasts an auto-off circuit to cut out when a flash is fired, dual red LED night mode and multiple power settings. It costs £735.

sealife-cameras.com

Mares Dual 15X Regulator

The Dual 15X weighs in at only around 1kg, but appears to be far from light on features and benefits. The balanced-diaphragm first stage offers four medium-pressure and two high-pressure outlets designed for easy hose-routeing. The technopolymer second stage includes Mares Vortex Assisted Design venturi assist. It costs £269.

mares.com

Fourth Element Hydra Drysuit

The £999 Hydra is reckoned by Fourth Element to be well-suited to UK diving, with 4mm HDR high-density neoprene to keep the wearer warm in cold water while minimising suit compression for easier buoyancy control. Underarm gussets are designed to enhance mobility, with Supratex and Durawear panels adding further durability. Men's and women's versions are available.

fourthelement.com

Christopher Ward C60 Elite GMT 1000 Watch

Yet another new Christopher Ward model, this is the latest addition to its Trident dive-watch range. The titanium-bodied chronometer allows you to track not just dive duration but time in two world zones simultaneously! It's 1000m-rated, and has a helium escape valve to allow for saturation diving. Prices start from £1450.

christopherward.co.uk

Lomo Centurion Cases

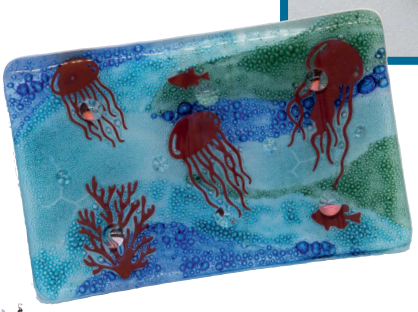
Protection for divers' valuable items such as cameras, lights, regulators and gas analysers is the promise with Lomo's latest Centurion range of cases. Made from polypropylene, sealed with a silicone gasket and equipped with an equalisation valve for flying, prices start from £23.

lomo.co.uk

TUSA Paragon S Mask

This mask has lenses that TUSA claims will protect your eyes against HEV (High Energy Visible) light. They are also anti-reflection coated, which it says provides brighter viewing and enhanced contrast. You might expect that for £170.

cpspartnership.co.uk



Marine Art Studio Glassware

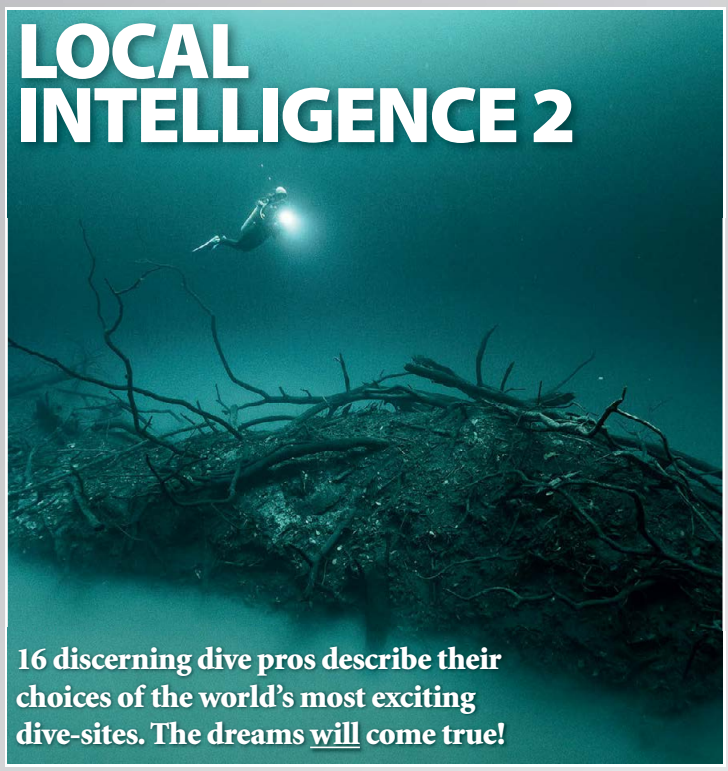
Diver and artist Pash Baker has long made ocean-inspired jewellery, but she has now added a range of hand-crafted, marine-themed glassware to decorate your home. Individual pieces start from £10.

etsy.com/uk/shop/marineartstudio

Apeks Leisure Wear

Apeks has launched a new clothing line that includes hoodies and T-shirts. The range includes team art, classic logos and a print of the original Manta regulator that started it all for Apeks. Prices start from £27, and garments can be returned for recycling for a £5 credit.

apeks.com



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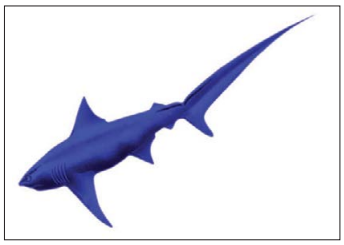

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Diving Medicals - Midlands (Rugby) - HSE, Sports Medicals and advice at Midlands Diving Chamber. Tel: 01788 579555 www.midlandsdivingchamber.co.uk (72756)

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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 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.chelmsford diveclub.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, Larkswood Leisure Centre E4 9EY. Information: www.dive365.co.uk Email: loughton divers365@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)
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East Cheshire Sub Aqua. Macclesfield based BSAC club. Purpose-built clubhouse, bar, two RIBs, minibus, nitrox, compressor. Lower Bank Street, Macclesfield, SK11 7HL. Tel: 01625 502367. www.scubadivingmacclesfield.com (65609)
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Eastern Sub Aqua Club SAA 1073. We are a small friendly dive club and welcome new and experienced divers alike. We are situated north of Norwich for training. For more information please see out website: www.esacdivers.co.uk (65879)
Ellon Sub Aqua Club, Aberdeenshire, welcomes newcomers and experienced divers. We dive year round and meet on Thursday evenings. Contact www.ellonsubaquaclub.co.uk (65523)
Fife Scuba Divers Tel: 07575 372575. www.fifescubadivers.com. SAA Club No203. Meetings: Thu 19.30, 81 East Way, Hillend, KY11 9JF. Training Club, Crossovers welcome. (72380)
Flintshire Sub Aqua Club based in Holywell, Flintshire, 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.
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)
Ilkeston & 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 experienced divers. Contact Richard: 07931 170205. (69383)
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.lsac.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.oddy@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 (BSAC 5) 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.

