

April / June 2017

OZ DIVER

AUSTRALIA'S PREMIER DIVE MAGAZINE

BROTHER ISLANDS

TIGER SHARKS

TRUK LAGOON PART I

DIVERS WITH DIABETES

ORGANISM ADAPTATIONS

WAKATOBI

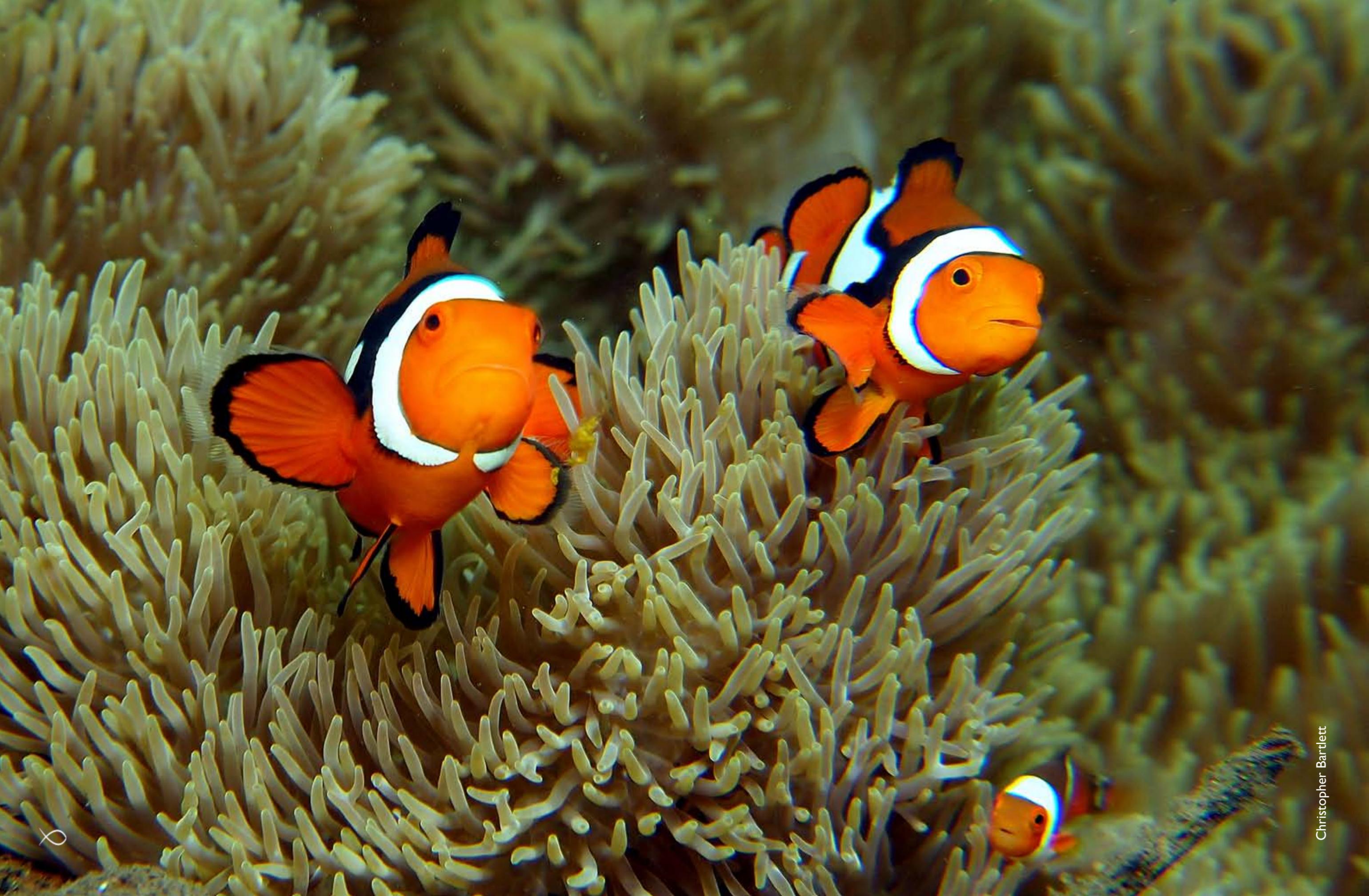


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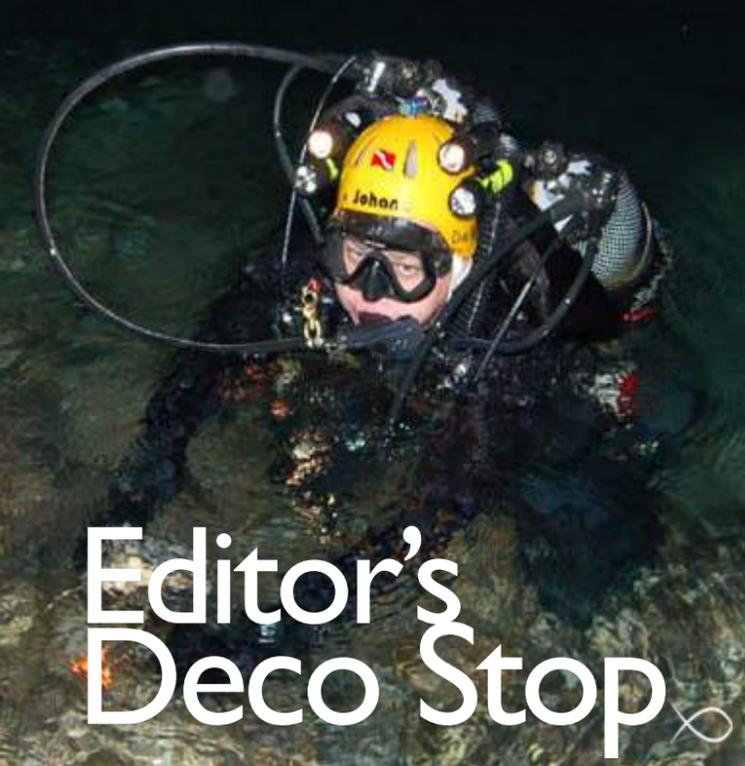
IT IS THE JOURNEY AND NOT THE DESTINATION - WWW.OZDIVER.COM.AU

April / June 2017

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Editor's Deco Stop

Are we fighting a losing battle? Do you believe that you can save the world, yet every time you switch on the television you realise that you are fighting for nothing? Do all the people who you tell that sharks are one of the most important creatures on this planet not believe you? Would they rather believe what the Discovery Channel or the media tells them?

I worked in television for a number of years, as well as being a journalist, and I know that it is only the good stories that sell. A while back I was pitching a documentary for television on how bad dolphins are (did you know that gang rapes in the dolphin kingdom are common, and believe it or not, to their own young?). Yet do you think that they wanted to let me do it? Why not? Because it would not sell. Who do you think would watch it and think that 'our' Flipper could do such things?

Do you think that they will broadcast shows on how nice and important sharks are? One morning I switched on the television and it

was on the Discovery Channel – what I saw was a program entitled River Monsters. I was intrigued.

I wanted to know what monsters can be found in rivers. When it started the presenter said: "We know that it is not safe to swim in the ocean, but now it has been proven that it is also not safe to swim in rivers and dams."

I was wondering what I had missed and what this person was smoking. Then it came out that the 'river monsters' that will eat anything that is in the water are Bull sharks. Now I have dived with most of the shark species in the ocean and a number of times with Bull sharks, but after watching that program I was even scared to swim in a swimming pool.

Just after that there was another program – I Shouldn't Be Alive – and believe it or not, it was also about sharks. And again they were portrayed as bloodthirsty and dangerous man-eaters. How many viewers would have seen these broadcasts and believed all the stuff that is being sold to the television stations? Do they know how many sharks they will have killed due to broadcasting this crap?

But who am I to say anything? Television rules the world and money talks a language that we don't understand.

The Editor & Publisher

Johan Boshoff

-it is all about the journey and not the destination

Matthew 6:33

But seek ye first the kingdom of God, and his righteousness; and all these things shall be added unto you.



