



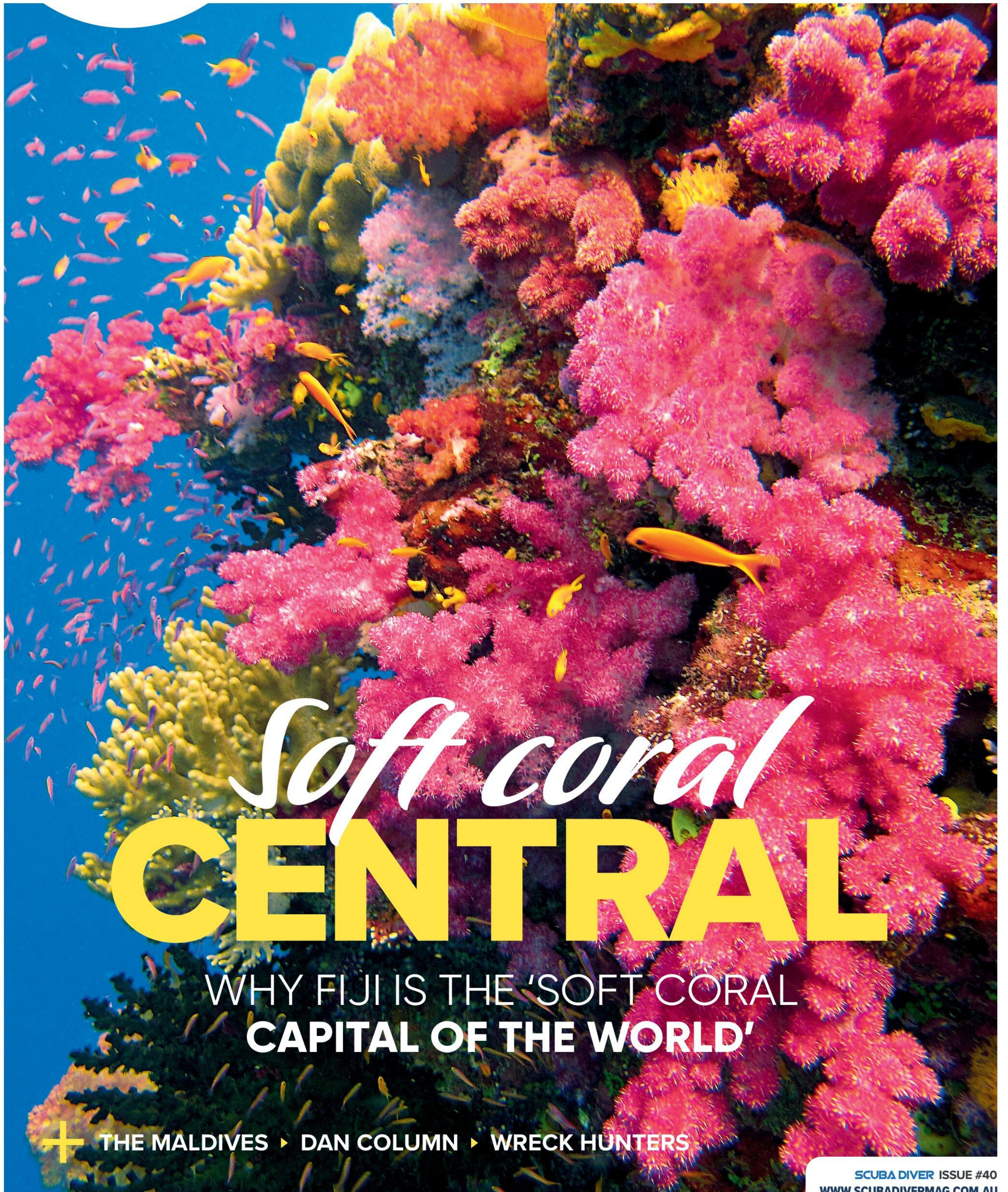
SUPER 'STRADDIE'
NORTH STRADBROKE
ISLAND'S SIREN LURE FOR
ADRIAN STACEY

Q&A: JILL HEINERTH
WE CHAT WITH THE
CANADIAN EXPLORER
AND CAVE DIVER

THE MERMAID'S KITCHEN
BROOKE O'CONNELL ON
THE ALLURE OF WELLINGTON'S
UNDERWATER HABITATS

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193 Latrobe Terrace,

PADDINGTON, QLD 4064

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Times are changing and to keep the magazines free, we're asking dive stores to cover their own postage costs. If you enjoy reading the magazine, think about helping out your centre with a small donation to help cover their costs. Your continued support is most appreciated.

A NOTE FROM THE EDITOR



Goodbye and good riddance, 2021!

Well, what a year 2021 has been. I, like most people, thought that 2020 was going to be an unpleasant but temporary interruption to our lives – now, almost two years later, restrictions are still in place, and it is clear that we are going to have to learn to live with COVID-19.

I am, however, confident that 2022 is going to be a much-better year, and we will be able to get back to what we love doing - diving!

For the final issue of the year, we have a great article about North Stradbroke Island. A stone's throw from Brisbane, this undiscovered gem offers amazing animal encounters and terrific dive sites. From across the Tasman, we delve into the superb diving on offer from Wellington and heading east; from there, we celebrate the reopening of Fiji with a round-up of the numerous and spectacular dive destinations the 'soft coral capital of the world' boasts. Our final destination article is from the stunning waters of the Maldives onboard the luxurious Blue Force Fleet vessel Blue Force One.

For tech enthusiasts, we have a terrific Q&A with explorer, author and adventurer Jill Heinerth, and for our conservation column this month, we look at how Meridian Adventure Dive in Raja Ampat is tackling the threat crown of thorns starfish pose for the reefs.

We also have our usual Photography, Wreck Hunter, Divers Alert Network and DivePlanit columns.

Goodbye and good riddance 2021!

Adrian Stacey, Editor-at-Large (Australia & New Zealand)



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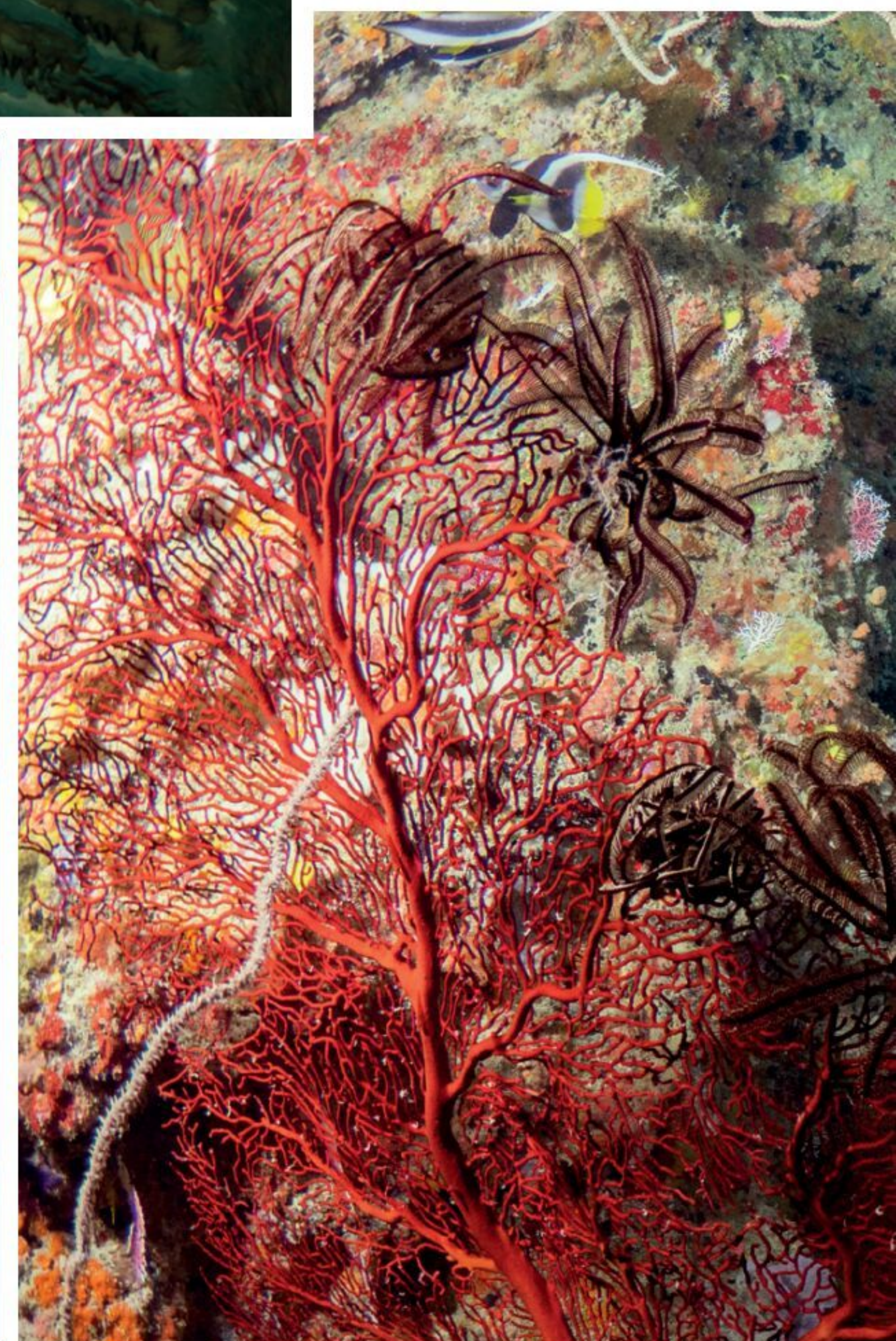
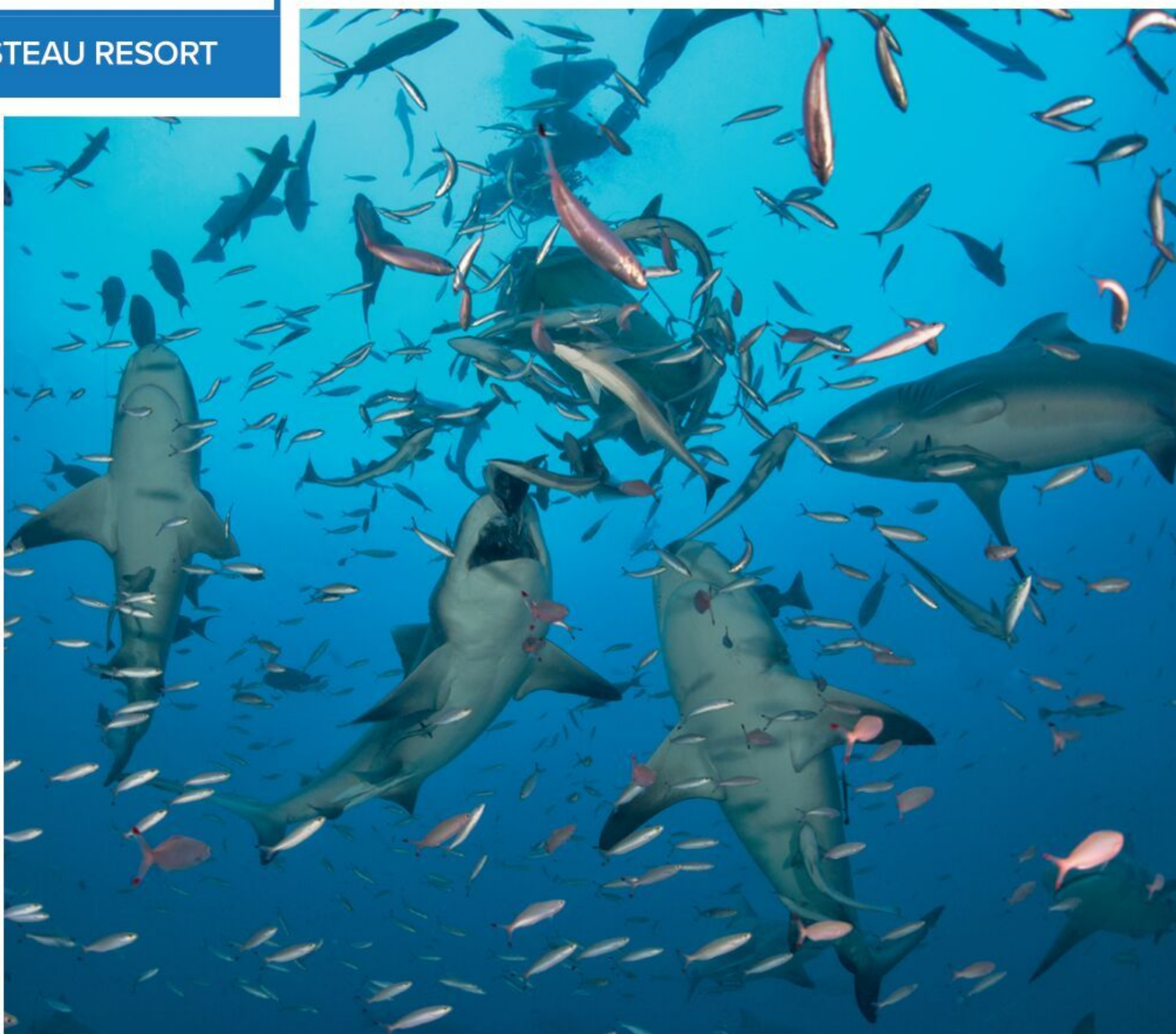
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Regular columns

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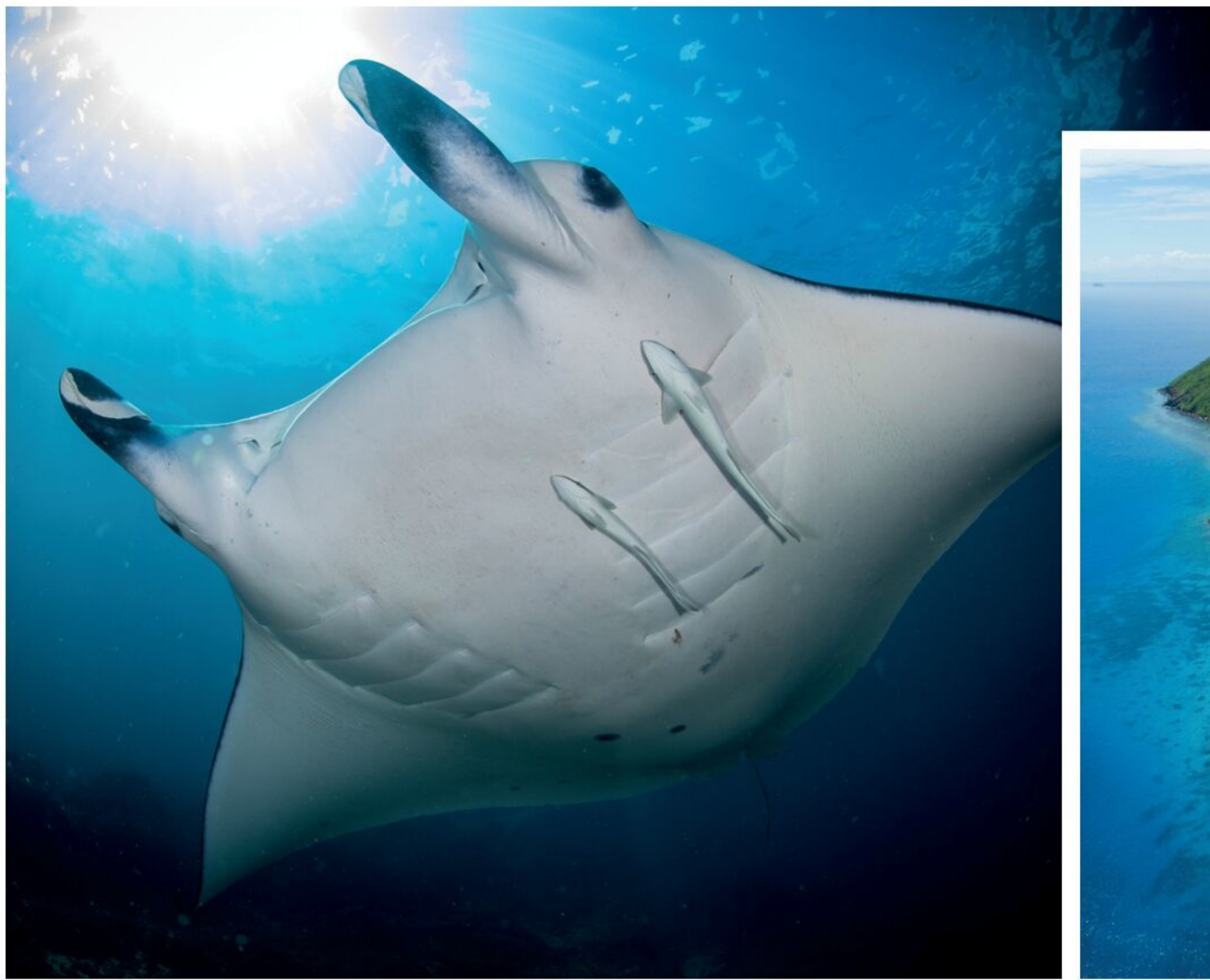
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Deborah Dickson-Smith normally plans a dive trip to Fiji every year, and now that borders are set to open, it will be the first international dive holiday on Deb's agenda.

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What UW photographers who have had a long break from diving should do to make sure they get back up to speed.



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Canadian Jill Heinerth is a world-renowned cave diver, photographer and film-maker. Scuba Diver talked to her about how she first became interested in diving, and what the future holds in store for her.

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Brooke O'Connell explains the allure of Wellington's underwater habitats, which include the colourful Mermaid's Kitchen and the impressive F69 shipwreck.

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We take a look at some of the new products hitting the market, including the Seiko Prospex King Turtle watch, the TRIWA X Sea Shepherd watch, and the Blu3 Nomad, an innovative surface-supply dive set suitable for use in shallow water.

61 Test Extra

Scuba Diver Editor-in-Chief Mark Evans has been diving the Garmin Descent MK2i for several months on a long-term test, and here he tries the smaller cousin, the Descent MK2S, which has all of the functionality of the Descent MK2, but in a dinky package, more suited to teenagers, women and smaller blokes.

DIVE MAP



2019
YEAR OF THE
EARTH
PIG

NOTE: This map is only a Tourist Map of the Republic of the Philippines. The information contained here is used only as a functional tool to provide basic tourist information for travelers. The same cannot be used as official reference. The content in this brochure is owned by Tourism Promotions Board Philippines. All photos were used with the permission of the owners and Philippine Commission on Sports Scuba Diving (PCSSD). Information accurate as of time of printing, August 2019.



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GROUNDBREAKING SURVEY REVEALS EXTENT OF CORAL REEF CRISIS

After spending ten years assessing the state of coral reefs around the world, the Khaled bin Sultan Living Oceans Foundation has released a comprehensive report of their findings from the Global Reef Expedition

After spending ten years assessing the state of coral reefs around the world, the Khaled bin Sultan Living Oceans Foundation has released a comprehensive report of their findings from the Global Reef Expedition.

The Global Reef Expedition Final Report provides valuable baseline data on the status of the world's reefs at a critical point in time and offers key insights into how to save coral reefs in a rapidly changing world.

Both natural and man-made factors have contributed to a precipitous decline in coral reefs as coastal development, pollution, disease, severe storms, and climate change have all impacted the health of coral reefs. As oceans continue to warm, and massive coral bleaching events occur with increasing frequency and severity, coral reefs are struggling to survive. Scientists estimate that half of the world's coral reefs have been lost in the last 40 years. Coral reefs are clearly in crisis. How do we save the reefs that remain before it is too late?

The Khaled bin Sultan Living Oceans Foundation (KSLOF) embarked on the Global Reef Expedition to address this coral reef crisis. This research mission brought together hundreds of scientists from around the world to conduct tens of thousands of standardized scientific surveys at over 1,000 reefs in 16 countries. The expedition traveled around the globe surveying and mapping coral reefs, from the Red Sea through the Atlantic, Pacific, and Indian Oceans. Scientists on the research mission worked closely with local experts, managers, educators, and government officials to help the Foundation collect the data needed to develop science-based solutions to conservation.

The Global Reef Expedition set out to understand the health of the world's reefs by surveying and mapping coral reefs, identifying their current status and major threats, and examining factors that enhance their ability to survive - and recover from - major disturbance events such as coral bleaching. In addition to the scientific efforts, the Global Reef Expedition also engaged in education and outreach programs designed to improve ocean literacy, educate





Photography © Khaled bin Sultan Living Oceans Foundation



students and community leaders about coral reefs, and inspire conservation action. The report notes that swift action is needed to address climate change and overfishing in order to combat the coral reef crisis. However, it also identified management efforts, such as reducing pollution and establishing marine protected areas, that can be taken to spare local reefs from the worst impacts of these global problems. These conservation efforts may be able to help save the reefs that remain. The Foundation had its greatest success in coral reef conservation by engaging local communities directly in conservation. By involving local experts and government officials in data collection, combining the scientific findings with outreach and education efforts, and addressing disparities in ocean literacy, the Foundation was able to provide countries with the information they needed to manage their marine resources effectively.

The Khaled bin Sultan Living Oceans Foundation freely shared its research findings with government officials, marine managers, and other conservation organizations so that the maps and data from the Global Reef Expedition could be used for marine conservation. Now that the Global Reef Expedition is complete, Prince Khaled bin Sultan, who funded and spearheaded this research mission, says he hopes the findings will help to 'leave a legacy of ocean conservation, so our children, and our children's children, can also experience the beauty and wonder of a coral reef'.

Scientific report

The Global Reef Expedition Final Report was published on 7 October 2021. Authors include Renée Carlton, Alexandra Dempsey, Liz Thompson, and Amy Heemsoth of the Khaled bin Sultan Living Oceans Foundation and Sam Purkis of the Khaled bin Sultan Living Oceans Foundation and the University of Miami's Rosenstiel School of Marine and Atmospheric Science. Copies of the report are available to view and download on the foundation's website at www.livingoceansfoundation.org

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COULD YOU BE UNDERWATER PHOTOGRAPHER OF THE YEAR 2022?



The search is on for the world's best underwater photographs. UPY - the Underwater Photographer of the Year - 2022 contest opened for entries on 1 November and closes on 4 January 2022. The contest is widely regarded as the world's leading underwater photography competition, attracting thousands of entries, with the winners showcased around the world in the mainstream media. The previous edition attracted entries from over 500 photographers and was won by Renee Capozzola from the USA.

Chair of the judges, Alex Mustard, said: "The previous edition of UPY created our biggest splash yet. During the pandemic the stunning photos proved so popular as an escape into the underwater world. Last year also saw our first female overall winner, with Renee taking the top spot in the entire competition with Shark Skylight. We're already excited about what UPY 2022 will bring. For many of the photographers, the last couple of years have brought more local diving, and it is really turning up very fresh underwater imagery. So we're continuing with our new My Backyard Award to celebrate images taken close to home, wherever that may be for you. Last year it was won by Mark Kirkland from the centre of Glasgow with While You Sleep."

UPY is an annual competition, that celebrates photography beneath the surface of the ocean, lakes, rivers and even swimming pools. British photographer Phil Smith was the first underwater Photographer of the Year, named in 1965. Today the competition is truly international, has 13 categories, testing photographers with themes such as Macro, Wide Angle, Behaviour, Wreck and Conservation photography, as well as four categories for photos taken specifically in British waters. UPY already has more than 30 prizes lined up for this year's contest, from the leading brands in diving and travel, with more set to be confirmed in the coming weeks. The contest incorporates a bespoke results system, providing feedback to the photographers on how far through the contest every single image has progressed, so every entrant will benefit from taking part. The experienced judging panel remains underwater photographers Peter Rowlands, Martin Edge and Alex Mustard.

www.underwaterphotographeroftheyear.com

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DIVE TIME ONBOARD SPIRIT OF FREEDOM

After an extended break due to COVID-19 travel restrictions, Cairns-based Spirit of Freedom is back and set to explore the tropical waters of the Great Barrier Reef and Coral Sea from 2 December 2021!

Offering accommodation to suit all budgets, the 37-metre steel-hulled vessel has 12 cabins, a complement of 12 crew and sleeps up to 24 passengers.

The experienced Spirit of Freedom team, known for attention to detail and world-class service, have put this downtime to effective use, with the vessel undergoing an extensive mechanical refit and crew busy learning new skills. Now, they are back and ready for 'dive time'!

Regarded as Australia's premier liveaboard, their three-, four- and five-night itineraries remain the same, as does the world-famous dive sites like Steve's Bommie, the Cod Hole and Osprey Reef. Plus, their COVID safety plan and flexible cancellation policy provides divers peace of mind when planning a trip.

Itineraries and accommodation options to suit all budgets

For those with only a few days to spare, the three-day/11-dive Cod Hole and Ribbon Reef trip begins every second Thursday from Cairns and travels along the rarely visited Ribbon Reefs, finishing 150 miles to the north at the world-famous Cod Hole. Over two and a half days, divers will encounter colourful tropical fish, an incredible variety of vibrant, healthy corals, giant clams, anemones, huge schools of cruising pelagic fish, and a family of giant potato cod. Your last night is spent on board in the bay at Lizard Island. Enjoy time ashore at Lizard Island the next morning, before boarding the low-altitude return flight to Cairns, arriving on Sunday morning.

Guests joining the four-day/15-dive Coral Sea Adventure will enjoy stunning aerial views long the coastline from Cairns, on the low-level flight to Lizard Island.



This trip begins every second Sunday, with the first day diving the very top of the Ribbon Reefs, before steaming overnight to Osprey Reef in the Coral Sea. Two days are spent diving the spectacular walls of Osprey Reef, an old volcanic atoll lying 225km off the coast, including the famous shark dive at North Horn in the stunning unwater amphitheatre! The last day is spent at Ribbon Reef Number 3 before the overnight journey back to Cairns, arriving early on the Thursday morning.

For those looking to maximise their time in the water, combining the three- and four-night itineraries into a seven-day, seven-night liveaboard dive expedition will allow for up to 26 dives over the week. The seven-night itinerary includes an overnight stay in secluded Watson's Bay, with a couple of hours to explore Lizard Island, and two full days at Osprey Reef in the Coral Sea. In between dives, relax and enjoy the comforts of Spirit of Freedom's spacious cabins, welcoming lounges and sundecks, and hearty chef-prepared meals.

www.spiritoffreedom.com.au

DIVE MUNDA CELEBRATES ONE-YEAR ANNIVERSARY OF YOUTH SPONSORSHIP PROGRAMME

The Dive Munda team watched with excited (albeit nervous!) anticipation as we saw more and more borders reopening and destinations aligning for international travel to resume. The Solomon Islands is still here and the team cannot wait for their turn to welcome you back soon!