INSURANCE

Merseyside training club, new and active divers from all agencies, weekly pool session. Own Rib towing vehicle Contact www.wapsac.org.uk or wapsacsac@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@plymouth divers.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 and 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)
Wiltshire's newest Scuba Diving Club - JC Scuba Dive Club. Friendly active dive club based in Swindon, all affiliations welcome. Pool sessions, UK & Worldwide trips, shore, boat & liveaboard diving, regular socials. Affiliated training school, fully insured. Exclusive member benefits. www.jcscubadiveclub.co.uk

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07/20

Sexual harassment has no place in diving – let's stamp it out

Female divers have enough to worry about without the additional burden of unwanted attention. PENELOPE GRANYCOME has experienced the problem – and soon found out that she was far from alone

AT THE FRONT DESK of a busy Pacific dive-centre, a customer's demand comes through to Karen*, an instructor, sending her into a panic. "Bring a tank, meet me at the pier 6pm."

In another country Jo* (also an instructor) can barely contain her shock when her status-equivalent colleague asks of a new trainee he has not met: "Is she f***able?" He had given a previous divemaster trainee an STD so serious that it landed her in hospital.

A woman diver in London receives a series of texts from another diver she had considered a friend - they're so nasty that when she informs PADI its advice is to "tell the police".

How do we cope when our sense of safety or trust in a sport we love is upturned by harassment or threat? Especially when that sport is a psychological activity carried out in an extreme environment.

With numerous potential stressors already, additional emotional or physical threat could tip a diver into a dangerous situation. Anxiety could turn to panic on seeing or fearing seeing an abuser.

A professional subjected to sexually coercive tactics by a customer or colleague might be afraid to speak out for fear of losing their job.

Another sad outcome would be that the professional gives up diving altogether.

And when attempts are made to crack down on abusive behaviour, the dark side can sometimes be a naming and shaming of innocent people, making a mockery of justice.

Individuals can worry about the consequences of making a fuss, and such fears can be devastating, because bullies feed off making their targets feel worthless and powerless. Which is why victims should confide in trusted friends and fellow-divers less clouded by anxiety.

I WAS THE WOMAN in London mentioned above, and I experienced a stream of abusive messages and stalker-like actions after politely asking a diver friend to stop "helpfully" commenting on my body, weight and life.

What I had thought was an open and honest friendship was clearly anything but, as his words descended into "gas-lighting" (a form of bullying designed to make victims question their own minds) followed by an all-out attack aimed to denigrate my personality. As the stream of texts came in, I blocked them as best could.

A week later, about to fly to the Caribbean, I checked my phone to find that he had suddenly decided to join Facebook (having always professed himself against it) and publicly messaged a club with which he knew I would be diving, asking about trips.

I froze, and contacted an instructor there in panic. The staff were kind and understanding and during the trip I shelved the problem in my mind but, on landing home, burst into tears.

The next two weeks were challenging, I looked at my drysuit and found I didn't want to dive in the UK, wondering who I could trust. I kept wondering how I would deal with running into him at a dive-site, or going onto a liveaboard to find myself trapped aboard with him.

Would I be able to check with an operator before embarking? What safeguarding existed? Vulnerability and trust can be easily taken advantage of.

Jo reflected back to me how such people choose their prey, those they perceive to be weaker and to whom they initially behave with seeming kindness.

During her career, Jo had helped a divemaster trainee who was taken for the tune of £2000 by a local guide. He had "declared his true love and reeled her gently in, hook, line and sinker".

The trainee had been in a vulnerable position because she had been going through a divorce, and later said she felt deeply ashamed and embarrassed to have believed his declarations of affection.

He was sacked by the dive-centre and it emerged that it was the second time he had behaved in this way.

KAREN AT THE PACIFIC centre detailed the actions of the customer who had been a repeat visitor and heavy tipper.

He would take all the female dive professionals out socially, often making nauseating comments, and on successive trips things had escalated.

Karen had previously brushed his comments away but he had requested her specifically as his guide for a night-dive. She cast her mind back to previous dives and his comments about her in a wetsuit. Trying to maintain a positive relationship for the sake of the business and downplaying her instincts, she engaged with him – but he kept mentioning his room.

Three days later he called the front desk with the demand: "Bring a tank, meet me at the pier 6pm".

By now she had learnt that he would say grotesque things about her to other women when she wasn't present, and denigrate her under the veil of humour.

These are tactics used in an attempt to make victims feel bad about themselves and therefore seek validation.

The dive-centre said that she was under no obligation to dive with the man again. Of his request for her alone to guide him, Karen says: "When that note came to me, I was in a complete panic state – I could barely speak."

She still struggles with the fear of encountering that diver again. She was his specific target and other staff had had no direct experience of him, but have promised to observe him closely and protect her should he return.

In my case, PADI was unequivocal in recommending that I talk to the police, and this was reinforced by a work colleague, a former police officer. The police were immensely supportive and ran through every detail, telling me exactly what to do and to log should he try anything again.

Diving is all about trust, so much in yourself and always in others. No one ever has the right to take that trust away.

* *All names have been changed.*

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