In the meantime, some exciting updates and more news and partnership announcements below and coming!

In August, Dive Munda celebrated their one-year anniversary since starting their Youth Sponsorship Programme with awesome success stories. Thanks to generous sponsorships; during Phase 1, they trained 110 local Solomon Island Youth (60 percent female, 40 percent male) to become certified SSI open water divers; in Phase 2 they already trained 20 local youth to become SSI Advance Adventurer certified and now, with Phase 3 starting soon, they will see more partnerships come to the table to help them train five local Solomon Island youth (four female and one male) from Phase 1 and 2 to become SSI Dive Professionals! Watch this space for an incredible new sponsorship partnership announcement shortly!

Dive Munda would love to get to train at least 20 more youth to become certified as advanced divers under Phase 2! Again, the team need your help here. You can still sponsor a youth via any of their initiatives. Huge thanks to Stephen and Marina Neuerburg, David Strassman, Jonathan and Matt Durden, Kate and Shannon Coyne, and Imelda and Graham O'Loughlin for sponsoring. Contact Dive Munda at: dive@divemunda.com to find out what you can do.

www.divemunda.com

DIVER FINDS 900-YEAR-OLD SWORD OFF COAST OF ISRAEL

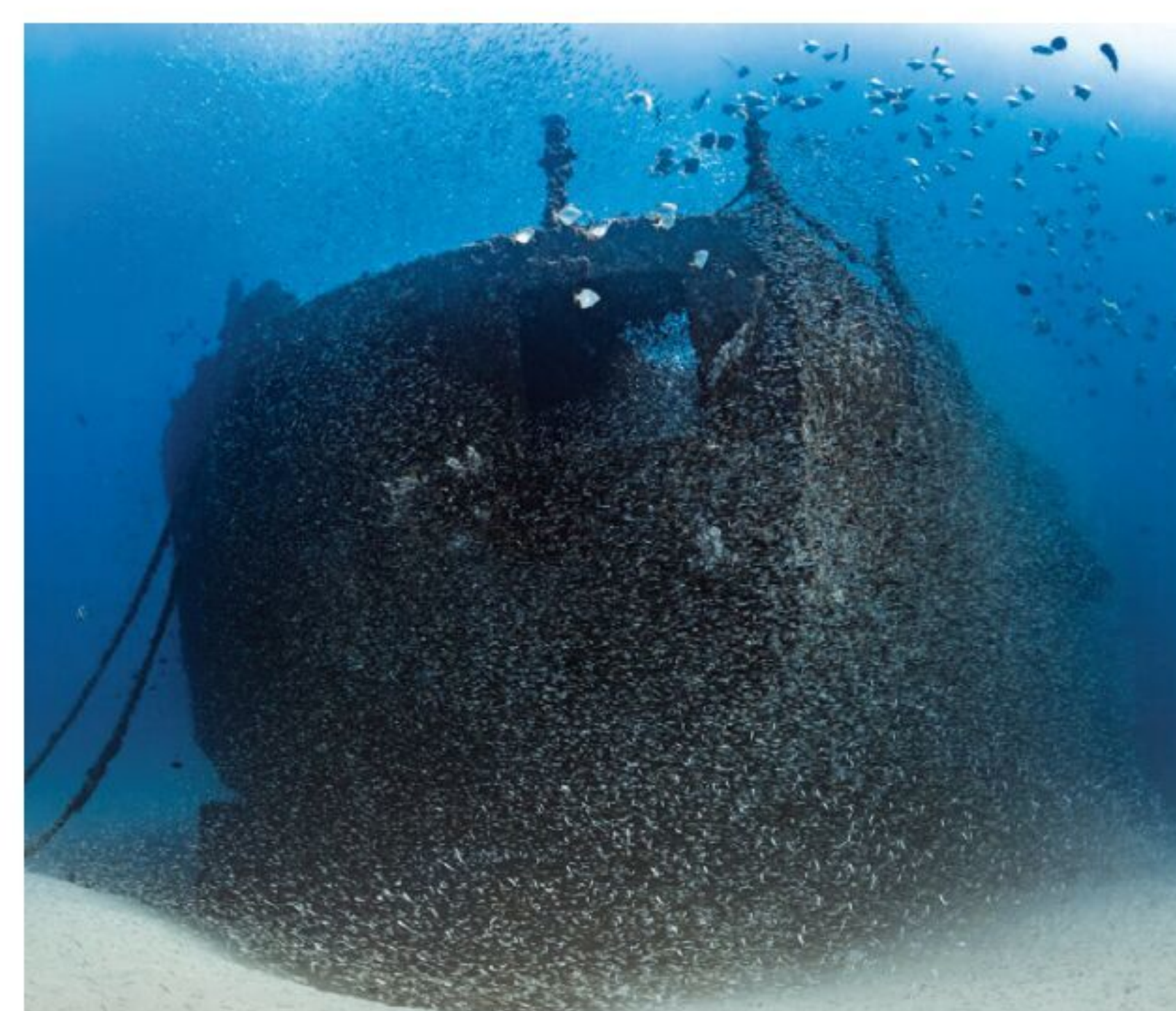
A one-metre-long sword thought to date back 900 years and possibly wielded by a crusader knight has been found by a diver off the north coast of Israel.

Shlomi Katzin was exploring a natural cover near to the port city of Haifa off the Carmel coast, which was known to provide shelter for ships in the Mediterranean during storms for many centuries.

The sword, which is heavily encrusted with marine growth, is thought to have been uncovered by shifting sands. Other finds included shards of pottery, and a number of stone and metal anchors. He recovered the sword as he feared if he left it, it would be stolen.

Katzin handed over the weapon to the authorities, and the Israel Antiques Authority (IAA) said that once it has been professionally cleaned and analysed, it would be put on public display. The eagle-eyed diver was rewarded with a certificate of appreciation for good citizenship.

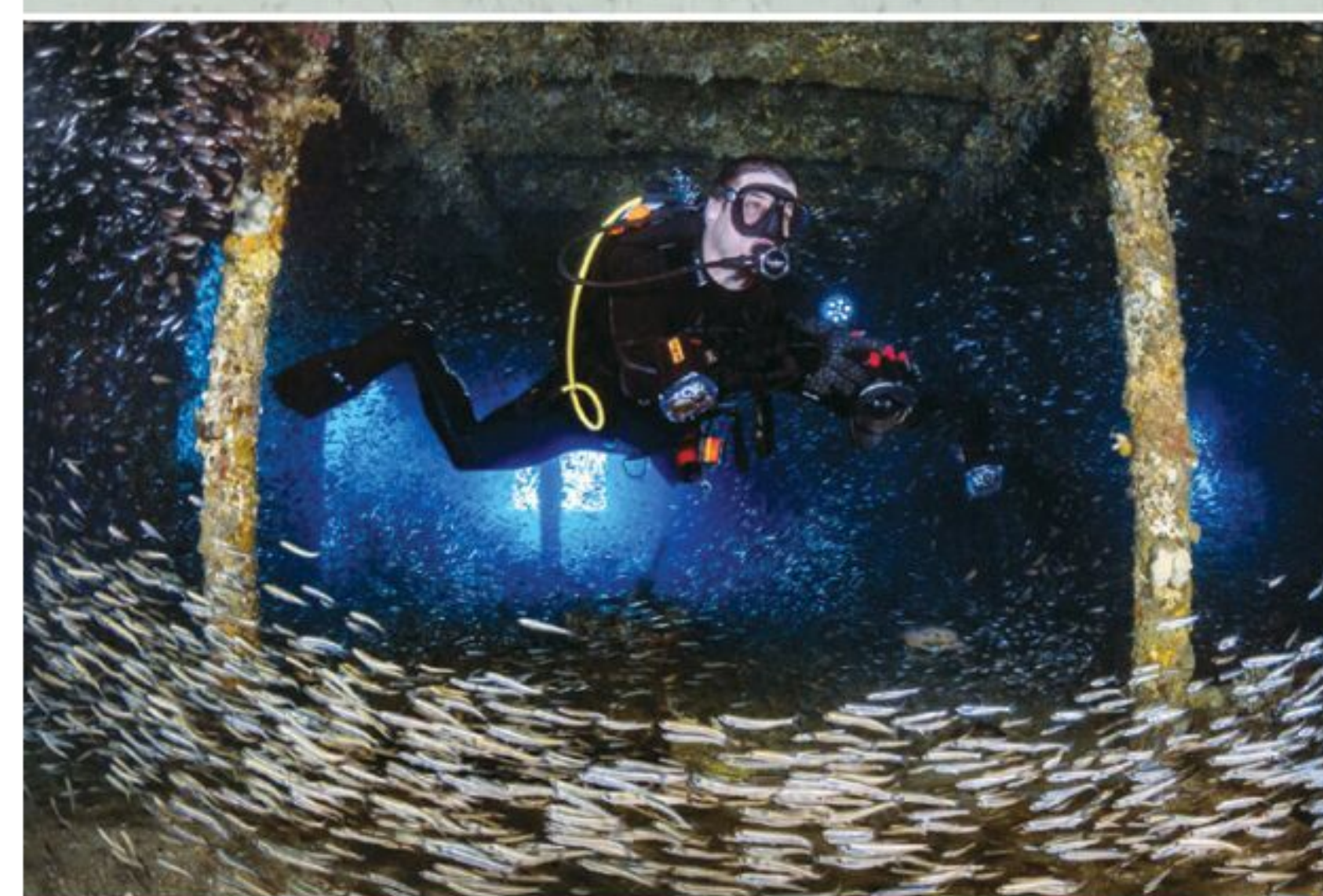
Inspector Nir Distelfeld, from the IAA's Robbery Prevention Unit, said: "The sword, which has been preserved in perfect condition, is a beautiful and rare find and evidently belonged to a crusader knight."



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We all spend far too much of our life Googling information, facts and figures, but now you can be doing your bit to help protect the oceans at the same time by using a search engine that funds campaigns to remove plastic from our seas. OceanHero search engine users have helped recover 21 million ocean-bound plastic bottles from the comfort of their homes and offices.

“When you consider that 18 billion pounds of plastic waste enter our oceans every year, you realize that each of us has a responsibility to stem the tide,” said OceanHero founder Marvin Burman. “If humans don’t make major changes by 2050, there will be more plastic than fish in the oceans.”

How OceanHero works

Internet users add the OceanHero search engine to their browser. When they conduct a search, open a new browser tab or answer ocean-themed trivia questions, OceanHero pays partners to recover ocean-bound plastic.

OceanHero works with organizations that have created a global infrastructure of plastic collection hubs, built micro recycling plants, found innovative ways to repurpose plastic, and provide pollution education. The funds come from unobtrusive ads displayed in the browser and search results, similar to what you see in any search engine. OceanHero does not track users’ search history, or sell any personal information to third parties.

Turning waste plastic into bricks

OceanHero works with Trash Waste Solutions to reclaim ocean-bound plastic and turn it into bricks in Manado, Indonesia – an area that has suffered massively from plastic dumping. Burman noted: “Many communities have limited waste management systems. Recycling centres are often only available in larger cities. That’s why we started this pilot project in Indonesia. We’re creating micro recycling plants that transform plastic waste into building blocks. So instead of plastic destroying communities, it can rebuild them.”

Additional Global Ocean Protection Partnerships

OceanHero also partners with Plastic Bank, which has 32 branches in Haiti and the Philippines. Plastic Bank provides family sustaining plastic collection jobs in under-developed communities then recycles the plastic waste into reusable products.

The search engine also supports Waste Free Oceans, an organization that improves recycling infrastructure throughout the world. Burman noted: “This work will help more than 700 species that are impacted by plastic entanglement and ingestion.”

A Beautiful and Educational Experience

When you add the OceanHero search engine to your browser, you can select ocean mode to see stunning oceanscape homepage backgrounds with every new tab that you open.

You’ll also enjoy fun interactive elements. Burman said: “When people use our browser extension, we continuously engage them with messages and questions that highlight the marine-ecosystem’s importance and what we can do about ocean pollution.”

About OceanHero

OceanHero is a search engine that helps you save the oceans from plastic pollution with every click. The social business partners with and funds nonprofit organizations to recover ocean-bound plastic, create recycling infrastructure, and provide pollution education.

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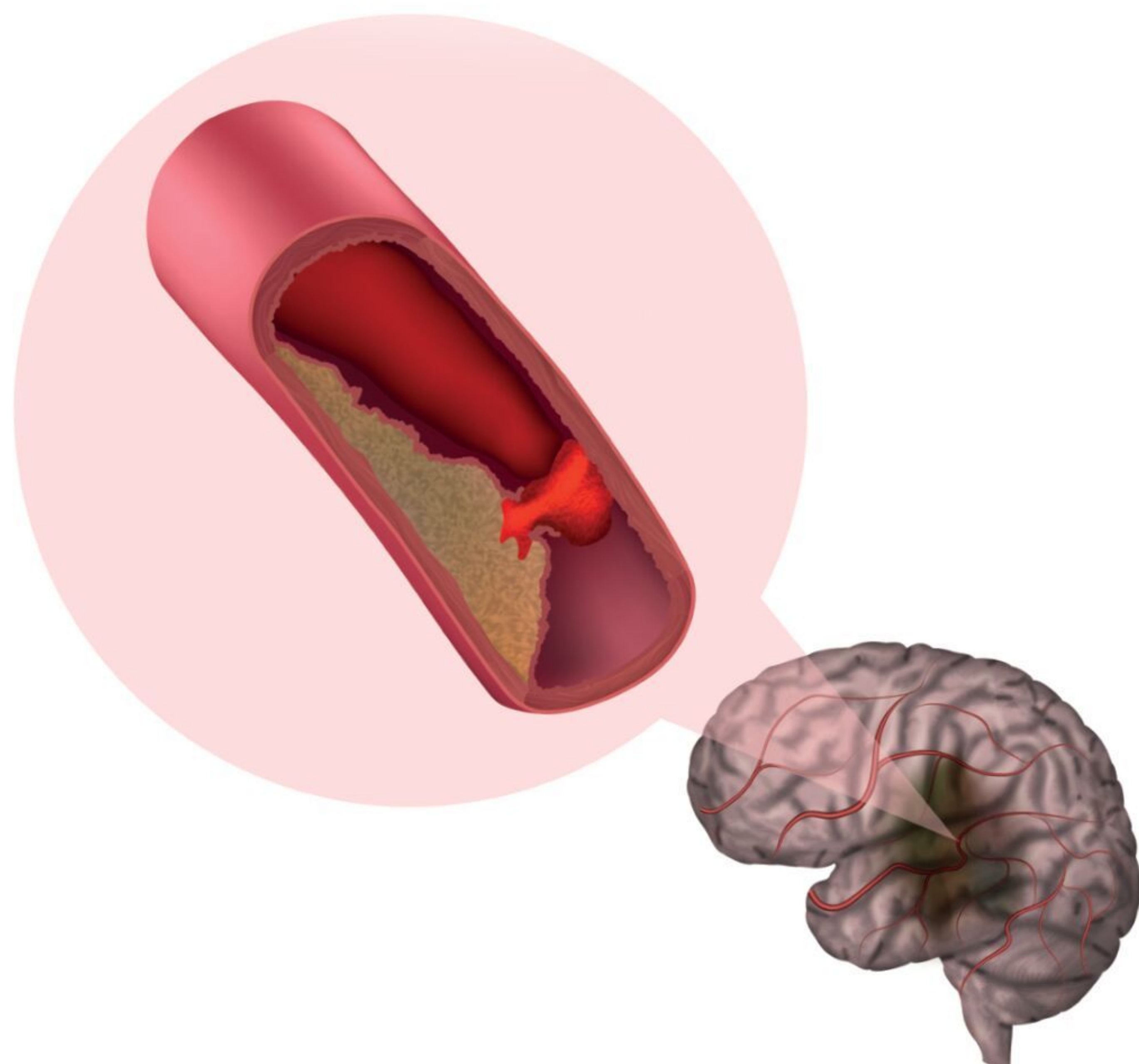
DAN medical specialists and researchers answer your dive medicine questions

THROMBOTIC STROKE

Q: I am 60 years old and had a thrombotic stroke two years ago. Surgery on my carotid artery restored circulation, but I have left-arm paralysis and diminished movement in my left leg, and I need a cane to walk. My doctor says I am unlikely to have a repeat stroke, and I currently am not taking any medications. Will I be able to dive again?

A: A cerebral vascular accident, or stroke, occurs in two ways: haemorrhagic (bleeding) or thrombotic (clot). Both forms affect oxygen and blood flow to the brain. Lasting deficits are common after a stroke and may affect speech, strength and movement. For a thrombotic stroke, a thrombolytic medication such as a tissue plasminogen activator (tPA) can break up the clot and should restore oxygen and blood flow. The unfortunate drawback to this drug is that it must be administered within hours after the onset of symptoms.

Paralysis is not uncommon following a stroke. A doctor should evaluate your level of impairment and what effect it may have on your diving. Inability to use your arms can make it difficult to work with your gear, such as adjusting your buoyancy compensator, clearing your mask or reaching a back-up regulator. If the deficit affects your legs, it may be difficult to swim, kick, move with gear on while on a wet boat deck or rocky shore entry, or swim against a current. A physical deficit may also affect your ability to respond to an emergency, making it difficult to self-rescue or rescue a buddy. Residual spasticity can make some activities particularly difficult and exhausting.



Carefully weigh your return to diving and assess the risk versus reward. Your doctor should determine and address the reason for your stroke. No studies are available that address if the areas of your brain damaged by your stroke will be more susceptible to decompression illness (DCI). Even a mild neurologic DCI incident could have severe consequences and affect the degree of function you achieved through rehabilitation.

If you decide to dive, we suggest that you seek a detailed ongoing assessment and approval from your treating physician. This process should include a complete dive physical and a neurological evaluation that includes the strength and weakness of major muscle groups and the degree of cerebral injury as well as an assessment and comparison of the left side and right side of your body. This evaluation will help avoid diagnostic confusion in the event of postdive problems. The treatment for stroke and DCI is very different, so the correct diagnosis is vital to guide you to the appropriate treatment facility.

Lasting mobility and movement limitations may require you to have further training with specially trained dive buddies. There are agencies that specialise in helping divers with limited mobility to enjoy the underwater world.

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STRAD ISLAND

The coastline of Australia boasts a stunning array of picturesque islands and coral cays. In Western Australia, there is Rottnest, in South Australia Kangaroo and Neptune, the State of Victoria has Philip Island, and in New South Wales, there is Lord Howe, and these are just the tip of the iceberg. Queensland is also blessed with some real gems.

North Stradbroke Island, or Straddie as known colloquially, is a stone's throw from Brisbane. It has long been a popular destination for Brisbanites to escape the hustle and bustle of city life for a relaxing weekend away. Straddie, and its neighbour Moreton Island, sit in Moreton Bay and act as two huge barriers protecting the city of Brisbane from the might of the Pacific Ocean. They are also one of the reasons that Brisbane is bereft of the stunning sandy beaches that the Gold and Sunshine Coast are famous for. These barriers force the Brisbane River to deposit its silty cargo in the bay rather than out to sea, creating mud flats instead of golden beaches.

Fortunately, North Stradbroke Island, the second-largest sand island in the world, has plenty of the sandy beaches that Australia is famous for, and it is only a 30-minute ferry ride from Brisbane. These sandy beaches make the island a mecca for surfers and holidaymakers and over the school holiday, the population swells to more than twice its normal size. The area is also a popular destination for divers, and the temperate waters around North Stradbroke Island contain an abundance of marine life and a superb array of dive sites.

The diving is excellent year-round, but there are two distinct seasons which each provide very different animal encounters. In the summer months, from November to April, the main attraction is the manta rays and leopard sharks. In the winter months from May to October, grey nurse sharks aggregate in large numbers. This is also when the spectacular humpback whale's migration occurs. The diving here is very weather-dependent, with some of the sites exposed to the open ocean and prone to strong currents. However, there are some sheltered areas, so there is usually a Plan B to fall back on if the weather is not very co-operative.

BROKE



Did you know?

The sand tiger shark is a slow-moving coastal predator distinguished by its flattened, conical snout and spiked, protruding teeth similar to the tiger shark. The sand tiger shark has small eyes and light brown skin that resembles sand, which helps the shark blend in.

There are three main dive areas at Straddie - Shag Rock, Flat Rock, and Manta Bommie. Shag Rock is close to the island, and as a result, is the most sheltered. Currents are usually minimal on this site. With a maximum depth of around 16m, it is ideal for courses, beginner divers, or even advanced divers looking for a more-sedate dive. Wobbegongs and bamboo sharks can be found lounging on the reef or hiding under a rocky overhang. Scorpionfish, lobster, crabs and octopi hide in the numerous crevasses and nudibranch of different shapes and sizes move sluggishly around this spectacular underwater realm.

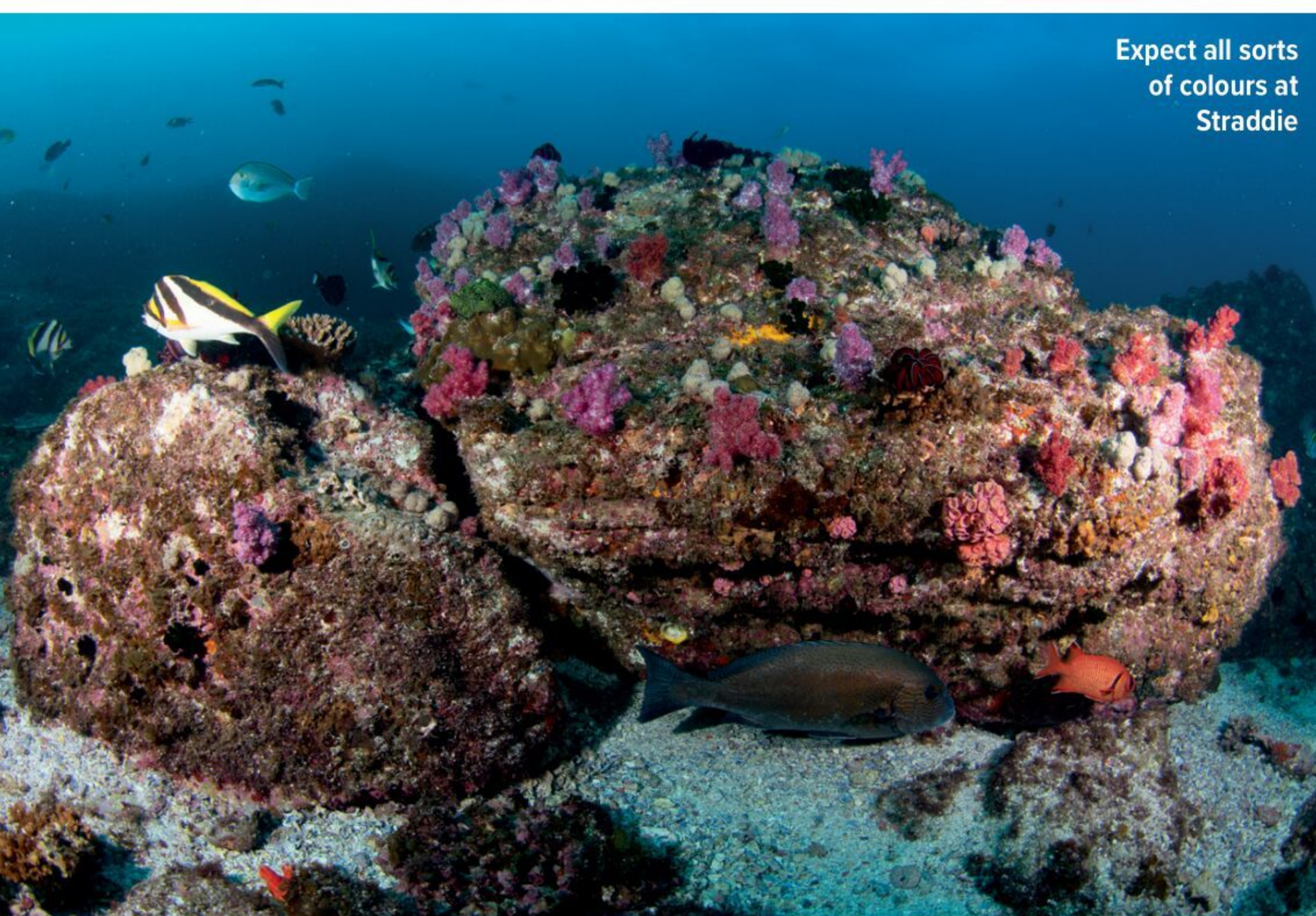
Flat Rock is one of the signature dive sites of the area. It is around 2.5 nautical miles from the northern tip of the island and reaches a depth of approximately 35m in some parts. The northeast side of this vast dive site faces the open ocean, and deep gutters have been gouged into the rock by the relentless onslaught of the seas, forming a dramatic landscape of ridges and canyons. The winter months herald the arrival of the endangered grey nurse sharks, and the gutters are usually packed with these large docile creatures. Year-round inhabitants of the reef include hawksbill and loggerhead turtles, wobbegong sharks, whitetip reef sharks, the occasional bull shark, numerous rays and a good smattering of pelagics. ▶

Scuba Diver Australia and New Zealand Editor-at-Large Adrian Stacey extols the virtues of North Stradbroke Island, and explains why he always looks forward to a visit to the multitude of dive sites off 'Straddie'

Photographs by David Biddulph & Adrian Stacey



Huge school of jacks



Expect all sorts of colours at Straddie



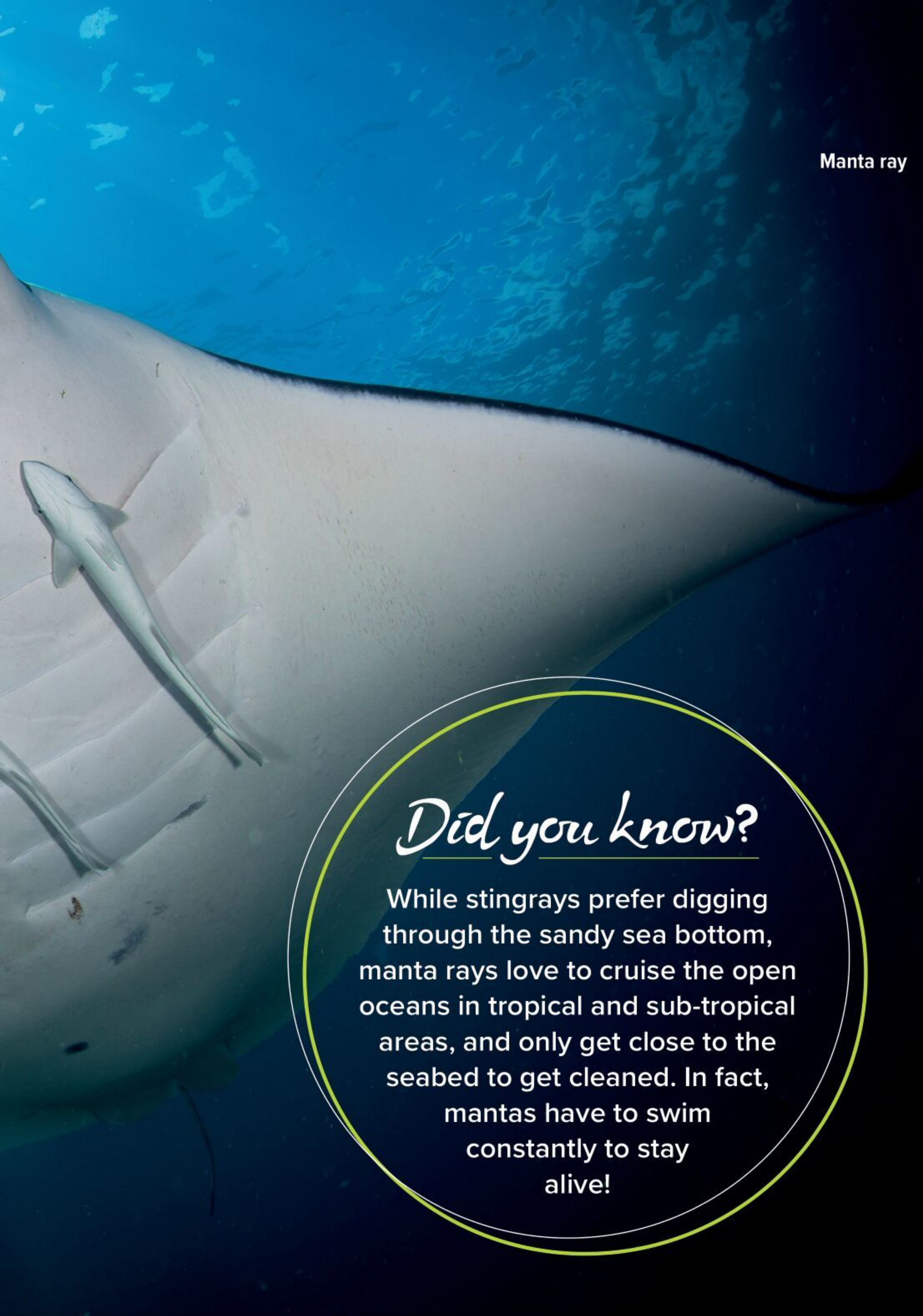
“ Diving at Straddie can be done from the mainland with one of the dive shops in Brisbane, and depending on their departure point, the boat ride can take between one and a half to two hours ”

The southwest side of Flat Rock has a very-different, more-gentle topography. Layers of undulating rock roll, gently from its summit to the ocean floor, pockmarked with the occasional coral bommie. A variety of soft corals and hard corals cling to the rocky topography, and the reefs are home to numerous colourful fish, including blue tangs, clownfish, butterflyfish and rainbow wrasse, to name a few. On a recent dive here, we encountered an immense school of big-eyed jacks. At times, this swirling mass of fish engulfed the entire group of divers and entertained us for a good ten to 15 minutes, constantly morphing into a variety of different shapes. The previous day a great hammerhead had been spotted around the school, no doubt in search of dinner, but there was no sign of the creature on this occasion.

Manta Bommie is a small rocky reef located just off the north tip of North Stradbroke Island. The reef sits at a depth of around 15m and is surrounded by substantial sandy plains. Three bommies sit onto the reef and reach about 5m from the surface. The conditions here can be challenging as the site is prone to strong currents and swells. During the winter months, Manta Bommie is somewhat desolate and rarely dived. However, during the summer months it explodes into



Recreational and technical divers are welcome



Manta ray

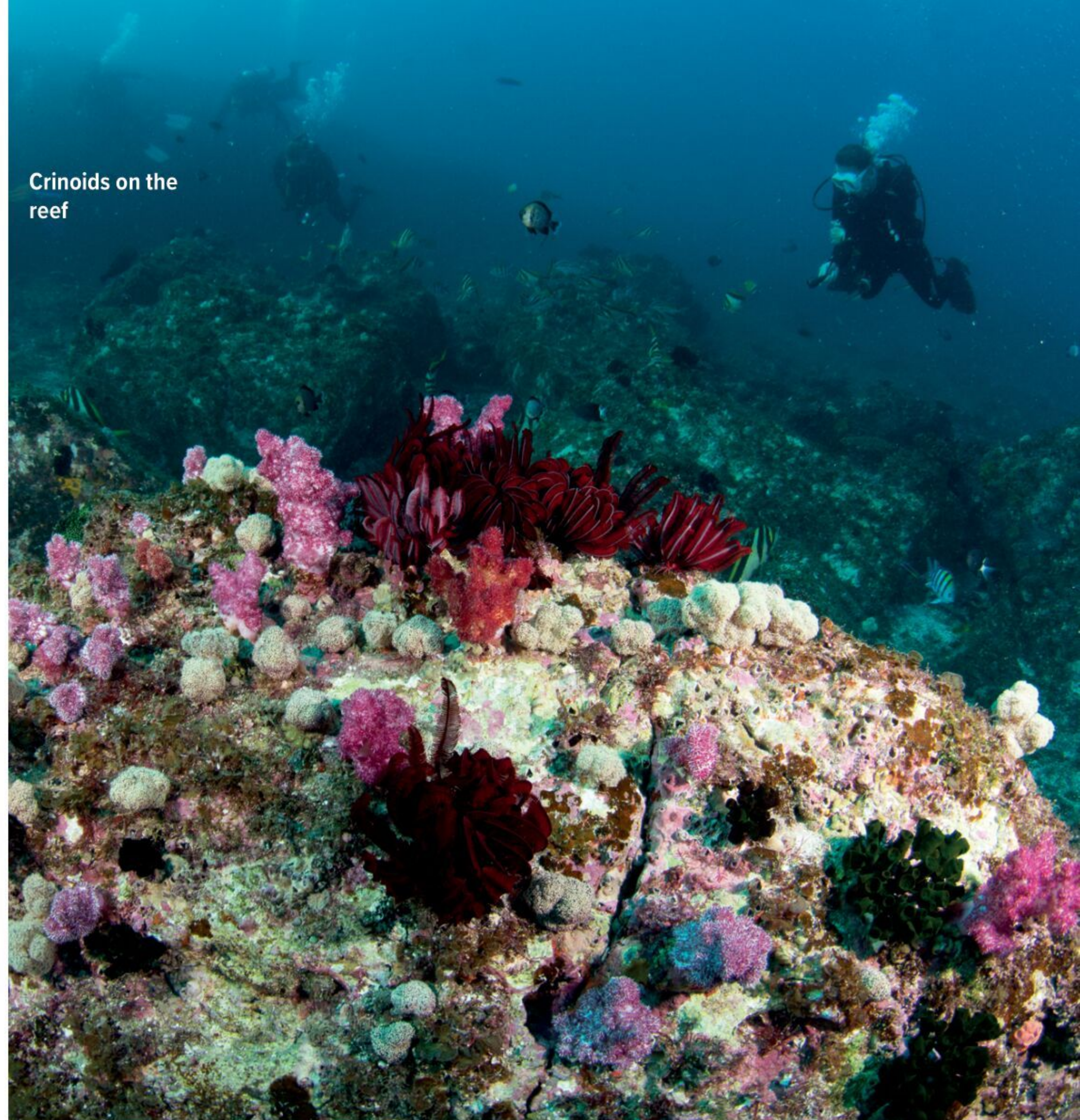
Did you know?

While stingrays prefer digging through the sandy sea bottom, manta rays love to cruise the open oceans in tropical and sub-tropical areas, and only get close to the seabed to get cleaned. In fact, mantas have to swim constantly to stay alive!

life. Leopard sharks arrive in their hundreds and can be found lounging on the sandy seabed. They are joined by shovelnose rays, whiptail rays and eagle rays. The main attraction, though, is the manta rays, who turn up in large numbers to stop at this somewhat innocuous location to visit one of the cleaning stations and feed. Manta Bommies receives rave reviews from most people who dive this little-known gem, and it is considered the second most-important gathering site for mantas in Australia. In addition to the three main areas, there are several other sites, including Boat Rock, Roaring Deep, Seven's Reef and 29 Fathom Reef. These are generally for more advanced and technical divers due to their depth and often challenging conditions.

Boat Rock is located a little to the north of Manta Bommie. This large pinnacle drops down to a depth of around 25m. Strong currents usually sweep over this exposed dive site, so while it is not an easy place to dive, it does attract large pelagic fish like barracuda and sharks, that wait here in large numbers for a meal to be swept by.

As the name alludes to, Roaring Deep is a deep drift dive just off Flat Rock; a swift current takes divers on an exhilarating journey across the reef at a depth of around 25-30m. Large fever of eagle rays and mobula rays, bull, sandbar and whaler



Crinoids on the reef

sharks are often encountered on this spectacular dive.

Seven's Reef is a site more suited to tech and rebreather divers. The shallowest point of this site is around 20m, the deepest part around 50m, large 20m pinnacles rise from the seabed, and the area is a popular place for bull sharks, bronze whalers and sandbar sharks to hang out.

29 Fathom Reef, with its strong currents and reefs between 50-60m deep, is another one for the tech divers. Large schools of fish congregate here, and they, in turn, attract barracuda, kingfish and, of course, plenty of sharks.

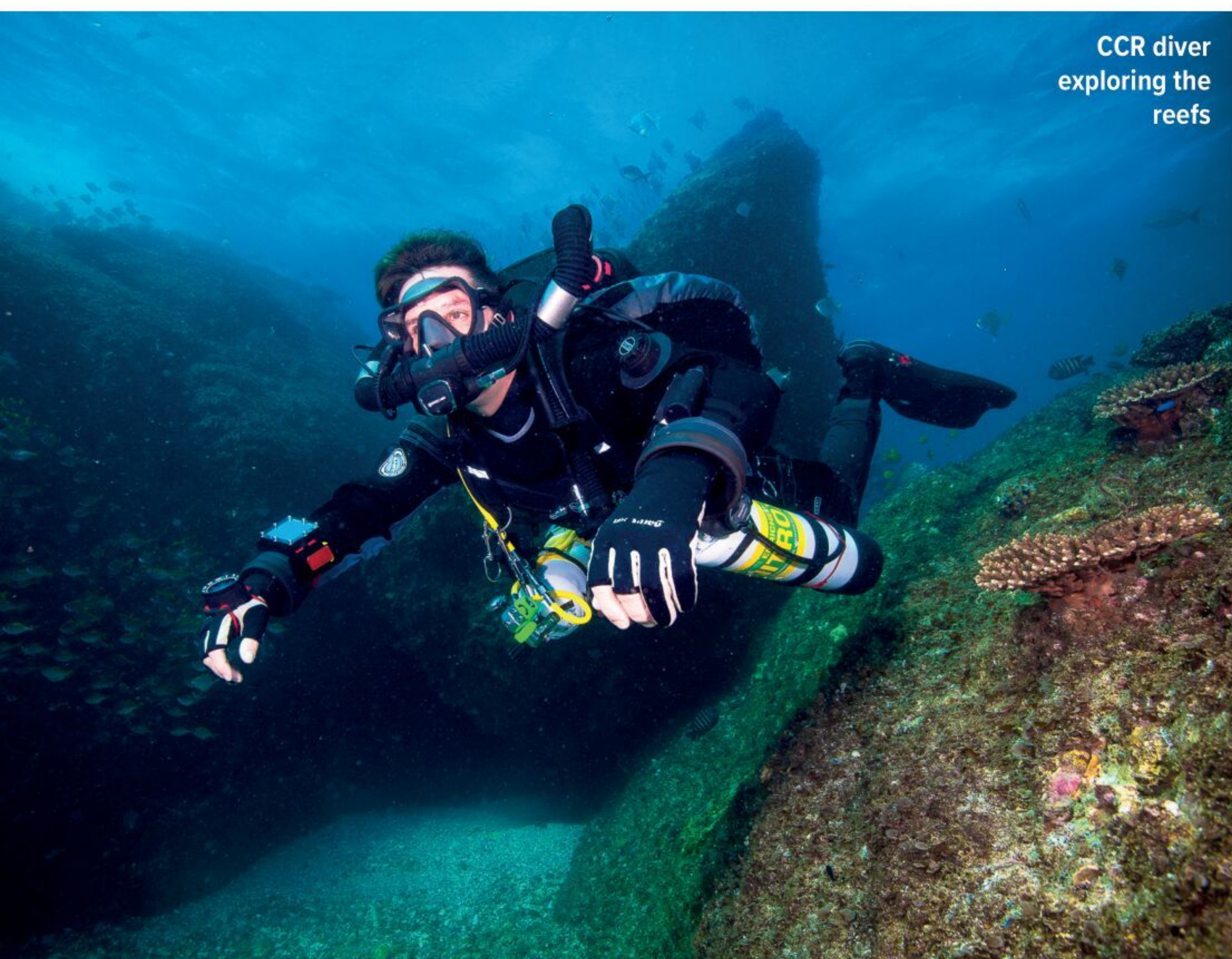
Diving at Straddie can be done from the mainland with one of the dive shops in Brisbane, and depending on their departure point, the boat ride can take between one and a half to two hours. The other option is to dive with Manta Lodge, the only dive centre located on the island itself. Manta Lodge is a well-run and professional dive centre. It is clear that the owner James and the manager, Dan, are passionate about the diving at Straddie, and this translates to their staff, who have all been excellent on the occasions I have dived there. Warm rain jackets are provided for the surface interval in the colder months, and safety is clearly ►



Leopard shark



Manta flies in over a cleaning station



CCR diver exploring the reefs

“ The diving is magnificent, and with Manta Bommie, they have one of the top dive sites in Australia just on their doorstep ”

of paramount importance. They have several dive festivals throughout the year, including Shark Fest and Nudi Fest.

Manta Lodge is also gaining an excellent reputation among technical divers. They can offer full support, including boosted oxygen and helium on-site, cylinders for both open circuit and CCR, along with Suex diver propulsion vehicle rental. Training is also available on both open circuit and rebreather technical diving. They also hold an annual tech diving weekend with guest speakers, equipment demos and dive charters to some of the aforementioned dive sites.

Getting to North Stradbroke Island is easy. Ferries leave from the Brisbane suburb of Cleveland hourly, and the 5.55am ferry will get you to the island in time for the morning dives with Manta Lodge. You can then get a ferry back and be home just after lunch. Alternatively, if you are planning an overnight trip of a few days away, there is YHA accommodation at the dive centre, a campsite just opposite, and several hotels are only a short drive away. There are also plenty of AirB&B options, but over the school holidays, these quickly book up.

North Stradbroke Island should be at near the top of anyone's list of places to visit while in Brisbane or, for that matter, Queensland. The diving is magnificent, and with Manta Bommie, they have one of the top dive sites in Australia just on their doorstep.

Add to this the stunning beaches, relaxed atmosphere, and it is the perfect place to visit for families looking for some adventure and avid divers alike. ■



Whitetip reef shark

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TRAVELLING POST-COVID

WHAT YOU NEED TO KNOW



After months and months of border closures, finally some of our favourite diving destinations are opening their international borders – hooray! But... before you go crazy and book onto the next available liveaboard, there are a few additional requirements to entering and leaving each country, and they all differ. And before you even book, you'll need your International COVID Vaccination Certificate. Here are a few examples of conditions to entry for a few of our favourite dive destinations now open.

Fiji

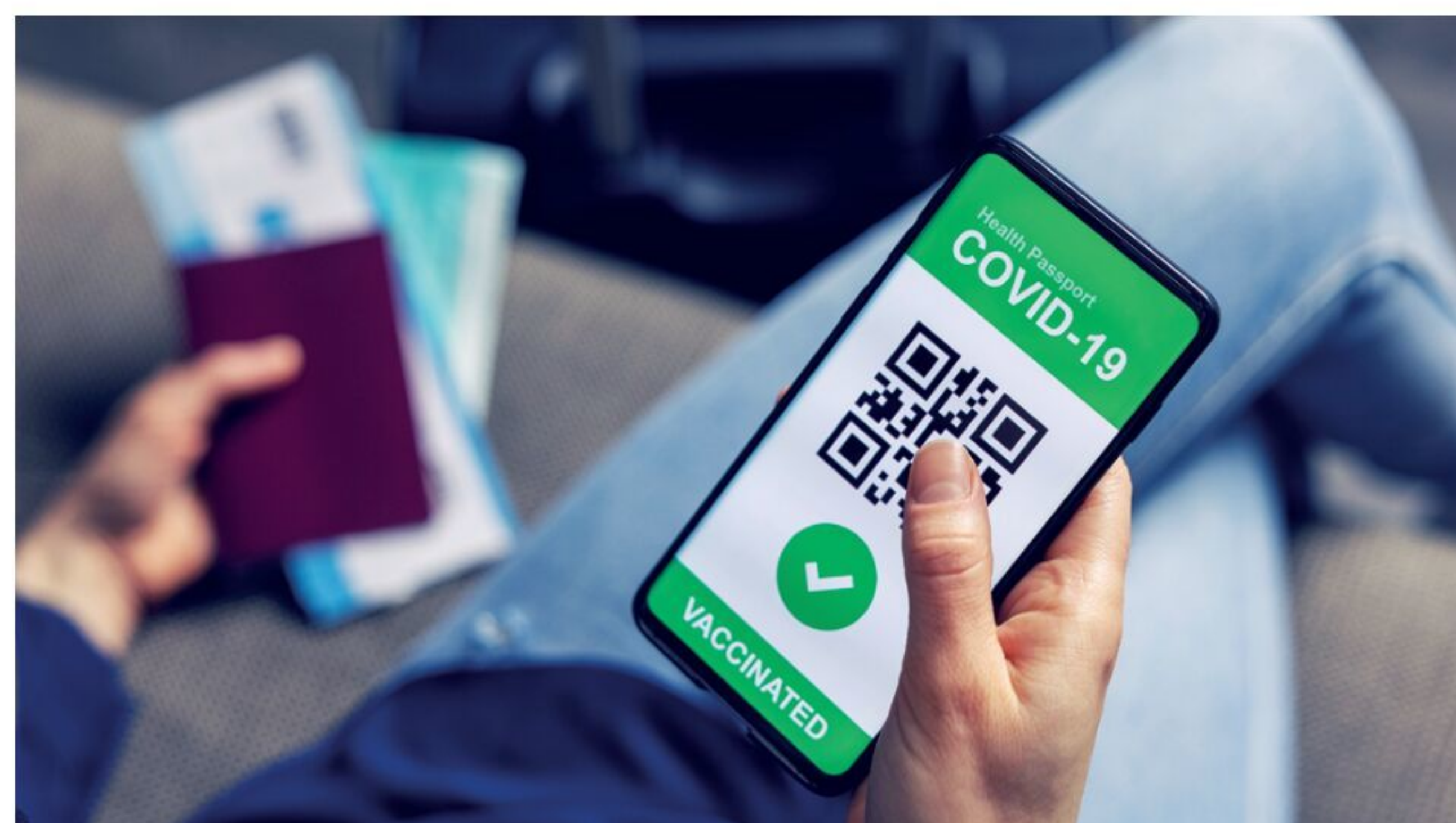
Let's talk about Fiji first, as they say 'bula'! to the world on 1 December 2021. There are still some entry restrictions, however:

- First, you need to be fully vaccinated at least 14 days prior to entry.
- Travel insurance is mandatory.
- You need to present a negative PCR COVID test on arrival.
- You need to choose accommodation and other travel arrangements with a Care Fiji Commitment (CFC) accredited operator.
- Two days after you arrive, you'll need to take a Rapid Antigen COVID test (all CFC accredited hotels can organise this – for a fee), before you embark on any day trips outside the resort or jump on a liveaboard.

Then you need to make sure you're familiar with your home country's requirements for returning home. Australians will need to take a PCR COVID test 48 hours prior to leaving Fiji, and Fiji currently has very few PCR testing facilities, so it's recommended the test is booked well in advance.

There are costs involved with each of these tests, in Fiji, the Rapid Antigen tests cost around FJ \$30, while the PCR tests cost FJ \$350, so you'll need to factor this into your holiday budget.

Staying with a Care Fiji Commitment (CFC) accredited hotel assures a World Health Organisation (WHO)-approved standard of best-practice health and safety measures for travel in a post-COVID world. Every tourism business will also have a dedicated Wellness Ambassador who is responsible for rolling out these enhanced health and safety measures across the business and keeping everybody safe.



Palau

Palau is open! BUT... there are a few requirements for entry, and documentation that needs to be presented to your chosen airline at check-in.

Vaccination - Travellers must submit proof of complete COVID-19 vaccination with final dose administered at least 14 days prior to arrival. **Negative COVID-19 PCR Test or Documentation of Recovery** - All travellers must also provide proof of either: a) A negative result of a COVID-19 PCR test, and such test must be taken within three days prior to departure from the point of origin; or b) Documentation of recovery from COVID-19, which includes proof of a recent positive viral test and a letter from a healthcare provider or a public health official stating that you have recovered and are cleared to travel. **Testing and Mitigation Orders After Arrival** - All travellers will be tested on the fifth day following their arrival and are required to follow the Mitigation Orders issued upon arrival. This makes liveaboard trips a little tricky, so it might be worth looking at a land-based dive trip.

Thailand

After trialling its so-called 'Sandbox Programme', Thailand now allows fully vaccinated visitors from 46 approved countries (including Australia and New Zealand) to enter by air with no quarantine requirements. Visitors will need to show that they are COVID-free at their time of travel with a PCR test undertaken before they leave their home country, and do a test in Thailand, after which they will be free to move around the country in the same way that any Thai citizen can.

Returning home...

Currently, Australia requires travellers to undertake a PCR Covid test two days prior to returning home, which is easier to organise in some countries than others. Some countries classified in the 'Green Zone' are exempt, including Vanuatu, The Solomons, Samoa, Tonga and Niue. ■

The team at Diveplanit Travel can help you navigate the entry and exit requirements for all your favourite dive destinations. Email us at enquire@diveplanit.com or call us on FREECALL 1800 607 913. [Diveplanit.com](https://diveplanit.com)



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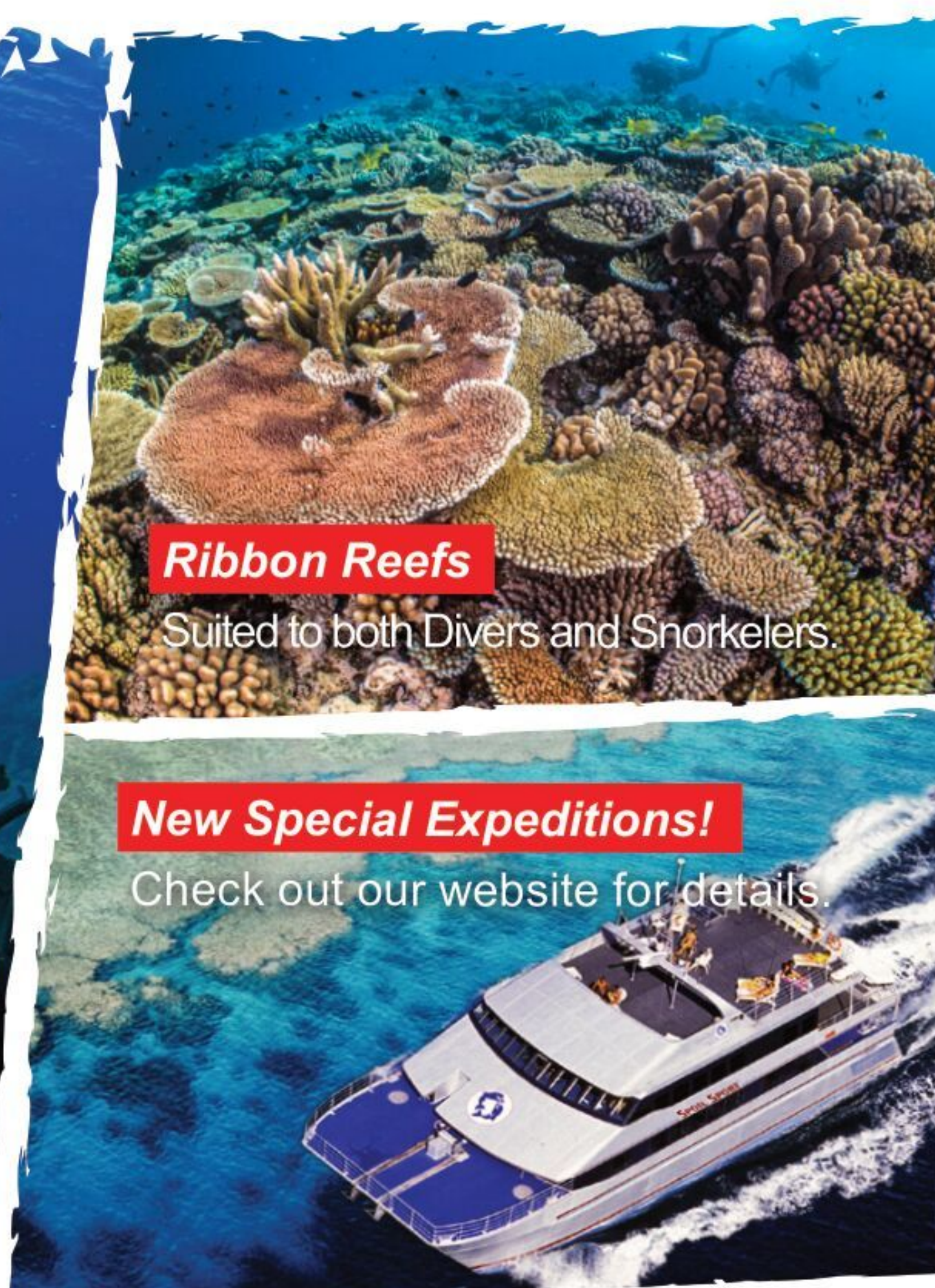


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Diveplanit Travel's Deborah Dickson-Smith normally plans a dive trip to Fiji every year, and now that borders are set to open, it will be the first international dive holiday on Deb's agenda

Photographs by Markus Roth, Thomas Vignaud, Brett Monroe Garner, Jon Piepkorn, Beqa Lagoon Resort and Barefoot Resorts

Here's a comprehensive guide to diving Fiji, from north to south, east to west. Admiring Fiji's rugged green volcanic landscape, it's not hard to imagine what stunning diversity of terrain and variety of marine life its aquamarine waters might reveal.

The country's 333 islands support over 300 species of hard corals, more than 1,500 species of fish and many species of soft corals, anemones, sea fans and nudibranchs. Circled by three of the world's largest barrier reefs, Fiji presents the ultimate adventure playground for scuba divers.

Acknowledged as the 'soft coral capital of the world', spectacular diving awaits in places like Vatu-I-Ra, where colourful coral-clad pinnacles rise from 40m to just below the surface, teeming with colourful anthias, swarms of fusiliers and schooling jacks and barracuda.

The Great Sea Reef and the Great Astrolabe Reef offer exhilarating drift dives along their magnificently coloured walls in the company of pelagics like giant trevally, sharks and manta rays, while for thrill-seekers, Fiji's shark-diving sites present the opportunity to get up close and personal with several species of sharks, from little blacktip reef sharks to magnificent tigers and bulls.

Suncoast - Rakiraki

If Fiji is known as the 'soft coral capital of the world', then Vatu-I-Ra in Bligh Water is the 'soft coral capital of the Fiji Islands'. The main island jump-off point for Bligh Water is located about two and a half hours' drive north of Nadi

on the main island of Viti Levu. The reef here is a maze of barely submerged coral pinnacles, all festooned with brightly coloured soft corals in yellows, pinks and deep purples. The soft corals attract crowds of bright yellow damselfish, purple and orange anthias, while swarms of fusiliers ply up and down the pinnacles and schools of eye-bar surgeons hang silently in the blue.

The nooks and crannies hide morays and sweetlips and whitetip reef sharks rest in the bottom of sandy gullies. The dive sites here are all named quite metaphorically - Wheatfield is topped with long, wavy soft yellow corals that look for all the world like a field of wheat swaying in the breeze; Purple Haze is a wall draped in purple soft corals; and Vatu Express is a drift dive - no finning required - just relax and enjoy the reefs and cleaning stations as you glide by.

Vatu-I-Ra is a favourite hangout of Fiji liveaboard, the Nai'a, and also accessible from the resorts near Rakiraki, including Volivoli Beach Resort.

The Mamanucas

The Mamanuca chain of islands is the closest to Fiji's international hub of Nadi, a short ferry ride from the main island. As you cruise past the islands that dot this archipelago, you'll see plenty of palm-fringed white sandy beaches and the stunning resorts.

But the Mamanucas hold plenty of treasures beneath the water too.

The Malolo Sea Reef produces perfect calm conditions within the lagoon for snorkelling the colourful coral gardens, with easy diving for beginners on sheltered bommies and pinnacles. It's the perfect place to try diving for the first time, or even learn ▶

Beauty & the BEASTS

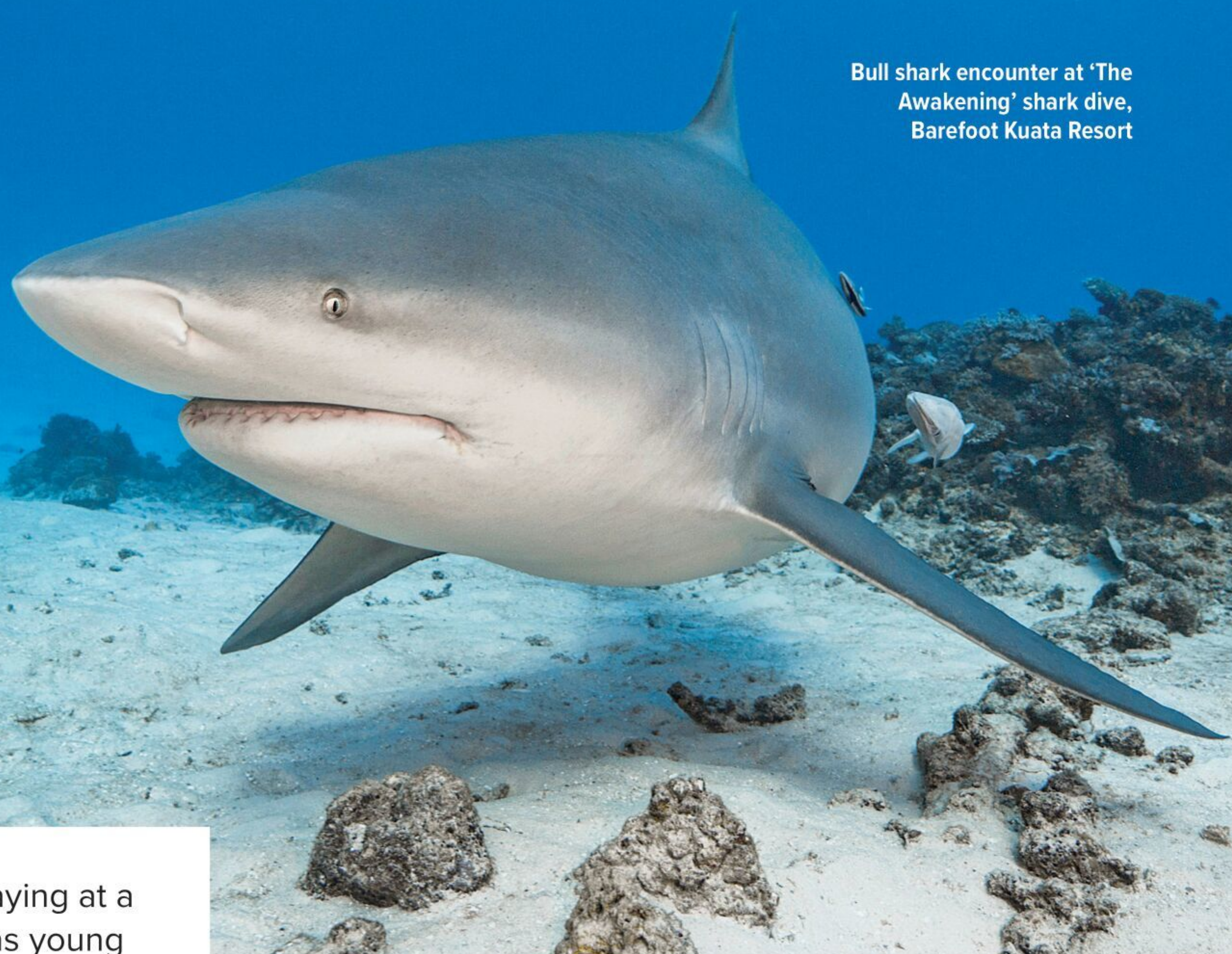
A GUIDE TO
DIVING IN FIJI

Bligh Water, an
explosion of colour.
(c) Tourism Fiji

Did you know?

Bull sharks are the star attraction on Fiji's shark dives - although they are sometimes overshadowed by the odd tiger shark - and they are a formidable sight. With their short, blunt snout, you are highly unlikely to mistake them for any other species of shark!

Bull shark encounter at 'The Awakening' shark dive, Barefoot Kuata Resort



to dive, whether you're holidaying with friends, staying at a luxury resort, or on holiday with the family – kids as young as ten can have a go at diving in Fiji.

Within the lagoon there are sites like Sunset Reef, a slowly shelving reef excellent for novice divers looking for coral trout and Maori wrasse, and Supermarket, which offers a good chance to see bronze whaler and reef sharks. The ocean side of the Sea Reef is characterised by wall and drift diving.

For a luxury dive experience with your own dive butler, head for Vomo Island Resort, and for an equally wonderful (cheaper) experience, try Treasure Island or Castaway Island.

The Yasawa Islands

The Yasawa Islands stretch north from the Mamanucas, a chain of rugged-looking volcanic islands. On the southern end of the Yasawas, you'll find a range of backpacker resorts, many with their own dive centres, offering an affordable, eco-friendly island-hopping experience for the young at heart. For those after a few more creature comforts, there are several luxury resorts tucked away among the islands at the northern end, where diving is included with your stay as well as gourmet food and five-star day spas. Being relatively remote, and close to deeper water, the Yasawas offer a good chance to encounter pelagic marine creatures like sharks and manta rays - indeed some of the resorts offer activities based around them.

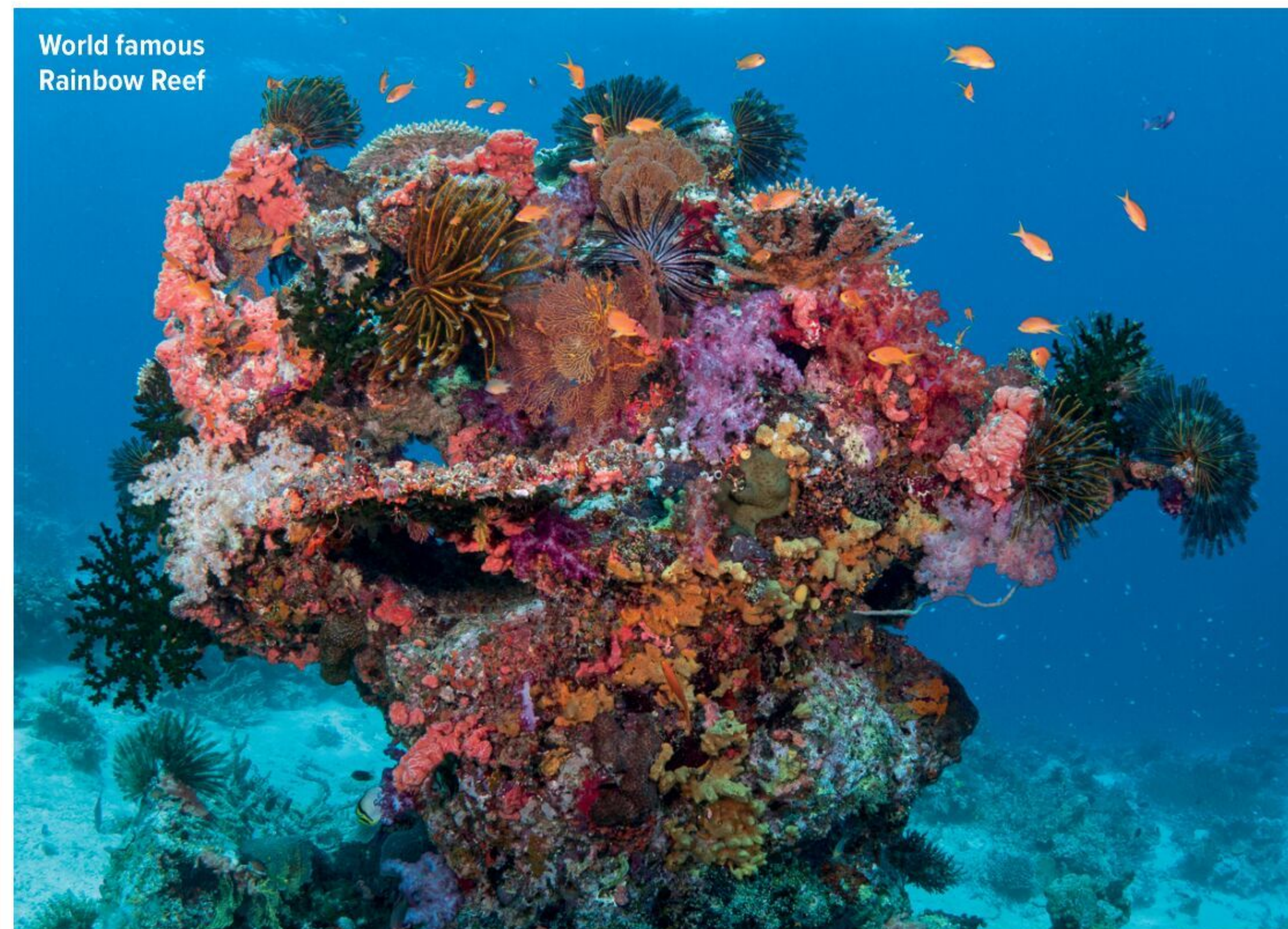
From Manta Ray Island, you can snorkel with manta rays in season (May to October) as they come into the shallows to be cleaned. Further south at Kuata you can snorkel

with sharks, and certified divers can enjoy the full shark dive experience on The Awakening shark dive. Here you can observe up to 12 different species of shark, from little blacktips to mighty tiger sharks as they swim in front of you looking for the little snacks the dive guides have hidden around the feeding area. A couple of good resort options for diving the Yasawas are Barefoot Manta and Barefoot Kuata Resorts. These dive sites are also accessible on a cruise with Captain Cook Cruises Fiji.

The Coral Coast

The Coral Coast is named for the fringing coral reefs that run along the southern coastline of Viti Levu – Fiji's main island. Though quite shallow and often out of the water at low tide, the edge of these reefs falls away hundreds of metres just a short distance offshore. This means that as well as gently

World famous Rainbow Reef



Jean-Michel Cousteau Resort, did someone say "tropical paradise"?



Want to know more about Fiji?

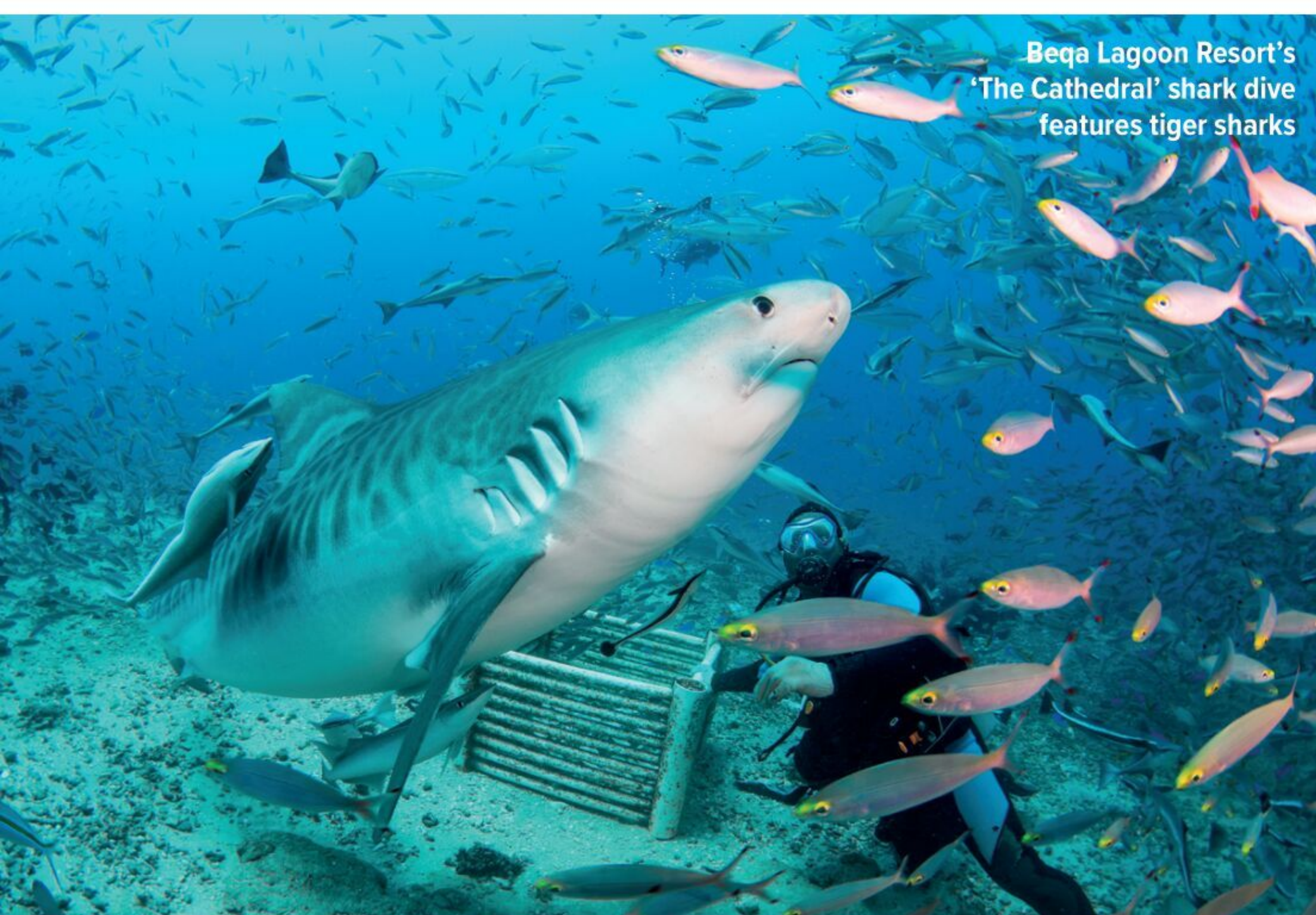
For more information about Fiji and the incredible diving on offer, please visit our website:

www.diveplanit.com/destination/fiji

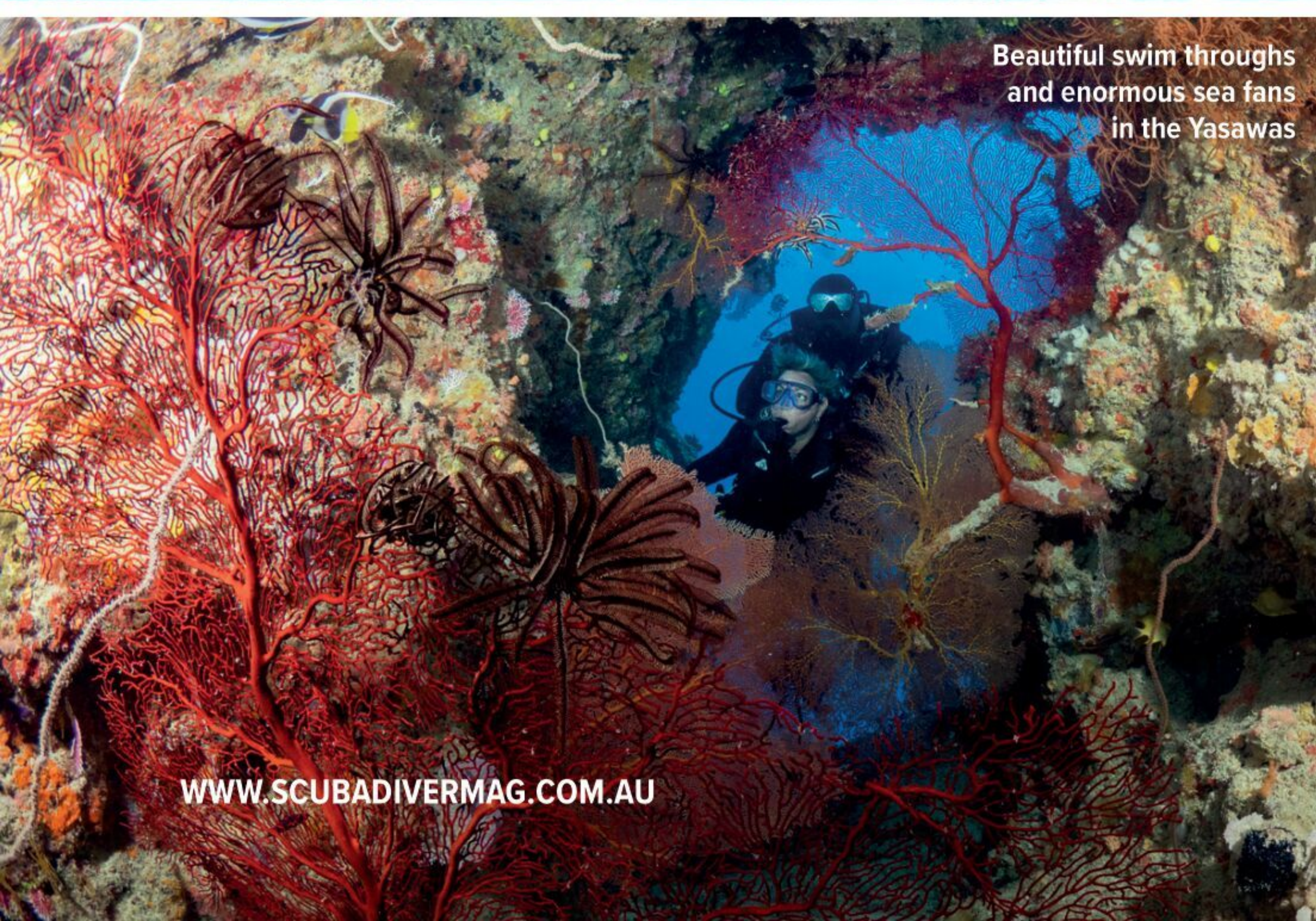


Vibrant soft corals
near Jean-Michel
Cousteau Resort

“ On these well-managed shark-diving experiences, you can expect to see large bull and tiger sharks, as well as silvertips, reef sharks, and even lemon and tawny nurse sharks ”



Beqa Lagoon Resort's
‘The Cathedral’ shark dive
features tiger sharks



Beautiful swim throughs
and enormous sea fans
in the Yasawas

sloping reefs, alive with all the usual brightly coloured reef inhabitants from nudibranchs to coral trout, there are walls and cavernous areas with deep slots, swim throughs and large overhangs. Being very close to the drop-off produces chance encounters with bigger animals like turtles and even dolphins. The coastline is dotted with family-friendly resorts which offer a wide range of services in addition to the full range of water-based activities.

Diveaway Fiji manage dive operations for several Coral Coast resorts, including The Outrigger Fiji Resort and Hideaway Resort and have exclusive access to a wonderful natural shark aggregation, where they often encounter over 50 sharks in a single dive.

Pacific Harbour and Beqa Lagoon

Still on the main island of Viti Levu, Pacific Harbour, gateway to Beqa Lagoon, is a two-and-a-half-hour drive southeast of Nadi. The shark diving in Beqa Lagoon is one of Fiji's most-famous marine experiences. On these well-managed shark-diving experiences, you can expect to see large bull and tiger sharks, as well as silvertips, reef sharks, and even lemon and tawny nurse sharks.

The sites inside Beqa Lagoon are long established and well organised. Typically, a low coral wall separates observers from the feeding area, and dive guests are led down the mooring lines and positioned behind the wall before feeding commences. There are three shark dives in Beqa Lagoon - ‘The Arena’, managed by Beqa Adventure Divers, ‘The

Bistro', managed by Aquatrek, and 'The Cathedral', managed by Beqa Lagoon Resort. On some dives, the sharks are hand fed, on others, fish pieces are laid out around the feeding site for the sharks to discover. Either way, guests are treated to an eye-to-eye view of the sharks as they cruise around the site seeking out their lunch.

Vanua Levu, Savusavu and the Namena Marine Park

Fiji's second largest island, Vanua Levu, holds two of Fiji's best kept secrets as far as scuba diving is concerned - the Great Sea Reef and the Namena Marine Park. The Great Sea Reef is the third longest barrier reef in the world, and arcs 300km from the top of Vanua Levu towards the tip of the Yasawa Islands. Though home to 80 per cent of Fiji's coral fish species, amazingly, much of the Great Sea Reef is still largely unexplored.

Vanua Levu's other secret is the Namena Marine Reserve – an island surrounded by a tongue of reef that extends 20km south from Vanua Levu into the deeper Koro Sea. The island and its surrounding reefs are contained within the Namena Marine Reserve. What makes Namena so special is its location. Surrounded by spectacular seamounts and right on the edge of the reef drop-off, Namena is also on a migratory pathway for cetaceans. So, you could see pelagic fish, dolphins and four species of whale.

Namena Marine Park is accessible from Savusavu resorts, including the Jean Michel Cousteau Fiji Resort, and it is on the itinerary of Fiji liveaboard; the Nai'a.

Taveuni and the Somosomo Strait

World-famous Rainbow Reef is in Fiji's Somosomo Strait, a narrow channel between two islands. Here, nutrient rich waters from deeper areas are brought to the surface and over the reefs providing a constant food supply for the entire ecosystem of marine life that it supports. Many reefs are either hard or soft corals, but on Rainbow Reef, hard and soft corals sit side-by-side, with sea anemones and sea fans dotted between them. It's this unique combination which ensures you can see every colour of the rainbow.

There are about two dozen dive sites to explore throughout the Rainbow Reef, and all are a riot of colour, bar one – the Great White Wall. Part of this dive site is a near-vertical wall which drops from 20m and is blanketed with



Kuata Island in the Yasawa's

soft white corals down as far as the eye can see.

There are several dive resorts on Taveuni to suit all budgets, from Garden Island Resort at the budget end, to Taveuni Dive Resort and Paradise Taveuni, all offering fantastic dive packages.

Kadavu and The Great Astrolabe Reef

Kadavu Island is best known for the Great Astrolabe Reef, which runs along its southern shore and arcs north-east passed Ono Island up to Buliya Island, famous for manta ray encounters. The Great Astrolabe Reef is a breeding ground for big fish like tuna, marlin, giant trevally and sharks. Gaps in the reef can be subject to strong currents, but these also bring in the nutrients which feed everyone along the food chain, from the soft corals and reef fish to the big fish.

The environment makes for adventurous and colourful diving, with sites like Naiqoro Passage, where you can experience big fish action against a background of colourful soft coral coated walls.

For a wonderful experience on the lower end of the budget spectrum, Matava Eco Resort have been offering amazing marine encounters for many years, and for a luxury dive experience, go for Kokomo Private Island Resort. ■

“ If Fiji is known as the soft coral capital of the world, then Vatu-I-Ra in Bligh Water, is the soft coral capital of the Fiji Islands ”





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UNDERWATER PHOTOGRAPHY

GETTING BACK UNDERWATER POST-COVID

Martyn Guess provides some insight into what underwater photographers who have had a long break from diving, due to restrictions during the pandemic, should be doing to make sure they get back up to speed quickly with their equipment, techniques and skills

Photographs by Martyn Guess

A lot of my warm water diving friends and students have gleefully hit social media in the last few weeks to announce that, at last, they will be going on a much-longed-for diving trip. For many, this is after an enforced break of over two years if the last time they dived was in the summer of 2019.

My last warm water dive was in late-November 2019 with a group of students in the Red Sea - a brilliant trip with fond memories of a whaleshark and a pod of bottlenose dolphins on our check-out dive! This is such a long time, enough time to (temporarily I hope) forget some of the photography skills that regular diving with a camera provides. In addition to the skills there is the added dimension for photographers, of underwater camera equipment that has spent a long time probably just standing on a shelf or in a bag.

I thought it would therefore be a good idea to write my article this month on these issues and hope what I recommend will help people to get back up to speed quickly.

Firstly, on the equipment - I am lucky to have continued diving in UK waters when we have been permitted to do so. I have used my camera regularly underwater but many of my friends and the people who come on my workshops have not done as much UK diving, or none at all. I suggest the first thing on the list should be to get everything out and give it all a good inspection and clean if necessary. Check O-rings and insert new batteries and put everything together. Take the equipment for a service if you feel that something needs checking over. It is amazing that what would normally have been second nature might not be any more. Doing this well before any trip will allow time to get problems with equipment resolved in plenty of time and pay dividends when you get to your resort or liveaboard. Make sure everything is working as it should be. I suggest you also make sure your vacuum is working if you have one and that strobes fire. I recommend putting the rig maybe without

Image 1. Exercise with Black Background – High speed and small aperture



the camera into a bath full of water to check for leaks. I read this week about a very well-known photographer (who will remain anonymous) that got to the longed-for diving destination recently to find there was a niggling housing leak – which in a remote area can be difficult to fix! The same goes for your diving equipment of course.

It is easy to forget after a long lay-off, the different camera controls and how to achieve the desired settings. What was second nature a while ago may not be any longer. Depending on your camera I would suggest re-orientating yourself with the camera and make sure that you can easily find the ISO settings, different focus settings, speed, and aperture controls, etc. This way you will avoid getting into the water and having to struggle with how to adjust something critical for you to get a well-exposed shot.

Maybe set yourself some exercises with the camera and settings. Put the camera in the housing with a macro lens



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Image 2. Exercise with wide aperture, high speed, Lower ISO and strobe power

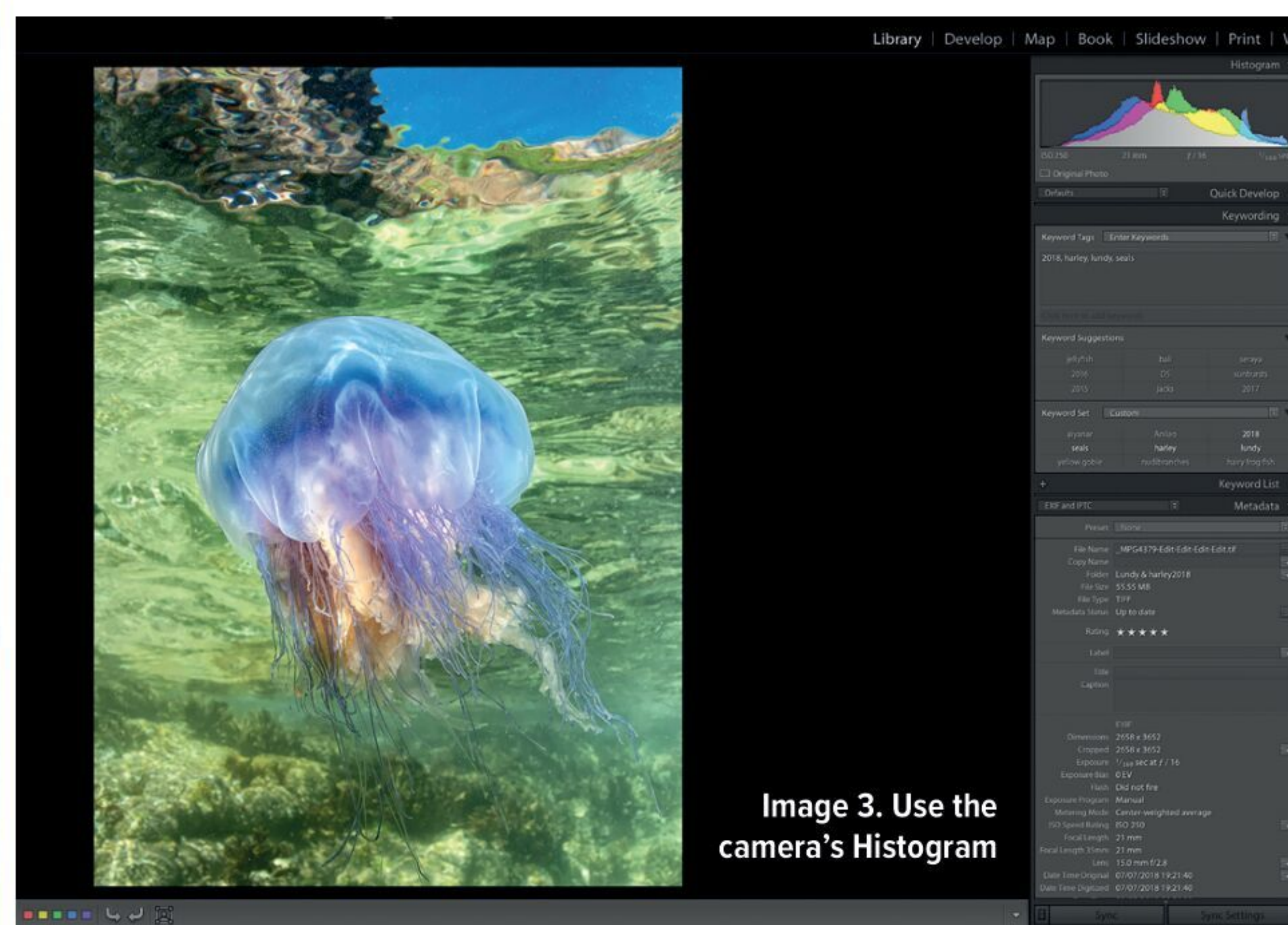


Image 3. Use the camera's Histogram

and get a single strobe working. Set up the camera and lighting for firstly black background shots (Image 1). Set the speed at around 1/200th sec or higher if the camera/flash sync speed will allow, set a small aperture say F22 and the strobe on say half power. Find a smallish subject and see if you can get a black or very dark background. Play around with the camera to subject distance and change settings including ISO and or strobe power if necessary. Maybe find a subject which is a very light colour and play around with strobe power and the camera settings to avoid burning out the subject.

Once you can take shots of a range of different subjects and get a good black background, start again with an aperture which will give you a very shallow depth of field, say F5.6. This is an exercise that is almost the opposite of the black backgrounds. You will have more light entering the lens because of the more-open aperture and will likely have to lower ISO and strobe power and maybe increase the camera speed to compensate. See if you can get some good bokeh backgrounds by playing with the aperture and camera to subject distance (Image 2).

Try and remember to use the cameras histogram to review the exposure of your images (Image 3). Take the same shot over and over with the speed gradually

Biography – Martyn Guess

Martyn has been diving for over 30 years and taking underwater images for nearly as long. He is a well-known and successful underwater photographer with many successes in National and International competitions and regularly makes presentations to Camera and Photography clubs and Dive shows as well as The British Society of Underwater Photographers (BSOUP) and other underwater photography groups. Today he shares his passion and knowledge - As well as teaching one to one underwater photography courses he leads overseas workshop trips for Scuba Travel and his articles regularly appear in Scuba Diver Magazine.

Image 4. Remember to shoot upwards for a more natural and pleasing image



decreasing each time to see the effect on the histogram as the graph moves further to the right each time. Try and perfect your exposures by reference to the histogram graph. Changing settings and keeping a good exposure is a great exercise to practice. Playing with your camera in this way is worthwhile, even for an expert. Think of it as an athlete warming up before their event. Yes, we might all know how to do it but going through the different settings will help you get back into the groove.

Start to think about camera angle ie, shooting up to a subject which will appear far more natural than shooting down (Image 4) again something we should all know about but easy to forget. Start to imagine eye contact with your subject and moving the focus points to achieve the best eye focus (Easy to practice with a little toy fish on land).

While not so easy on land alter the angle of the strobe or strobes if you can hold up the camera rig with two (if not rest it on your kitchen table). Check out the difference ►



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UNDERWATER PHOTOGRAPHY



Image 5. High detail macro shot with small aperture but compensate exposure for less light by adjusting ISO and speed

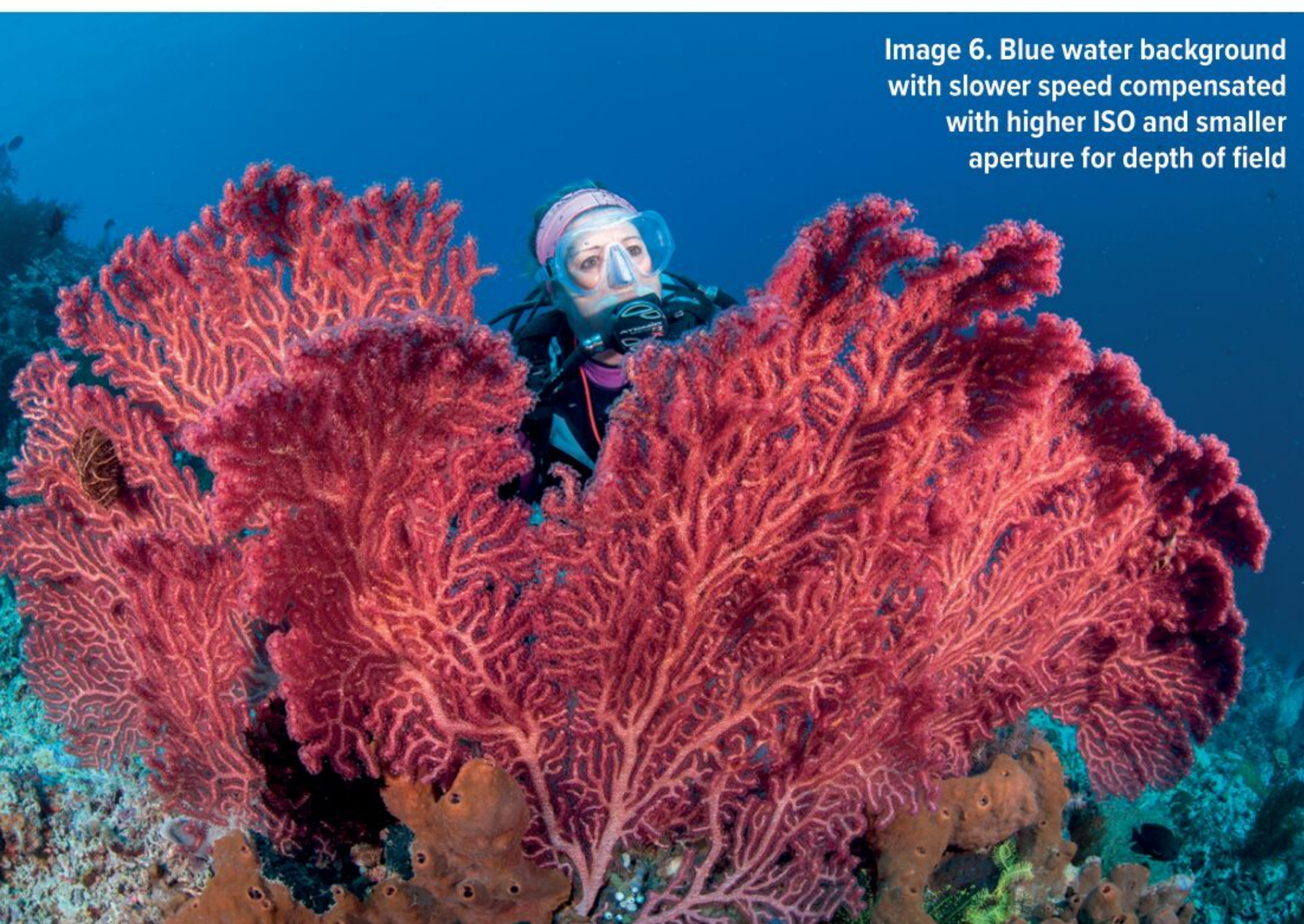


Image 6. Blue water background with slower speed compensated with higher ISO and smaller aperture for depth of field

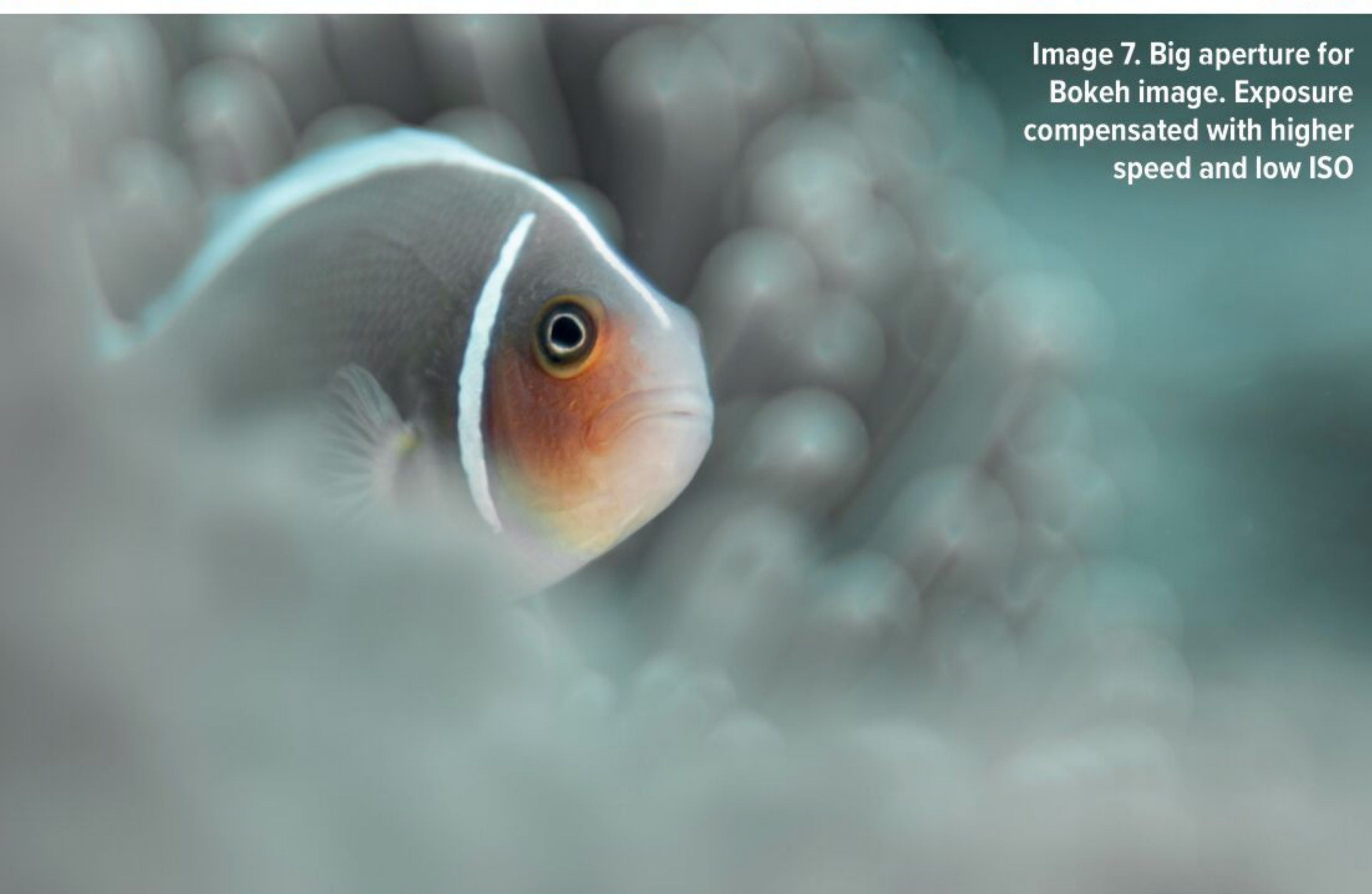


Image 7. Big aperture for Bokeh image. Exposure compensated with higher speed and low ISO

that the angle of the lighting has from straight on direction to cross lighting where the strobes point to each other and then on to inward lighting where the strobes start to point back to your head. See if you can achieve a black background by the angle of the strobe lighting. This will start to get you back into thinking more about your lighting and remembering the different techniques.

If you are unsure about the correct camera settings check out the exposure triangle. Easy to find on the internet. It will remind you that there are three elements that control exposure excluding your strobe power. Aperture (F stops), Shutter speed and ISO (Your cameras sensitivity to light). Take control of these three elements of exposure by using the manual setting on your camera.

Without this you cannot choose the combination of aperture, speed and ISO that will give you the best or your chosen exposure. Whether this is a sharp macro shot (Image 5) using a small aperture or a wide-angle shot of a reef scene with a blue background using a lower speed (Image 6), or a slightly out of focus bokeh shot using a larger aperture (7).

In underwater photography we want to bring colours to life and the reason we use strobes is to do just that. It is important though that the strobe power is used to just paint light where we want it and that the scene or subject is exposed correctly in the first instance. This will give you a balanced light image which is very natural looking. Practice the combination of exposure and strobe light with a wide-angle lens (you won't need the dome port on land and, of course, the rig is easier and lighter to handle without). Getting back into this on land will greatly assist your technique in the water and help you get the perfect shots that we all want!

Lastly get out some underwater photography books or look at the bigger photography competition results like Underwater Photographer of the Year and get your creative juices flowing. Check out the images you particularly like and imagine how you could take them. Think about how that photographer got his shot and the sort of settings he used. I am an avid note taker and I totally recommend jotting down ideas of shots that you want to create before you go away so that when you get to where you are going you are full of ideas about things to try and achieve.

All the above will I hope, help you get back into the photography mindset that you will hopefully have had before the pandemic. If you didn't have it, I hope that some of my basic reminders will help you on your way. Be patient when you first start diving again – you are unlikely to go out on your first few dives with a camera and take an award-winning image. Take things slowly and it won't be long before you are back up to speed. ■

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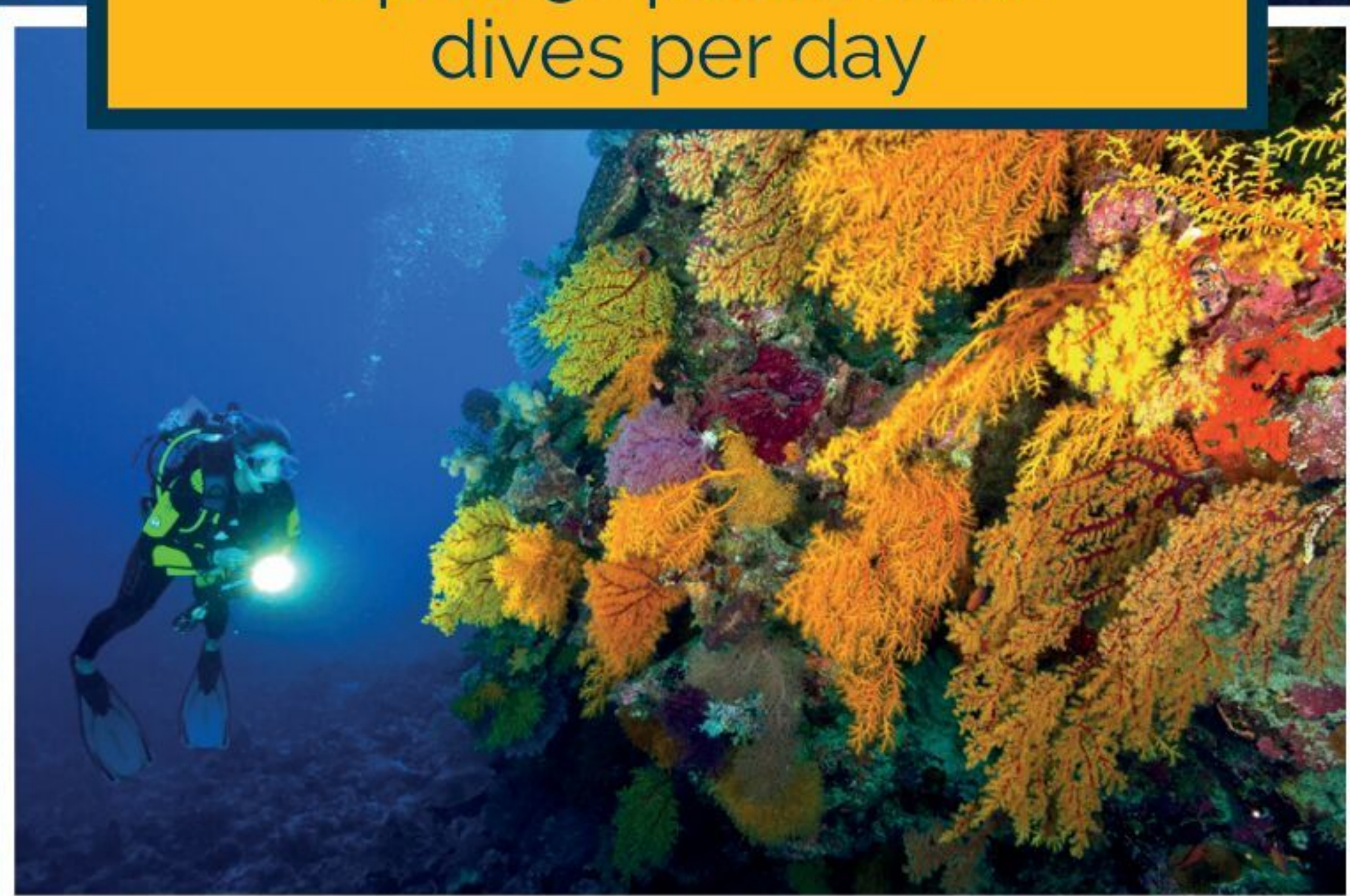


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TOP 5 FACTORS THAT INCREASE YOUR RISK OF ‘THE BENDS’

The experts at Divers Alert Network explain the top five factors that can increase your chances of getting a case of decompression sickness, or DCS

‘The bends’, also known as decompression sickness (DCS), occurs when nitrogen bubbles form in the blood, often causing severe joint pain. The common name ‘the bends’ comes from an affected person doubling (bending) over due to the intense pain of the condition.

Ascending too quickly and not following recreational diving guidelines are two main causes of decompression sickness. As we approach the re-opening of international borders, and you start planning a dive holiday, let’s review other factors that may contribute to individual susceptibility to DCS.

1. Exertion

The timing and intensity of exercise (also known as workload) during a dive can substantially affect a diver’s risk of DCS. Exertion increases blood flow and its gas-carrying capacity. Consequently, exertion during descent and the deepest phase of a dive increases the amount of gas dissolved in tissues and the subsequent decompression stress.

Mild exercise during decompression speeds up off-gassing. Exertion immediately following a dive can stimulate bubble formation and increase the likelihood of bubbles passing through the lungs without being filtered out of the circulation. When possible, keep exertion to a minimum during the deepest part of a dive. After diving, avoid exercise as long as possible. If exertion is unavoidable, dive conservatively to minimize risk.

2. Thermal stress

A diver’s body temperature can influence decompression risk. A warmer body absorbs more inert gas and releases it more readily. Conversely, a cooler body absorbs less gas during descent and releases less during ascent.

Divers using protective suits without active heating should avoid long exposure that may chill them toward the end of the dive. When using heated garments, a diver should stay comfortably cool at depth and warm during decompression. Staying comfortably warm during decompression and after dive promotes inert gas elimination and reduces the risk of DCS. However, attempt to quickly rewarm after dive, like taking hot shower or bath, may provoke decompression illness.



3. Post-dive air travel

Flying after diving increases decompression stress because the pressure in an aircraft cabin is lower than atmospheric pressure on the ground. The recommended guidelines for flying after diving are as follows:

- After a single no-decompression dive, a minimum preflight surface interval of 12 hours is suggested.
- After multiple dives per day, or multiple days of diving, a minimum preflight surface interval of 18 hours is suggested.
- After dives requiring decompression stops, a pre-flight surface interval substantially longer than 24 hours is considered prudent.

Adhering to the guidelines above can reduce your risk, but offers no guarantee against DCS. Observing surface intervals longer than the recommended minimums helps to further reduce a diver’s risk.



“ When possible, keep exertion to a minimum during the deepest part of a dive. After diving, avoid exercise as long as possible. If exertion is unavoidable, dive conservatively to minimize risk ”

4. Medical and physical fitness

Poor health and physical fitness can compromise individual safety when diving and may increase risk of DCS. Regular exercise improves fitness and cardiovascular health, which translates into the ability to cope with emergencies and mitigates risk of DCS. Adults need two types of regular activity to maintain or improve their health: aerobics and strength training. Centres for Disease Control (CDC) guidelines recommend:

- At least two-and-a-half hours of moderate-intensity aerobic exercise per week to achieve health benefits, and five hours per week for fitness.
- Muscle-strengthening activities at least two days per week.

5. Breathing gas mixture

The breathing gas mixture a diver uses can play a role in the development of DCS. Enriched air nitrox, also known as nitrox, includes an increased percentage of oxygen and, therefore, a reduced percentage of nitrogen. When diving nitrox and using the decompression schedule for air diving, the risk of DCS is reduced. The higher oxygen content of nitrox comes with an increased risk of developing oxygen toxicity if safe depth limit is exceeded.

Additional DCS risk factors include:

- State of hydration
- Carbon dioxide level
- Patent foramen ovale, or PFO

While individual susceptibility to DCS may vary, every diver can reduce their risk of decompression sickness by ascending slowly from every dive and following recreational diving guidelines.

Return to Diving Safely: A DAN Campaign

If you are in the process of planning an overseas diving holiday as international borders begin to re-open, be sure to take the time to review DAN's Steps to Returning to Diving Safely at www.DAN.org/return

DAN EMERGENCY HOTLINE

In the event of a diving incident, we encourage all divers to call the DAN Hotline promptly for advice:

- Within Australia: **1800 088 200**
- Outside Australia: **+1 919 684 9111**
- Within Indonesia: **21 5085 8719**



The challenges of searching for ancient wrecks, part two

Photographs by Mike Haigh and NOAA

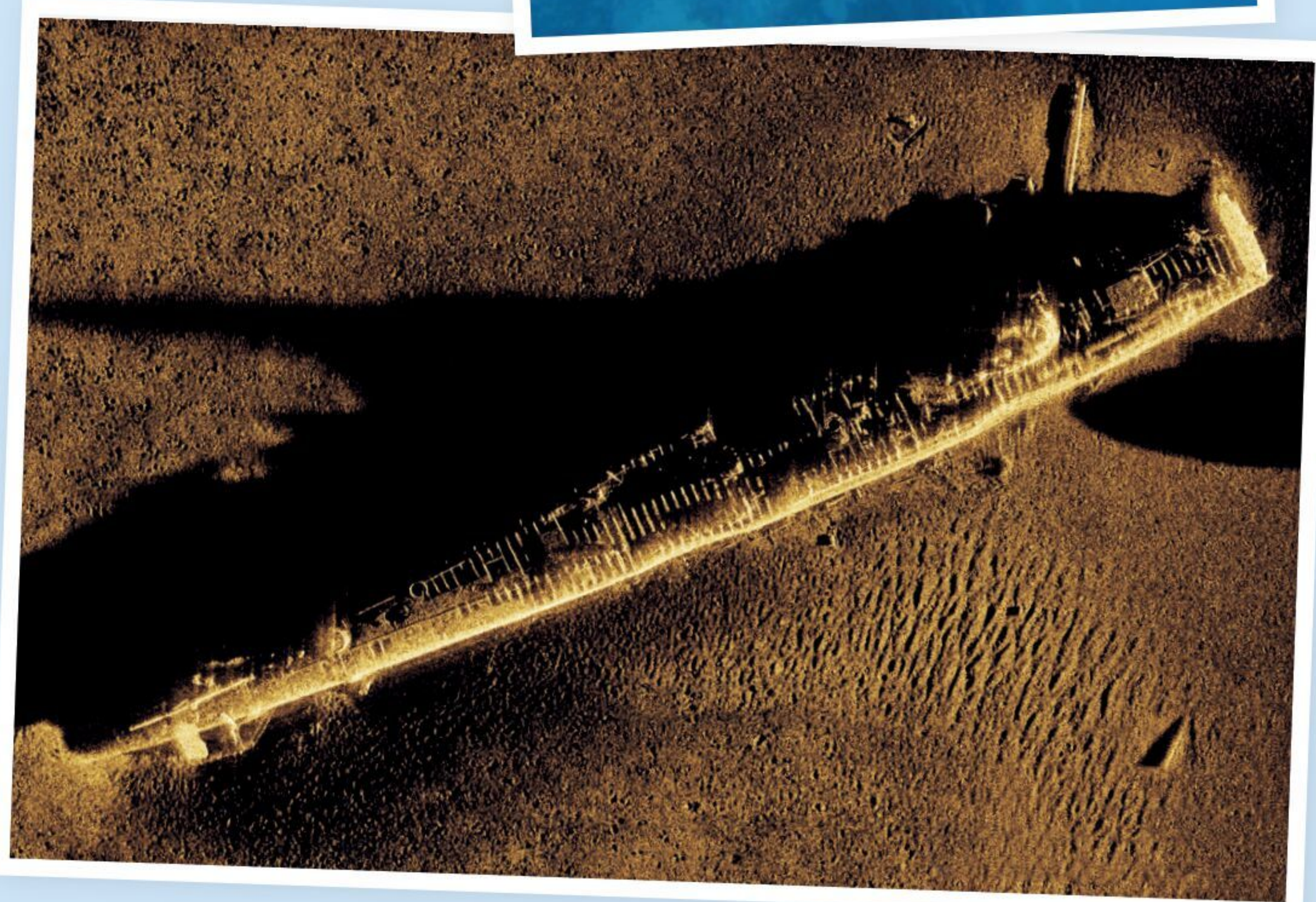
You have done your research, you know what you are looking for and have some idea where it might be. But now you are 'on site' looking at a frighteningly large area of sea. It might be calm and placid, but more likely it will be whipped into a froth of wave and spume. Worse, part of the search area may be covered by obstructions such as ice. A voice in your head says 'what the heck do we do now?'

The only thing you can. Deploy an AUV (Autonomous Underwater Vehicle). An AUV is a robot that travels underwater without requiring input from an operator. The key point is that it is not connected to the surface by an umbilical and therefore not restricted or hampered by surface conditions. AUVs carry sensors to navigate autonomously and map features of the ocean. In our case, this means locating our 'target'. Typical sensors include compasses, depth sensors, sidescan sonar, magnetometers, conductivity probes and sometimes biological sensors.

Before an AUV is launched a CTD (conductivity, temperature and depth) cast is carried out. This involves sending a probe to the ocean floor to generate a range of evaluations, from which the calibration of the relevant payload systems can be performed. Before launch audits are carried out on the vehicle's sensory arrays, the propulsion unit is tested, and the rudder and all other mechanical components checked. In addition, the submersible's navigational functions are reviewed. Finally, in case the AUV has to abort its mission, emergency recovery trials are undertaken to ensure that the vehicle's GPS and satellite systems are communicating as expected. After all this, the AUV is ready to dive.

For the launch the ship turns into wind and holds a speed of between two and three knots. AUVs are normally launched rear first down a chute into the sea. From the surface the dive angle is normally 20 degrees, but in adverse conditions this can be raised to 45.

The AUV normally moves to a loiter station and when all systems have been checked the search programme begins. The robot progresses to one corner of the search



area - final checks take place and the AUV moves to autonomous running and commences the search, cruising at something below four knots. The AUV's navigation system is programmed to follow a series of parallel lines – a bit like mowing the lawn. Periodically the AUV reaches a prescribed rendezvous station, where a 'handshake' takes place. The team on the support vessel check its sensors and navigational systems, corrects any deviations or other irregularities, and then releases the vehicle to carry on searching.

Of the systems an AUV possesses, the most relevant for wreck location is the sidescan sonar. This emits a downward, fan-shaped spread of sonar pulses which are reflected back to the sensors by the landscape within its swathe. Due to the way that the sidescan is orientated there can be a blind spot directly below the vehicle. This 'gap' can be filled from readings by a multi-beam sonar located in the AUV.

The altitude that the AUV 'flies' above the seabed is critical. If you go high, to cover a wide area quickly, the resolution of the images produced can be poor. If you go low, the field of vision is narrower, and you can see what there is in greater detail. But the search time will be extended – at extra cost. Remember, these vessels cost a fortune to operate every day. Nobody has an unlimited budget. Unlike ROVs, which give us a real time view of what is there, AUVs take time to reveal their secrets. You have to wait until its voyage is over before its data can be transferred to a server for conversion into a legible format. This often takes up to five hours. Then you need a specialist to decipher what the side scan has revealed.

So, a bit more complicated than a circular search, but normally the rewards for all this effort and cost are high, and of course there are no guarantees! Next time, we will be looking forward to the future.

www.wreckhunters.co.uk

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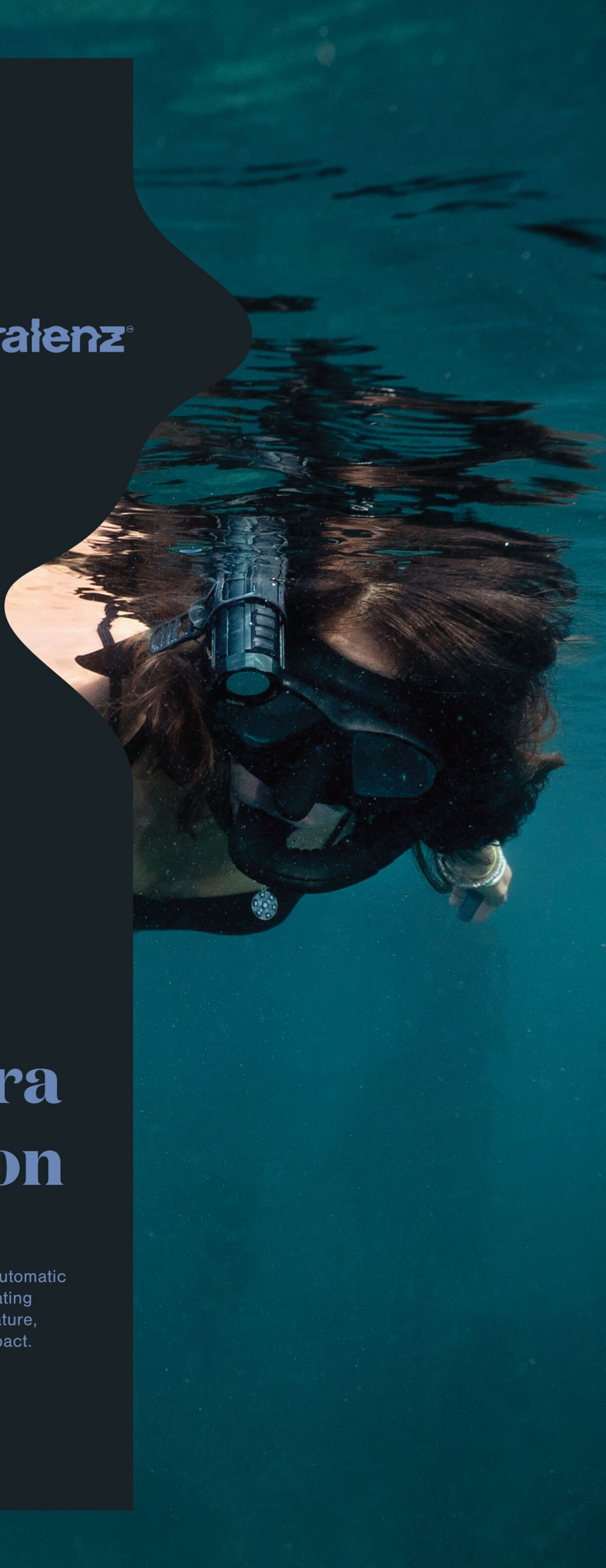
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TECH Q&A

Jill Heinerth

Q: What first ignited your passion in the underwater world, and when did you first start diving?

A: Like many kids my age, I was inspired by watching Jacques Cousteau on television. It was also the Apollo Missions, too. Watching men drive around on the surface of the moon influenced me to explore.

Q: You are perhaps best known as a cave diver. What is it about caves that capture your interest, and how did you initially get into cave diving?

A: I suppose it is a bit of a primal drive. Caves are like the veins of Mother Earth and I am attracted to go into the body of the planet in a spiritual sense. But I was also drawn toward the opportunity of being able to document places that nobody has ever seen before. Sharing images from remote, unexplored territory is a great privilege in an age when most of humanity believes that the age of exploration has already passed them by.

Q: You were the first person to dive in the ice caves of Antarctica? What was this momentous series of dives like?

A: That National Geographic project was perhaps the most-dangerous undertaking I have ever been involved in. It felt like the closest thing to going to another planet. Every moment was wild and unscripted. I had to be at my very best at every moment for the entire 60 days in the Ross Sea. The caves inside the icebergs were stunningly beautiful in their own right, and the garden of life we found beneath the great ice masses was colourful and abundant.

Q: You have been given many high-profile awards, including being a Fellow of the Explorers Club and Explorer-in-Residence of the Royal Canadian Geographical Society, and as well as being inducted into the Women Divers Hall of Fame. Which are you most proud of?

A: Representing the Royal Canadian Geographical Society as Canada's chief explorer is perhaps the greatest honour of all. In my role, I spend a lot of time with the next generation of young explorers. That feels like my most-important mission to date. ►



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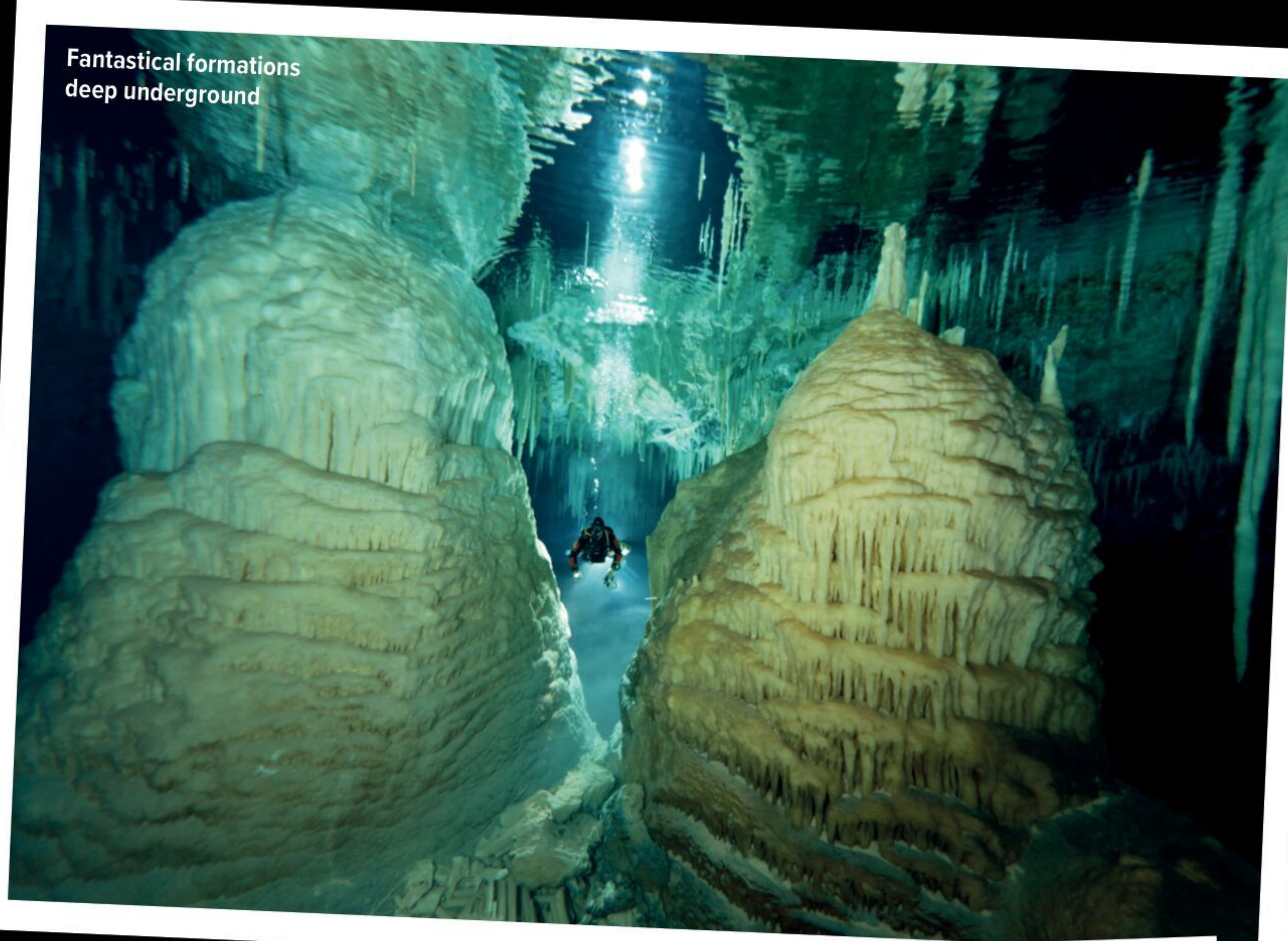


Canadian Jill Heinerth is a world-renowned cave diver, photographer and film-maker. Scuba Diver talked to her about how she first became interested in diving, what drives her need for exploration, and what the future holds in store for her

Photographs courtesy of Jill Heinerth

Q: You are well known in the technical diving world for your ground-breaking explorations. Which endeavours mean the most to you, and have left you with the most indelible memories?

A: My work at Wakulla Springs with the US Deep Caving Team feels like a stepping-stone for almost everything else I have done in my career. We began that mission over 20 years ago and yet those dives still stand as some of the most-ambitious dives ever conducted in technical and scientific diving. More importantly, it set the stage for my understanding of our water resources and my efforts as a water advocate. Since that time, I have continued to work with Dr Bill Stone on numerous efforts. The mapper we first deployed at Wakulla is now an artificially intelligent robot that will head to space.



Q: Technical diving is quite a male-dominated discipline. Did you find being female a disadvantage, or were you accepted with open arms because of your impressive diving credentials.

A: It hasn't always been easy working within male-dominated endeavours like cave diving and even underwater cinematography. There are times when I was flat out turned away as a woman. There are times when I got a job but got paid less than a male colleague. Believe it or not, I still face challenges as a woman in the sport today. We have a long way to go to reach full gender and racial parity in diving. Not all discriminatory behaviours are intentional. Many are a reflection of long-practiced societal norms. One day I hope that I won't be celebrated as a pioneering woman in diving. I hope I will just be celebrated as a diver who did some cool work. I hope we won't need a Women Divers Hall of Fame or scholarships to lift women into career mentoring and scholarships. I hope we will just be diverse figures in diving, working collaboratively to do great work.



Q: You adopted closed-circuit rebreathers quite early on. What are the advantages of CCRs for the type of diving you are doing?

A: I jumped into rebreathers in the mid-1990s as a tool to increase my range in exploration. Used properly with adequate open circuit bailout and dedication to safety procedures, I believe they can offer increased safety for deep and technical dives. They have offered me a chance to get closer to wildlife, do scientific work that leaves the water column undisturbed and do longer decompressions with a little less bulk.

Q: You have worked with James Cameron. What was it like consulting with a massive Hollywood director, albeit one with a love of the underwater world?

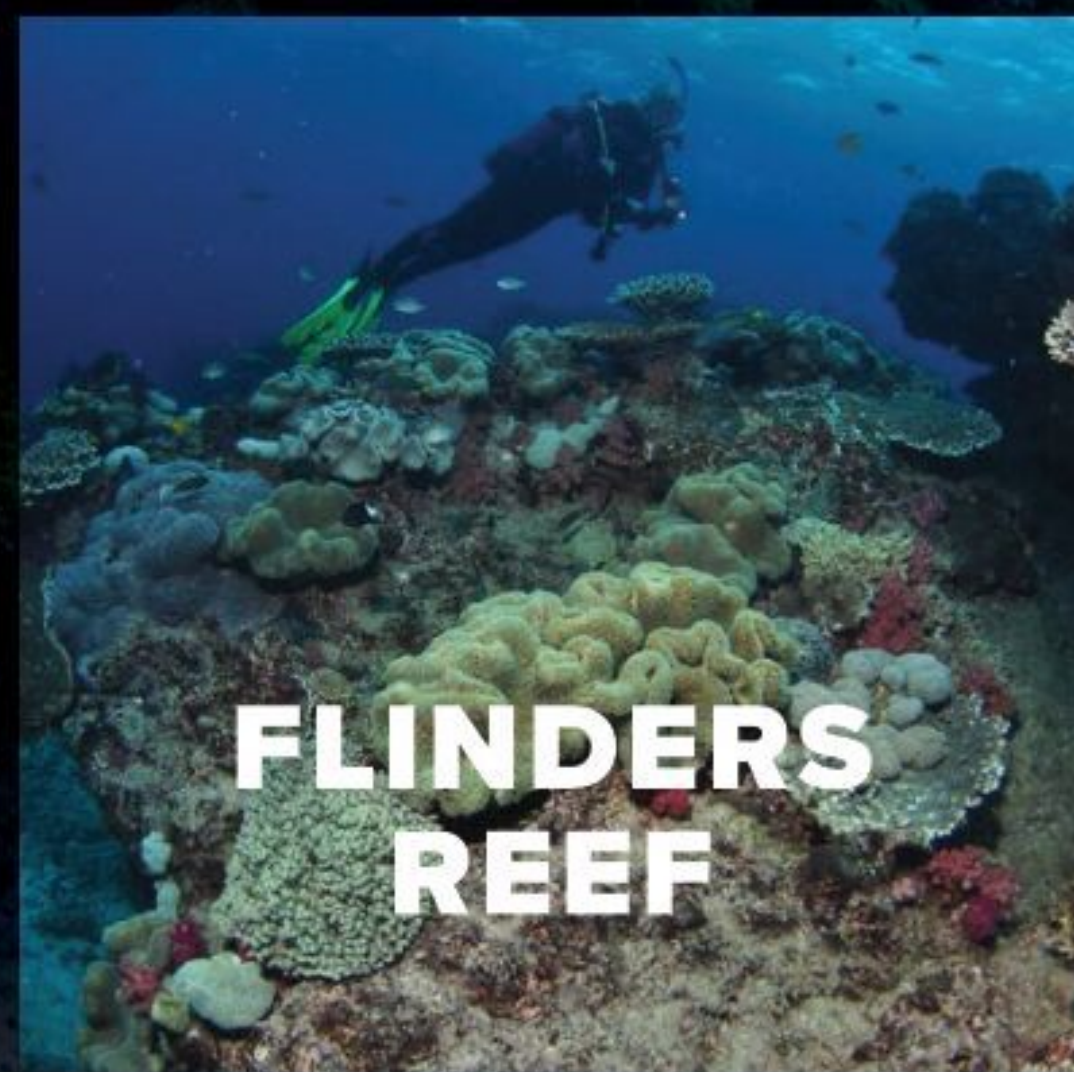
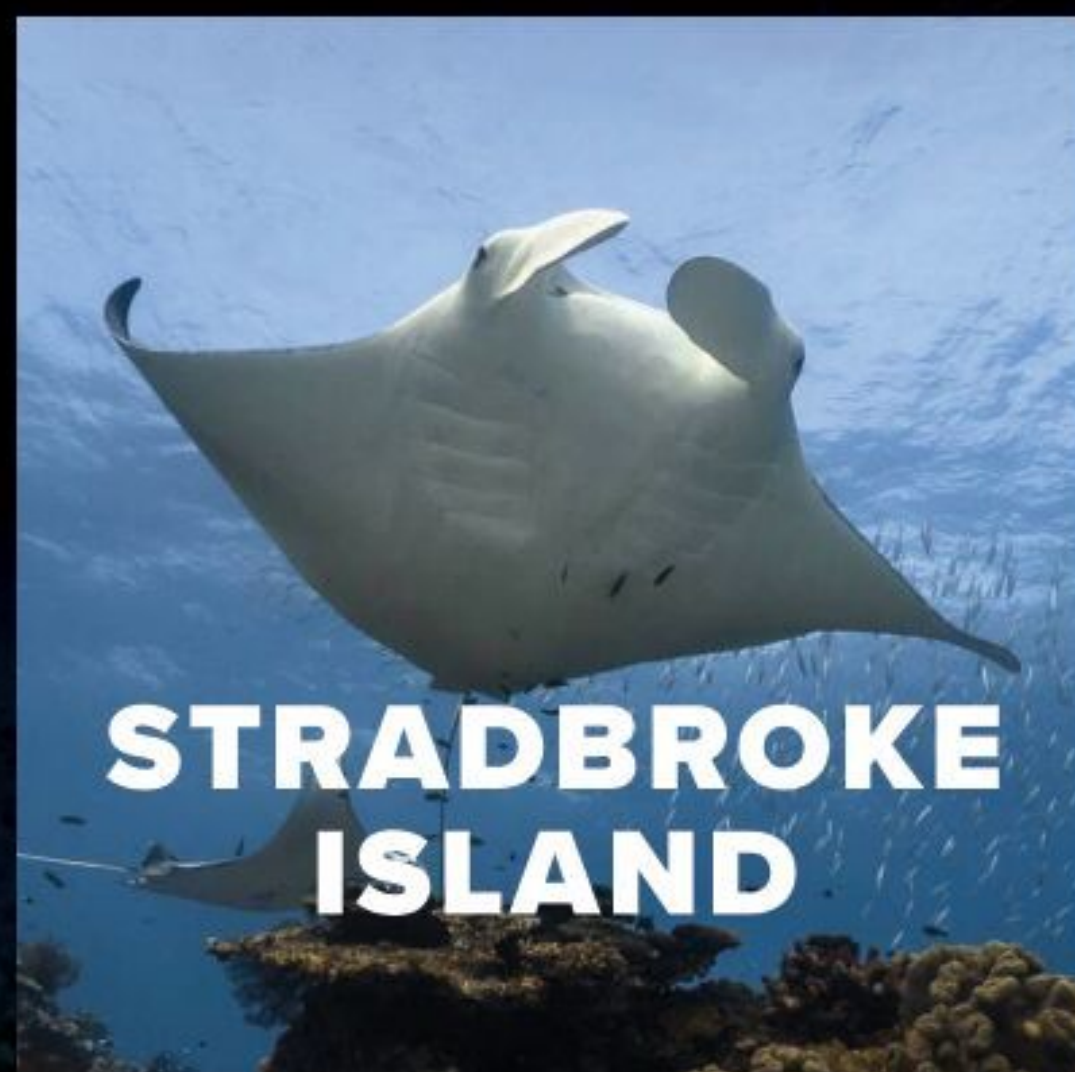
A: Numerous people warned me that James Cameron might be tough to work with. I absolutely loved working with him. He is indeed a taskmaster, but is right alongside working the long hours too. He is passionate about underwater exploration and technology and that can be infectious. I recall a moment when we surfaced after several hours of filming in a cave. We were really hungry and rather than getting out of the water, he and I shared a pizza at the surface before heading down again. ►

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“ It hasn't always been easy working within male-dominated endeavours like cave diving and even underwater cinematography ”



An iceberg underwater

Q: In all the amazing dives you have conducted, what is your most-memorable experience?

A: That is actually a really tough question. I am so fortunate to have had many incredible and diverse experiences. A pod of a hundred humpbacks off Newfoundland, getting pulled to the surface by a stellar sea lion tugging on my drysuit hood, leaving an iceberg cave after being trapped for almost two hours, entering an unexplored room of the most-delicate crystalline speleothems in Mexico, returning to The Pit to shoot a photo that stuck in my head for 20 years, or diving into the Monte Corona volcano... how can I choose? Most days I simply pinch myself and plan for the next!

Q: On the flipside, what is the worst experience you have had while diving?

A: Well, I would say the 'most-memorable' and 'the worst' are often intertwined. I have come home from some scary moments in diving. I have been trapped inside an iceberg cave from current that pinned me down. I have been stuck behind a scientist who got stuck in a tiny cave not much taller than my helmet. I have been bitten by a water moccasin, a fresh water eel and gotten bent deep in the jungle a long way from help. I have also had to write my fair share of eulogies for friends who died in caves. Those were horrible experiences but they all built the diver I am today. At times I was lucky, at other times smart. But today I carry all those experiences and friends with me as lessons on how to do things better and safer.



Jill thrives in arduous conditions

Q: So, what does the future hold in store for you, and what projects have you got coming up?

A: I'm working on an exciting educational project about the Great Lakes watershed from source to sea. It involves cave diving research, shipwrecks, augmented reality and the production of exciting multi-sensory assets. In many ways, I have prepared for this project my whole life and I look forward to sharing the launch in Fall 2022. ■



Jill exploring with her trusty camera

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DEEPS



Bryon Conroy got his first taste of diving in the Maldives ten years ago and it set him on a path to working in the diving industry. Now he returns, and heads for the Deep South in search of sharks

Photographs by Byron Conroy

Almost ten years ago to the date I was working and living in the UK working a 9 to 5 job and following a very traditional career path. I was 28 years old and had recently achieved a career goal that I had been working towards for the last few years. Upon achieving that goal, I had a feeling of emptiness, a feeling of 'what next'? I had achieved what I had set out to, but the job itself gave me no satisfaction.

So I decided to take a holiday. Little did I now that would be one of the most-affirming moments of my life and one of the best decisions I ever took. The whole point of this holiday was to try scuba diving - for many years, I had been interested in marine life keeping aquariums at home. But now after many years of hard work to achieve my career goal, I thought it was time to go and see all of these colourful marine species in their natural environment. My destination of choice was the Maldives, and my first dive in the clear, calm blue waters of the Maldives really did change my life. The experience was so overwhelming it bought things into perspective, there really was more to life than cold damp mornings in the UK and monotonous meetings repeatedly discussing the same things.

Upon returning to the UK, I handed my six-month's notice in from my job, sold all of my possessions and made a plan to leave the UK to become a professional diver. The journey took me all over the world, living in Mexico, Australia, New Zealand and now to my new home in Iceland, where I moved six years ago to work in diving. I have dived all over the planet over the last ten years, but much of that I owed to that very first dive in the Maldives.

The Maldives are a small island chain in the Indian Ocean, they are world famous for their beautiful islands and incredible diving. There are many different islands resorts all offering stunning over-water villas and relaxing spas. These make for fantastic honeymoon-style holidays with a few dives thrown in here and there. However, if you really are going to get the most of the diving in the Maldives, by far the best option is a liveaboard. A liveaboard will take you over a much bigger area as you don't need to return to the same place each evening.

My home for my seven-day trip would be Blue Force 1, a luxurious 42-metre vessel that offers ten cabins, all of which are to a very high standard and come with ensuite bathrooms. The boat won 'Best Maldivian Liveaboard' in

OUTH

Discovery



2018 and from looking at the pictures before I went, it is easy to see why. The objective of the company was to compete with the resorts, offering you the very best in luxury while also offering the best diving.

After some research and having been to the Maldives several times since my first dive experience ten years ago, there was one itinerary I had always wanted to try. 'Deep South' during the months of February and March. The Maldives is not famous for its reefs, but for its pelagic encounters. Google 'Maldives diving' and you will see a plethora of different images of manta rays, whalesharks and different types of reef sharks.

The Deep South itinerary though is extra special. For two months of the year the conditions are perfect. Visibility is

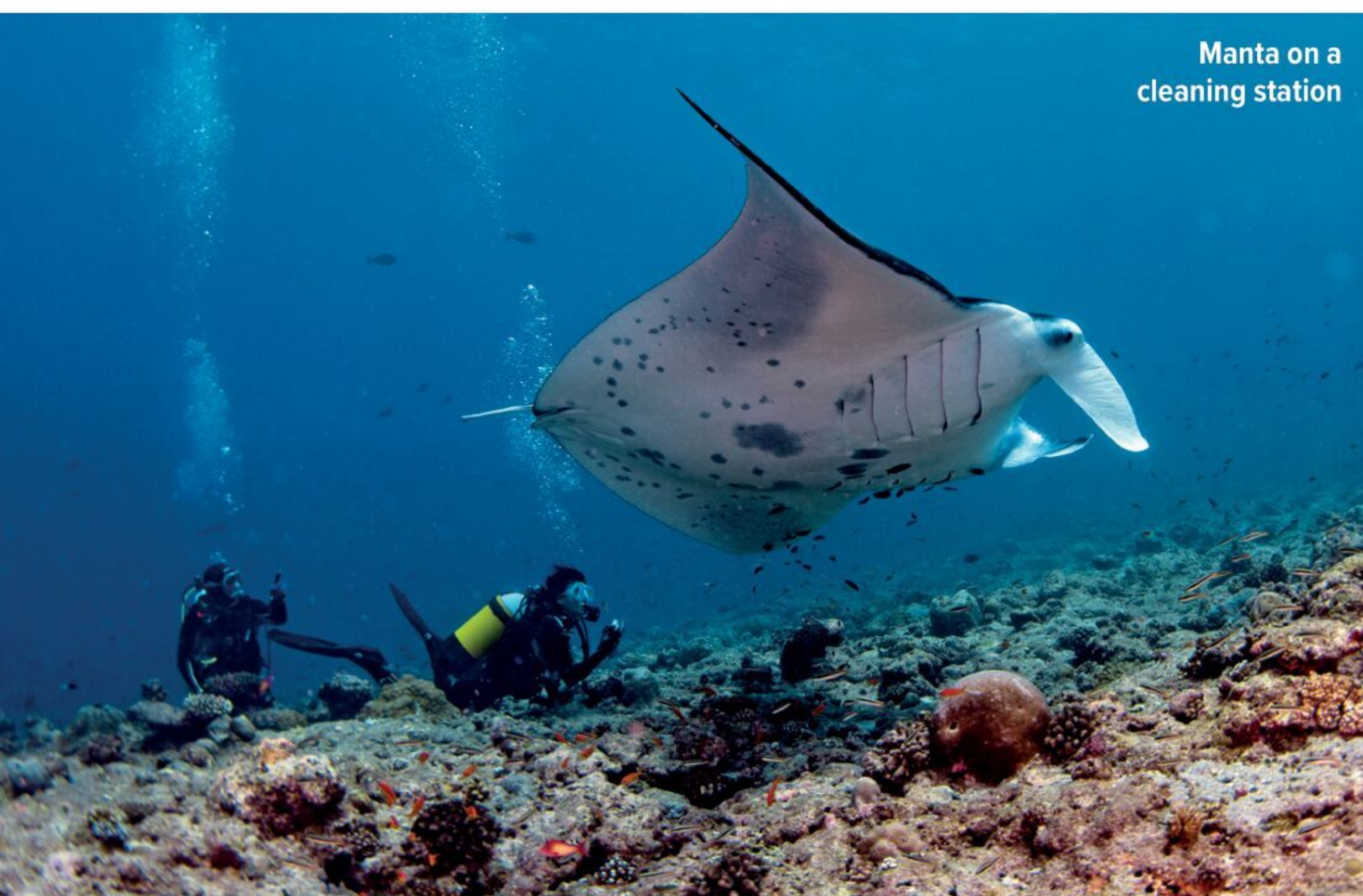
increased in the channels and weather makes for calmer surface conditions, making these challenging dives primed and ready for experienced divers. The diving is channel diving, big currents and is for experienced divers only. Conditions are tricky, but the rewards are rich, with walls of sharks to be found on the outside of the channels

Upon arrival in Male the international airport of the Maldives, we then needed to take a domestic flight about one-hour south to the island of Khoodoo, where we were greeted by some of the boat crew and whisked off to our home for the next week.

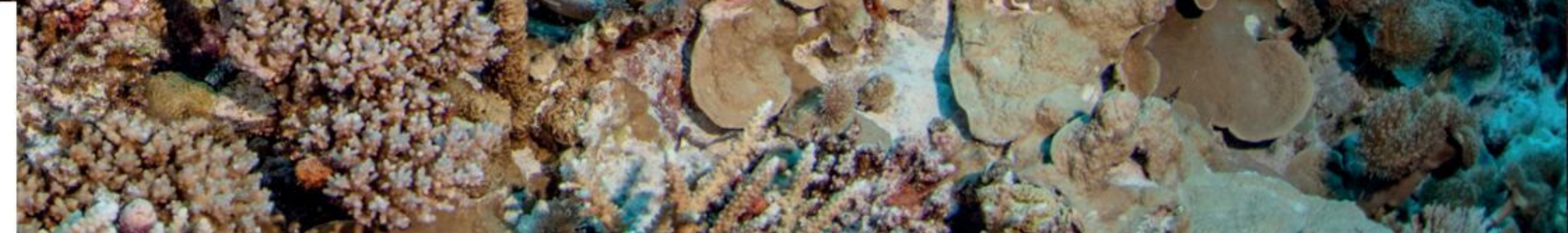
It was late afternoon by the time we arrived on the vessel and after the usual drinks and welcome from the dive team and boat crew, we were able to set up equipment and prepare for the first dives of the day. ►



Healthy hard and soft corals in the Deep South



Manta on a cleaning station



We also met our guide for the week, who was also the long-standing boat supervisor David. David brings a relaxed confidence both as a guide and a dive supervisor. With 25 years of diving under his belt and many certifications from different training agencies, he has a natural affinity for diving and for his clients.

Anyone who regularly dives liveaboards will be used to the dive equipment being kept on the back deck of the main vessel and some tenders being used to ferry divers around. In the Maldives it's a little different - and for the better. A separate dive boat called a Dhoni is used, this is a very spacious separate boat that is only used for diving and nothing else. All equipment is kept on the vessel for the duration of the trip, this makes both the diving better as small tenders are not needed and also gives the main vessel a much-more-luxurious feeling with a nice open back deck not cluttered with equipment.

Our diving began with a nice reef dive with a small amount of current; we followed David along the edge of a wall at around 18m in depth and drifted slightly. As we came to the corner of the site the current picked up a little and David spotted some sharks in the distance. Due to the excellent visibility and conditions, I was able to drift over the small group of sharks and fire off a few shots before they

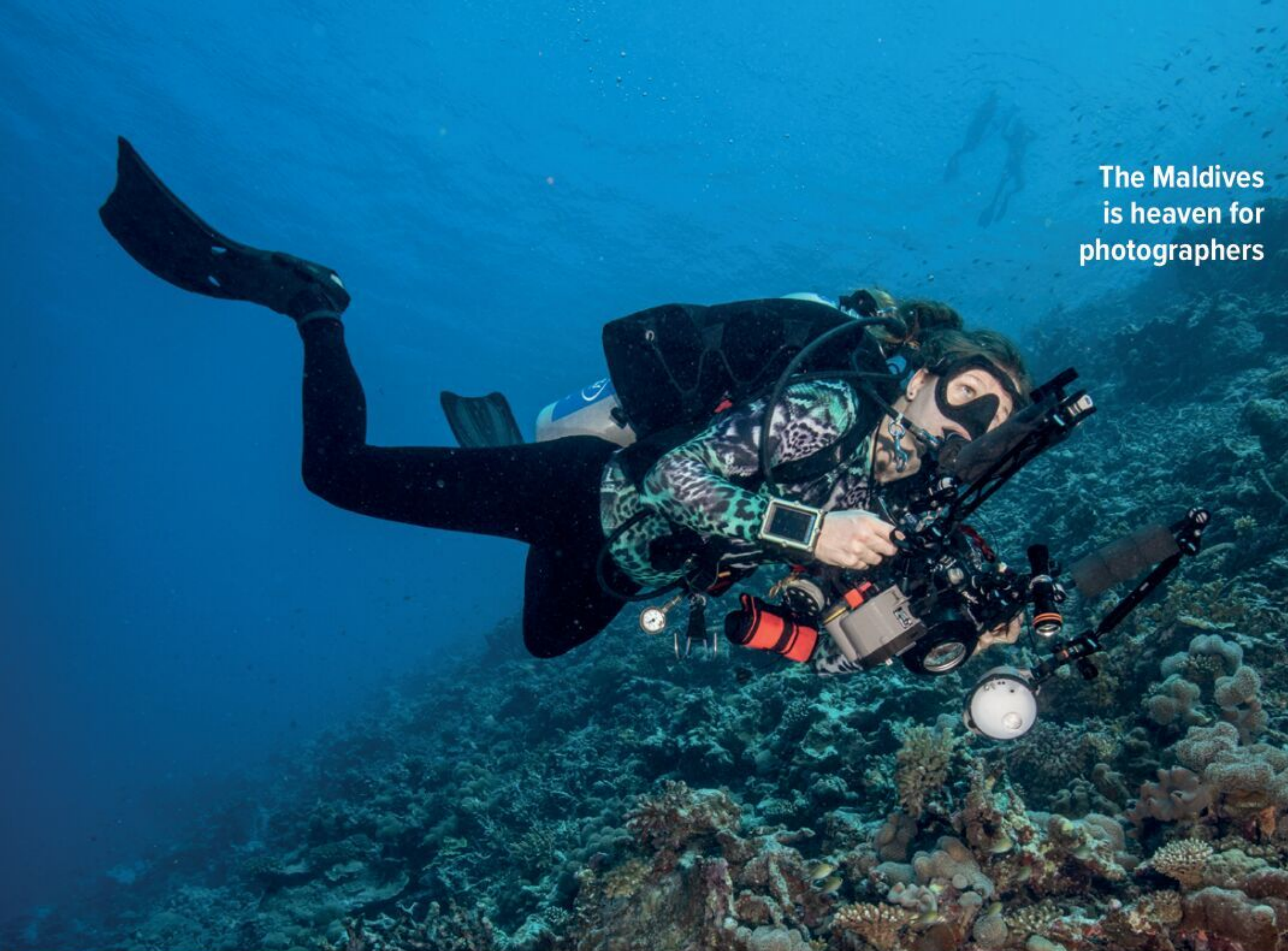
sank into deeper water. A very nice calm and relaxed dive to open the proceedings.

After a leisurely breakfast David gathered us around for the Channel dive briefing. Channel diving is what this trip is all about, and while we were diving in the Northern end of the Deep South, it would be two channel dives each morning before a more-relaxed dive in the afternoons.

Channel diving is when the current is pushing in from the open ocean into an island or atoll. At some points there are deeper channels in-between islands where the current can flow into the channel. In order to dive in this way, you get dropped off by the dive Dhoni in the blue water maybe 100 metres from the island, you then descend down in the open blue water to around 25m, the current will be gently pushing you towards the islands. As you get pushed closer to the wall the channel bottom will begin to appear in the distance and the current will intensify. This is when the guide will make the sign to 'hook in'. Using reef hooks is relatively simple, you to hook one end into a rock or dead area on the reef wall and then attach the other end to the BCD. You can then add a little air into the jacket and you can float up two metres from the reef and relax in the current. When hooked in you will be on the edge of the wall at around 30m, with the vertical drop-off in front of you and the islands behind. At the end of the dive you unhook and allow yourself to travel

Tiger shark





Crinoid shrimp

over the top of the channel and relax in a crazy high-speed ride over the reef.

Our first channel dive was on Mareeha Kandu. Following our expert guide David we jumped off the Dhoni and sank into the blue. It's quite a surreal feeling drifting aimlessly in the blue water, you can't feel the current but you just relax and let it do its work. Only once you get a visual reference on the top of the wall do you start to feel the current as you can see yourself moving faster and faster towards it.

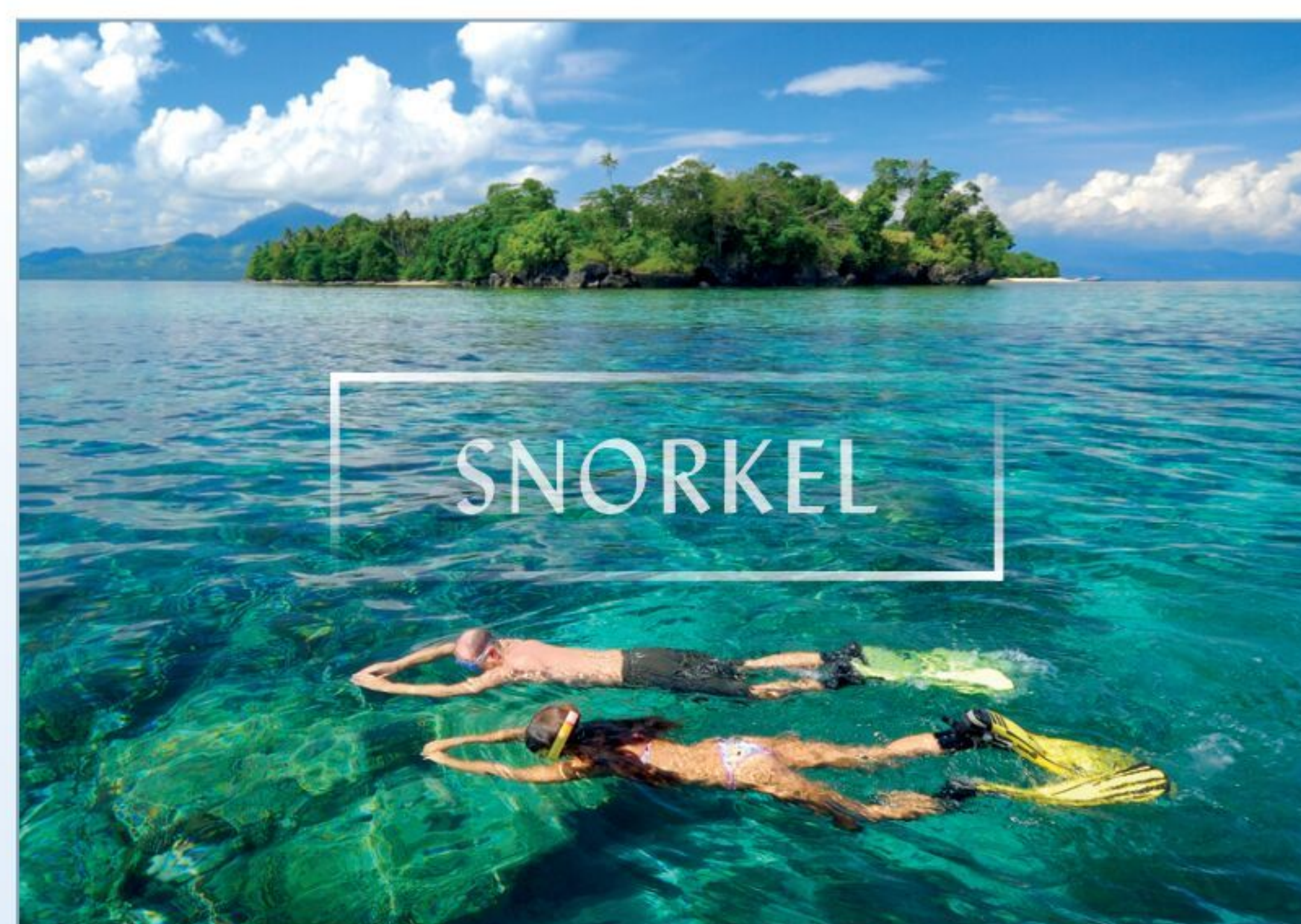
We quickly hooked in at 30m and let nature begin the show. I can best describe channel diving as being at the cinema. You basically go down, find yourself a nice area to watch the show, hook in and relax and then wait for the curtains to rise and the show to begin.

After a few minutes of settling down everyone begins to relax into a nice comfortable position and gets used to the raging current pushing against your face. Then slowly but surely the sharks begin to rise from the deep water and over the top of the wall. It starts with one, then two and before you know it there can be 10 to 15. The excitement in the group was palpable, everyone was so amazed to be feeling at one with these sharks as they effortlessly sat in the raging current going about their business while the audience viewed their behaviour.

After the dive we discussed what a fabulous dive it had been with David, he agreed it had been great but told us there would be much more to come! For our second dive of the day, we headed again to the same channel and became increasingly comfortable with the channel diving ►

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before completing a nice shallow reef dive in the afternoon.

After a good night's sleep, it was soon time for the early morning wake-up call and on to another day of channel diving. The channel of choice today was Vilingilli Kanduu. We were now in the groove with daily boat life and the ways of channel diving and feeling pretty relaxed going into the dive. We all jumped off the Dhoni together and began our decent into the blue water, visibility was exceptional at 40 metres and the water was a rich dark blue as the dive was very early in the morning and the sun was not fully up yet.

We reached the top of the reef wall, and while there was current it did not have its usual punch, making for an easy hook in. As we kicked back the show began, the usual routine, one, two, 10 sharks... then 20, 30. At this point I looked over to David, who was visibly excited - our usual cool and calm dive guide knew the game was on and this time we had tickets for the Hollywood blockbuster.

The shark numbers continued to rise, 40, 50... and after ten minutes or so there were more sharks than you could even count. They were moving effortlessly in the current and emerging from over the reef wall and into the lighter blue water above. The sun continued to rise, and became a backlight for the wall of sharks we were engulfed in.

We stayed deep on the wall for around 30 minutes, mesmerised by what we were seeing. With dive computers rapidly reaching their NDL limit, we reluctantly unhooked and drifted away from the sharks. When we returned to the boat the screaming of guests and the shouting of how many sharks they had seen was infectious. After cracking up my laptop, I studied the photos, in one frame I was able to count over 65 sharks just in the one frame.

Channel dives continued for the next days, along with other afternoon and evening activities. Blue Force offers kayaks, SUPs and also some shore time. Every trip, one afternoon is spent on a desert island.

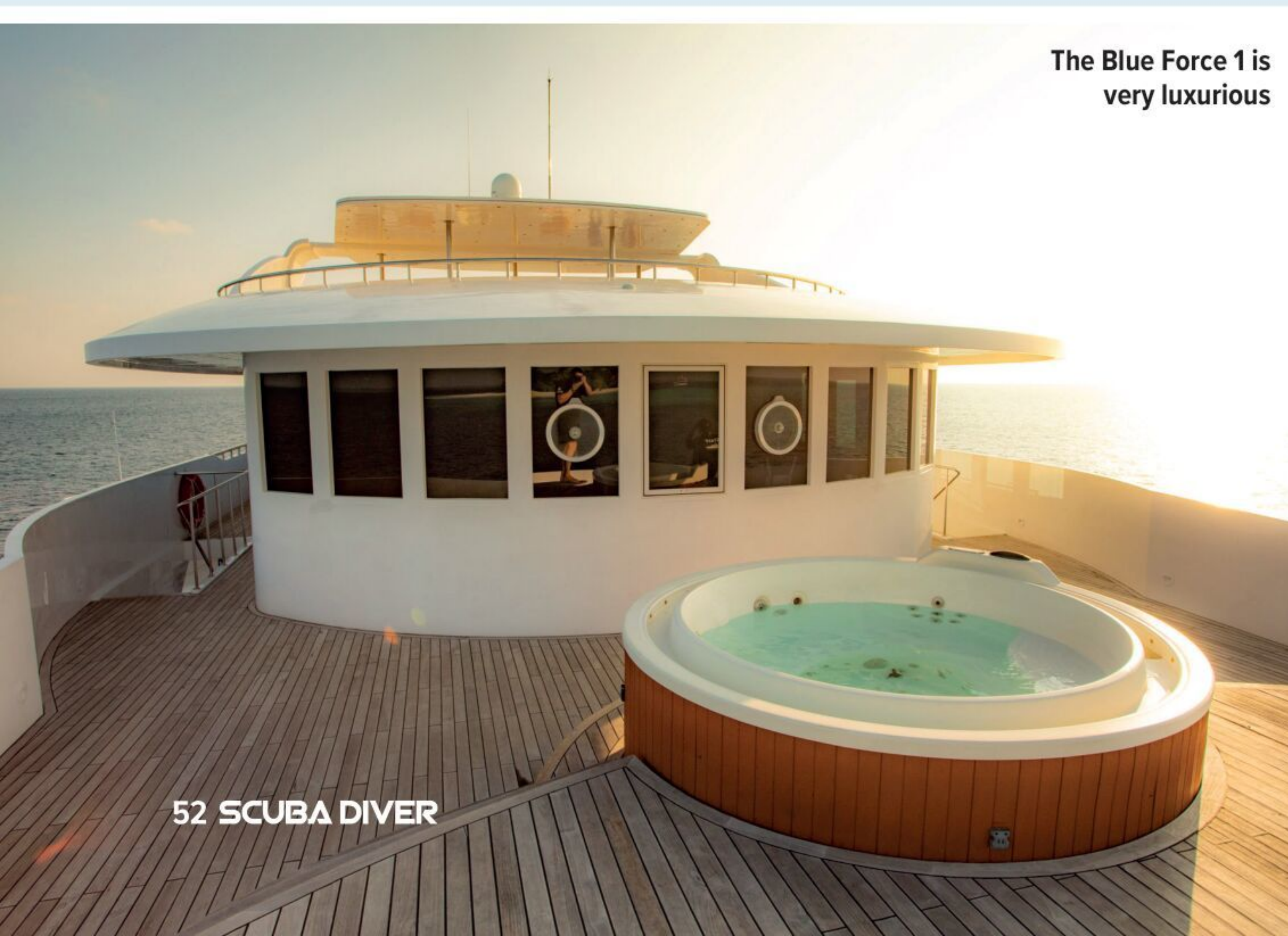
After channel diving it was time to head a little further South, and a four-hour ride during the evening allowed us to wake up at Fuvamulah. Over recent years a local shore-based dive operator has been arranging shark feed dives here, with the main star being tiger sharks.

Our boat explained that we would not be feeding the sharks, as this over time has altered the natural behaviour of the sharks. The dive itself is relatively simple, the front of the island provides a wall, we descended around 40 metres away from the wall to 10m and then swam towards it, then we dropped to 15m or so and followed the wall, keeping it on our right shoulder. As we reached the area where the arbor of the island is, we dropped a little deeper to around

20m. Then they came, out of the blue, climbing from the deep they appeared. We were lucky enough to spend 20 minutes or so with two tiger sharks, given the voracious nature of these sharks and the reputation they have, it was a surprisingly calm experience. The sharks were not aggressive and remained calm. There are only two places on Earth where you can reliably see tiger sharks in the wild - Tiger Beach in Bahamas and now here in Fuvamulah.

The Maldives is not famous for good corals, the area has really been impacted by global warming and climate change. In 2016, somewhere between 60 and 90 percent of all corals suffered from a mass bleaching event and corals in the North and central atolls have really been impacted by this. In the Far South though, things were different. This has more flow of open ocean water and as a result has managed to maintain slightly lower and more consistent water temperatures. As a result, the coral reefs are wonderfully healthy and the quality and diversity of corals is truly outstanding when compared to the rest of the island chain. For me this was a great thing to see - when I first came ten years ago I had come to see the corals, and now in the Deep South I had found the best corals in the Maldives.

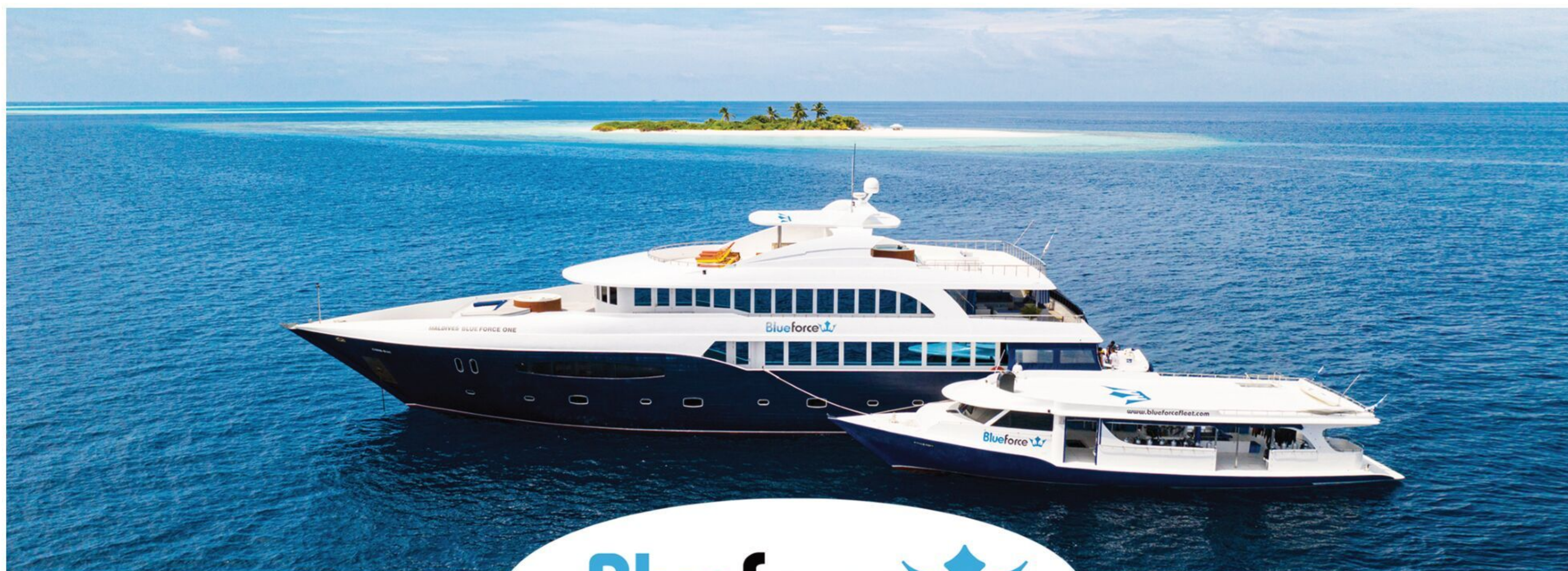
Tiger sharks, walls of reef sharks, shipwrecks, whalesharks and healthy coral reefs all within seven days. I have moved far and wide over the whole world, and seen for myself the devastating affects of overfishing of shark populations. It was a real pleasure to dive the deep South and see how no shark fishing for ten years has resulted in such a large and diverse shark population - just how nature had intended. ■



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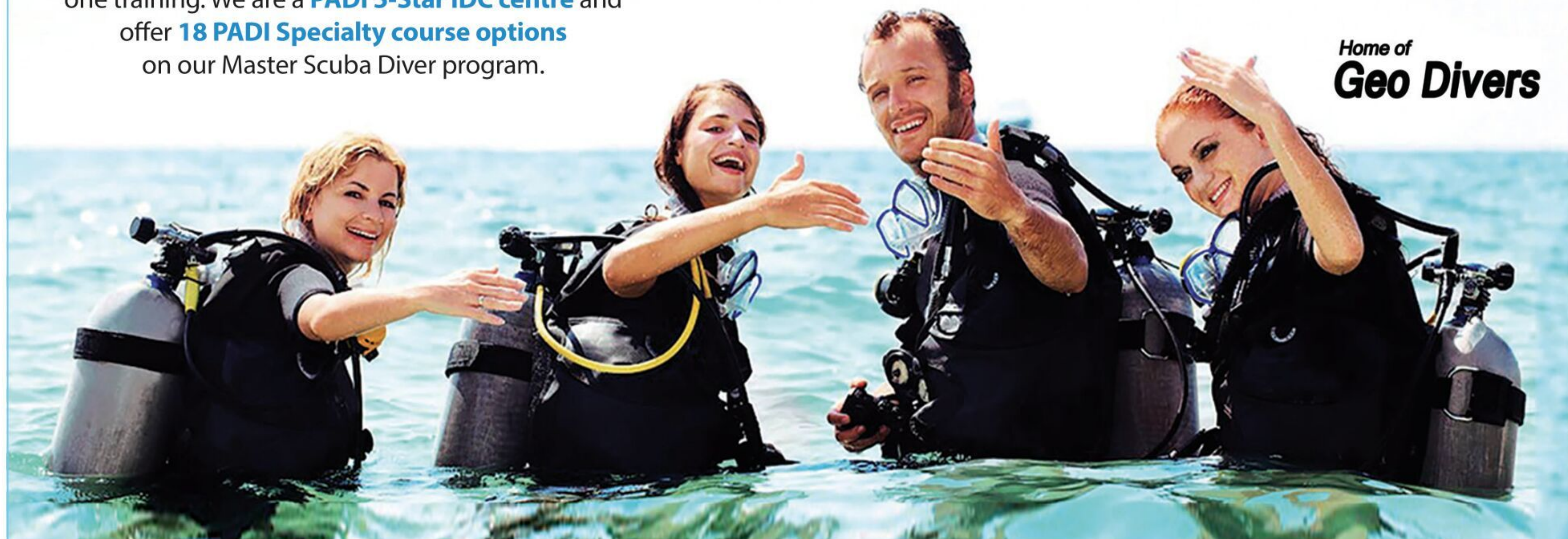
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Brooke O'Connell explains the allure of Wellington's underwater habitats, which include the colourful Mermaid's Kitchen and the impressive F69 shipwreck

Photographs by Ghost Diving NZ

Located on the southern tip of the North Island is Wellington, the capital city of New Zealand. Picturesque scenery surrounds the city, but the real beauty is beneath the surface, a marine wonderland waiting for divers of all levels to explore. Despite being known as the 'windy city', no matter the wind direction, you can always find somewhere to dive.

A northerly wind is favourable for the South Coast, while a southerly wind will allow you to discover seahorses, decorator crabs and plentiful scallop beds in Wellington Harbour. The Wellington region has two marine reserves covering 3,022 hectares collectively. The Taputeranga marine reserve located on Wellington's South Coast is notorious for mixing ocean currents and its richness of marine creatures. Taputeranga marine reserve is up there with the best in the country. Founded in 2008, it has flourished. Our favourite dive site Mermaid's Kitchen is located a stone's throw across the road from Dive Wellington and right in the middle of the reserve. The dive site is easily accessible from shore and is barely affected by current, making it a marvellous dive or snorkel all year round. A gradual decline to a maximum depth of 18m is ideal for open water divers to improve their skills. In the summer months, Mermaid's Kitchen transforms into a garden-like playground with bright green sea lettuce coating the ocean floor. Butterfish and banded wrasse can be found wrapped in the lettuce sleeping during the day and hiding from predators.

Schools of juvenile, yellow-eyed mullet and jack mackerel swarm the shallows, making a great snorkel for children, along with the occasional school of baby kahawai. Generally, the warmer water brings in larger fish feeding on salps and sifting through the lettuces. During the winter, the water is clearer and a little chillier, but a 7mm wetsuit provides decent exposure protection all year round. The water temperature ranges from 12-17 degrees Celsius all year round, and visibility anywhere from 2-20 metres.

Commonly referred to as a macro photographer's dream; Mermaid's Kitchen's walls are home to an immense range of anemones, sponges and nudibranchs. Going through one of the many overhanging swim-throughs with a dive torch will light up the walls exposing resident crayfish nests, clown nudibranchs with their eggs and swaying sea tulips. ►



Into the Mermaid's KITCHEN



Face off!

“ Owhiro Bay is in the heart of the Taputeranga marine reserve so you can only imagine the life around the wrecks ”



On a dive any given day at Mermaid's Kitchen, you will be greeted by blue cod who will follow you around the whole dive and dance with their reflection in your mask. Grazing blue moki can be found all year round, who get so complacent they often bump into you as they swim past. One of our favourite resident species are the highly intelligent common octopus who never fail to leave divers awestruck. Another species we see plenty more of thanks to the marine reserve is a member of the sea snail family; the pāua. Pāua can be found along the whole South Coast in 1-10m stuck under ledges in beds of 5-25 at a time.

An interesting addition to Mermaid's Kitchen is an anchor sitting upright in the middle of a sandy pit from a rescue boat from the 1968 Wahine Disaster weighing around one tonne. The anchor has significant growth of sponges, anemones and weed after being submerged for over 40 years. At times, there are fur seals playing in the rockpools, and occasionally pods of orca swim along the coast.

The F69

400 metres off the beach on the Southern Coast in 22m of water lies the remains of the 113-metre-long HMNZS Wellington (F69). She was a frigate in the Royal New

Zealand Navy commissioned in 1969, and in November 2005 the vessel was scuttled to create an artificial marine reef and a world-class recreational dive site.

Located just a five-minute boat ride from Dive Wellington, the F69 makes an exciting adventure dive for Advanced courses and wreck divers. She is broken into three pieces scattered across a large area, the bow, the bridge and mid-section, all with access points for penetration. Inside the wreck you can see the Captain's toilet, bollards, and wreckage from the ship's structure. Hundreds of sea tulips grow on the exterior gently swaying side to side. On the bow, a fully intact large twin-barrelled 115mm gun turret pointing south out to sea.

The bridge has a wide penetration hole in the roof and is surrounded by old window structures, allowing the sunlight to brighten up the inside. The stern allows access through the hangar, a more-advanced dive as divers travel down the corridors. Strong, rich currents passing by the F69 bring in more pelagic species such as playful pods of bottlenose dolphins, schooling kingfish and trevally. Crayfish nest in ►

Crayfish





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their hundreds hiding in the crevices of her walls protected by the Taputeranga marine reserve.

There are plenty of nudibranchs species grazing on the F69, including New Zealand's biggest nudibranch – the Wellington nudibranch, *Jason mirabilis*, and the clown nudibranch to name a few.

Owhiro Bay

Probably the easiest accessible wreck dive site (ever), you can walk down a boat ramp and descend straight into the remains of four sunken vessels. The Wellington, and the Cyprus both sank on the same night in 1874 during a notorious southerly storm hitting the same rocks. Although not much remains of the two so many years on, there is still copper and brass fittings and an anchor which can be found littered around Owhiro Bay.

The SS Progress, a coastal steamer, ran aground in 1931. Divers can still see her boiler in close range to the Yung Penn. The Yung Penn sits in the sand on Wellington's South Coast in about 7m of water. The ex-Taiwanese squid boat hit the rocky coast in 1982, breaking in half and sinking upside down providing a cave-like structure for juvenile species to hide. Owhiro Bay is in the heart of the Taputeranga marine reserve so you can only imagine the life around the wrecks. Best dived at night, you can see crayfish walking in plain sight, large conger eels swimming around the exterior, masses of juvenile blue moki, blue cod and Tarakihi, sea-perch and many other species. Large wandering anemones cling to the Yung Penn, surrounded by bright red anemone, pink and purple jewel anemone, and variable anemone waiting for something to cross their path. Local recommendations for weather and sea conditions are necessary for this site.

Wellington Harbour

Sometimes we cannot dive the South Coast, so off to the harbour we go. Mahanga Bay on the Mirimar Peninsula hosts a man-made tyre reef, and a lot of ex-mussel farm cages and tables which are growing more life as time goes by. The frame of an old car inhibits crayfish and molluscs, as well as various types of weed and kelps. Skates and flounder can be found hiding in the sand, and an array of oddly decorated decorator crabs marching their way along the seafloor.

A silty bottom composition in Kau Bay makes for a good

A face only a mother
could love!



“ Located just a five-minute boat ride from Dive Wellington, the F69 makes an exciting adventure dive for Advanced courses and wreck divers ”

buoyancy training site, visibility is generally a maximum of five metres which gives divers a chance to focus on the weed line close to the shore, which has more pot-bellied seahorse than we can count! Shelley Bay is known for its ample scallop beds and deteriorating pier formations. Easy access down another boat ramp, divers can quickly find 18m depth if swimming out to the channel.

Conclusion

The beauty of the Wellington Region is that you can find a site to dive on any given forecast and it will have something interesting to look at. The city itself is most known for its alternative style and great food, but with more people diving than ever before we are discovering the true appeal of Wellington – its underwater wonderland. ■





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BLU3 NOMAD | SRP: AUD\$2,899

Nomad is a compact dive system that supports one diver to 9m with a rechargeable battery pack that lasts 45-60+ minutes. Air is drawn from the surface above the water and pumped through the air hose to deliver clean breathing air to the diver. Nomad's custom-designed compressor is fully sealed and built to interact with saltwater. Patent-pending Smart Reg technology enables Nomad to be the world's smallest dive system to 9m and weigh in at only about 15lb. Nomad's lithium-ion battery weighs about 2lb and can be easily swapped for an additional 45-60+ minutes of run time. Recharge time is three hours or less. The battery is 144 Wh (watt-hours) so it can be brought onto an aeroplane in carry-on luggage.



Nomad's Smart Reg is patent-pending and unlike any other diving regulator on the market, and it is what enables Nemo to be more portable and energy-efficient than any other dive system on the market. Inside of the Smart Reg, a waterproofed sensor detects when a diver inhales and it then sends an electronic signal which triggers the compressor to pump air at exactly the time and speed that the diver is inhaling.

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TRIWA X SEA SHEPHERD | SRP: €139

Swedish brand TRIWA has launched an exclusive watch in collaboration with one of the world's most prolific ocean conservation organizations, Sea Shepherd. The watch is made from recycled ocean plastic as a statement on our oceans' health and as a way of further funding Sea Shepherd's mission.

In 2020, TRIWA launched the first collection of watches made completely from recycled ocean plastics. The collection, called Time for Oceans, was developed together with Tide Ocean Material as a way of making use of ocean debris. Since then, TRIWA has been looking for the right NGO to create a statement watch with and to further fund direct oceans conservation actions. After a year of preparations, TRIWA finally launches Time for Action together with Sea Shepherd Conservation Society. The watch is made completely from recycled ocean plastic and features Sea Shepherd's signature logo printed on both the dial and the backplate of the watch. This statement timepiece comes in a fully recyclable TRIWA packaging, together with a Sea Shepherd limited-edition sleeve to mark the collaboration. For each watch sold, 15% goes back to Sea Shepherd.



www.TRIWA.com

SEIKO PROSPEX 'KING TURTLE' SRPH37K | SRP: AUD\$1,100

The Seiko Prospex 'King Turtle' SRPH37K is an Australasia exclusive. The dial is finished in a three dimensional cube pattern coloured in green, which is surrounded by a black ceramic bezel, with a two tone green and white font for increased visibility. The hands and hour markers are finished in silver with Seiko's proprietary lumibrite. The sapphire glass is scratch resistant, as is the magnifier fitted over the day and date function. The case and metal bracelet are stainless steel, and the additional strap is an extra strength silicon with stainless steel clasp, which is as soft and comfortable as it is durable. Water resistance is Divers 200m and meets ISO6425 for diver's watches. Powered by the movement of the wearer, or by winding the crown, the Automatic Movement has a 41 hour power reserve. Presented in a special 'Diver's' box with an additional silicon strap. Limited to 1,000 pieces exclusive to Australasian market.

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GARMIN DESCENT MK2S | SRP: AUD\$1,399

Mark Evans: When Garmin launched the Descent MK2, it picked up where the innovative MK1 left off. It rectified the few issues with the original version, notably with a bigger, better display and overall better aesthetics. There was more functionality – both for diving, and a plethora of other sporting activities – and this made it a tidy package. The release of the MK2i, which offered all of this with the addition of air-integration capabilities, was a crowning glory for a supremely efficient unit. Never one to rest on their laurels, Garmin then looked at their potential market, and released there was nothing out there in the wristwatch dive computer market that was designed for smaller builds, be that women, youths or just smaller blokes. Not everyone wants a whopping big dive computer on their wrist for daily wear – my wife Penney loves her D4, but only wears it for diving as it swamps her wrist and is not practical for daily watch wear. And that is where the Descent MK2S comes in.

Available in carbon-grey with black silicone band, light gold with light sand silicone band, and as tested here, mineral blue with sea foam silicone band, the MK2S is significantly smaller than the MK2 or MK2i. It has a 1.2-inch sunlight-readable sapphire display, and 43mm case. It looked right at home on my wife's wrist, and on my teenage son Luke (though he said he would want the carbon-grey colourway!).



The Descent MK2S boasts Garmin's full suite of diving features as well as encompassing all of the company's smartwatch and health features, including activity tracking, smart notifications, stress and energy tracking, and Garmin's industry-leading women's health features, such as menstrual and pregnancy tracking.

As with the MK2 and MK2i, the diving side of things is easy to get used to. To get started into the diving menu is simplicity itself – you just press the top right-hand button and it brings you on to the screen where you can select the type of diving you are going to be doing – so either single gas, multi-gas, closed-circuit rebreather, gauge mode, apnea, or apnea hunt for the spearos out there. There is also a dive planning option.

Let's focus on single-gas mode, which is what most users will be doing. Another press of the top right-hand button gets you on to a screen where you can see what your nitrox mix is, what your maximum operating depth is, and what level of conservatism you have it set on. You can also see your surface interval. If you need to edit your gas mix or conservatism level, you just press the bottom left button and it takes you to a screen where you can go in and change



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GARMIN DESCENT MK2S | SRP: AUD\$1,399

these. At any time, once you are done, pressing the bottom right-hand button takes you back a screen. From that first dive screen, another press of the right-hand button takes you to a screen where it shows whether it is set for salt or fresh water, and what the safety stop timer is. Again, to edit you just press the bottom left-hand button. A third press of the right-hand button takes you to the 'dive screen' itself. I found this nice and clear, and easy to understand during the dive.

You can clearly see the nitrox mix, the water temperature, your NDL, your current depth, and your dive time. The display up the left-hand side of the screen goes from green, to orange, to red, and the hand rises as your NDL gets nearer to zero, so as well as the actual digit display, you get this handy visual graphic as well. The display on the right-hand side is rather neat. If you are hovering motionless in the water, the hand remains at the 3 o'clock position, and if you start to ascend, it goes up, and if you start to go too quickly, it warns you with orange, and then if it goes into red, the entire screen alerts you to the fact you are ascending too quickly. So, a rapid ascent warning, nothing new there. But what I liked was the fact that the hand can go the other way, to show when you are descending. This may seem pointless to some people, but I can imagine this being very useful if you were out in the blue looking for sharks, for instance, with no point of reference.

If you are at this stage and need to change your gas mix, you can just press the top right-hand button and it takes you to the gas select screen. As changing your gas mix is probably the most regular thing you will ever do, this makes it quick and easy to do.

After diving, when you want to look at your logbook, you just press the bottom left-hand button and the first thing on the screen is the dive log. Top right-hand button press and you are into the log. On this first screen it gives you the time, depth and water temp of your last dive (and a scroll down goes back dive by dive). A further right-hand press, and after a quick loading screen, you get more details, including a graph of your profile alongside the time, depth and water temp info. This screen also appears on the MK2S when you first get out of the water and back on your boat/dry land.

Penney is a warm-water-loving diver, and with the restrictions on travel from COVID, while we had this unit for test, we have not been abroad, so she graciously said she'd test it from a daily watch and topside exercise point of view, leaving myself and Luke to don our drysuits and go and dive it in UK waters!

While we are talking drysuits, the Mk2S has a neat feature where you can swap out the straps quickly and easily with a clip system (similar to the Suunto D5). This lets you change to different colours if you so wish, but it also means you can change out the standard strap for a longer version designed to go over a drysuited arm (this comes with the computer). Much neater than adding an extension strap to the existing strap. Luke was in his Fourth Element Hydra drysuit with 3mm neoprene gloves, and had no trouble pressing the buttons on the Descent MK2S to navigate through the menu on the surface before the dives, or scroll through the dive screens during the dives.





One thing I have seen commented on online is the screen of the Descent MK2S (and the MK2 and MK2i), and some people saying it is hard to read. As I said in my review of the MK2i, that is a load of tosh. Topside, I found I could read the display even when the backlight was not on, but once it was on, it is very easy to see. While diving, I had the backlight set for on all the time, and it made the screen nice and clear, even in bright sunlight in the shallows during a safety stop. I didn't really notice a massive difference in brightness once I took it over 60-70 percent, I have to say, but suffice to say you can easily see the display either in watch mode or while on a dive. As we said before, all dives on the MK2S have been in the UK, and a few dives in particular, the vis was, shall we say, marginal at best, yet the Descent MK2S was clearly legible even in these grim conditions.

The Garmin Descent MK2S is rechargeable, and I am a big fan of the method of charge - a clamp system on to charging points on the back of the watch, which is solid and secure. A full charge only takes a few hours, and then you can get several days of daily watch-wear out of it. You get a solid 30 hours of dive time out of a charge too.

Where the Descent MK2S wins hand's down against the competition – although, as we have said, there are not really any 'smaller' wristwatch dive computers on the market - is with all of the other features it contains within its svelte

body. I am not going to go into all the ins and outs of each, but suffice to say, if you are an active person, the Garmin has you covered! Being based on the tried-and-tested Fenix 6, it has functions for running, biking, hiking, golf, swimming (both pool and open water), kayaking, stand-up paddleboarding, boating, triathlon, yoga, cross-country skiing, even jumpmaster for those who like leaping out of planes, as well as new modes for surfing, mountain biking, indoor climbing and even a recovery advisor which recommends how long to rest before more activity.

It monitors your heart rate and your blood oxygen level (when it is directly on your wrist), calories burnt, the list goes on. And as a smart watch, you also get your phone messages on the screen, and it can even handle your music choices, either from your phone or even stored in the unit itself. Let's just say there is a lot to get to grips with!

The Garmin Descent MK2S comes in just under \$1,400, which might seem pricey, but if you bought a top-of-the-line wristwatch dive computer and a smartwatch, you'd spend more combined than you would on the Descent MK2S. If you are an active person who does other sports, and you want a wristwatch that can handle a plethora of your activities including diving, but not look massive on your wrist, then the Descent MK2S is the logical choice.

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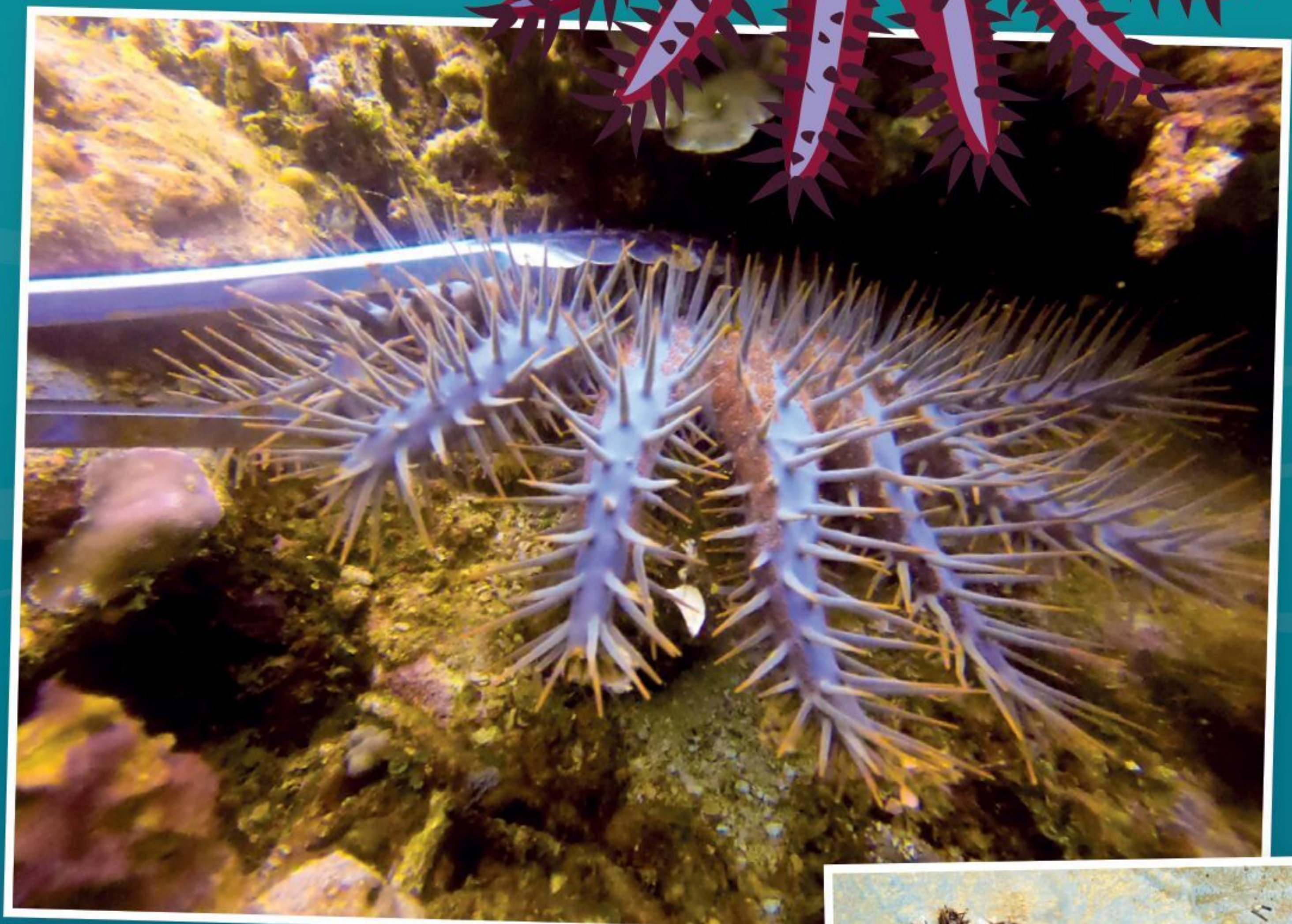
Raja Ampat community stands together against crown of thorns

We all know about the worldwide crisis coral reefs are facing on a day-to-day basis. From overfishing, pollution, climate change and chemical disruption via personal care products such as face wash and sunscreen, but some corals face an additional problem - being eaten by a giant seastar!

Outbreaks of crown of thorns starfish (COTS) pose a significant threat to coral reefs in the Indo-Pacific region. According to the Living Ocean Foundation, these starfish often exceed 1,000 animals per hectare and can destroy an entire reef system in a matter of weeks.

One way of being an ocean warrior and ensuring your decisions reflect best practice for our environment is choosing an eco-conscious travel operator. Trying to choose the most responsible marine tourism operators while travelling can help to preserve these delicate ecosystems.

Meridian Adventure Dive has been active in the removal of these little critters since their inception in 2017. Monthly expeditions ensure they remove these infestations and record the data for further research purposes.



It is believed the seastars were introduced to the reef through the ballast water of passing cargo ships, and with few predators in Indonesian waters, they have thrived. COTS are known to grow up to half a metre wide and are the second largest starfish in the world. The Living Oceans Foundation also mentions that a single COTS can devour 10 square metres of coral a year. They truly have a significant appetite and can cause great havoc.

Another unknown fact about these predators of coral is that they are covered in venomous spines, making them notoriously difficult to remove, which requires special gear. Wherever you may be, ensure you ask your dive resort about invasive species and keep a look-out during your dives for infestations.

About Meridian Adventure Dive

Situated in Raja Ampat, Indonesia, Meridian Adventure Dive is a PADI five-star Resort and winner of the PADI Green Star award. Scuba divers enjoy our professional services that have become synonymous with both the PADI and Meridian Adventure names. ■

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