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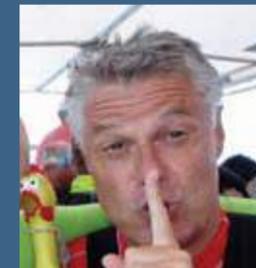
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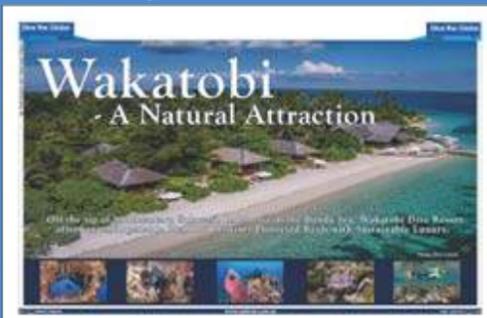
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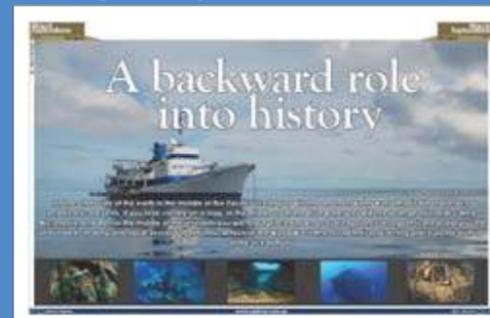
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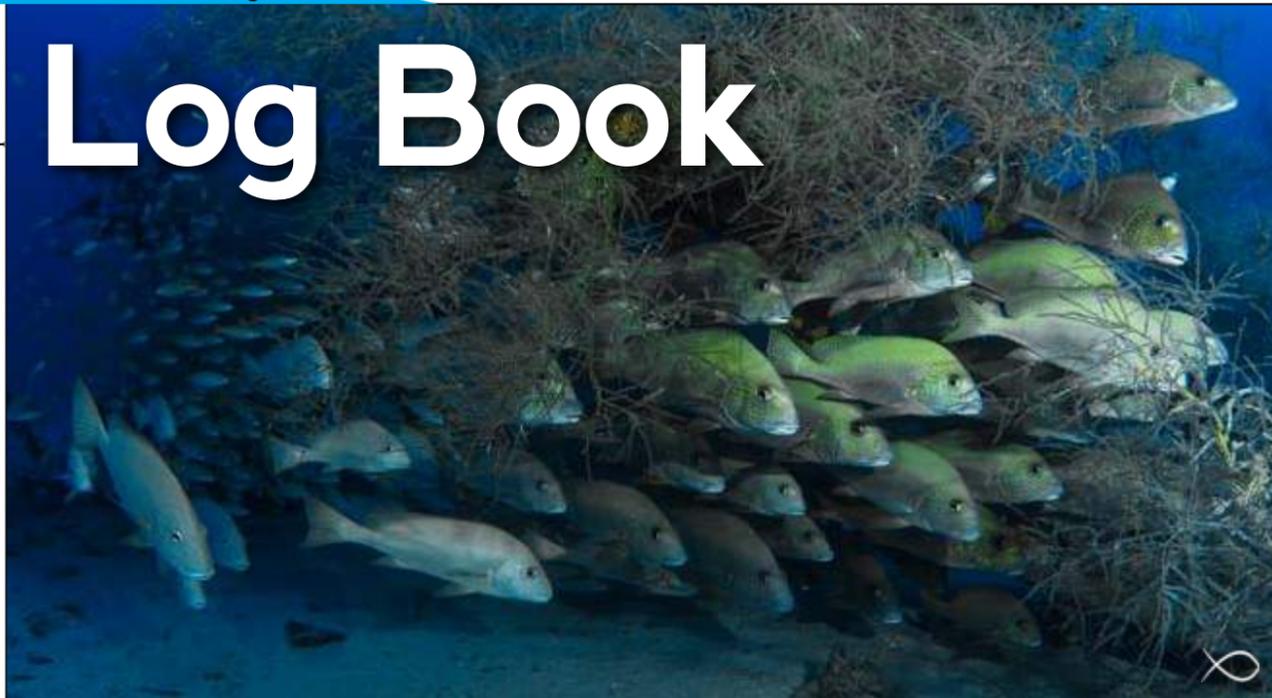


Discovering the Deep Side - Pg 97

FEATURE



Log Book



A DEEP DIVING LESSON

By Pierre Douglas

I has always believed that one should go just beyond one's comfort level to enable growth, but one dive taught him a lesson.

As qualified dive masters we decided to do something a bit more challenging and go to a new dive spot down to the task force board, about 54m deep. We decided that we would do a couple of build-up dives on Saturday, followed by a dive to 40m before we would deep dive into the cave Sunday afternoon. All the dives went without a hitch and everybody felt quite relaxed and confident.

We had put in place all the necessary safety features required for a deep dive, and we had two contingency (backup) plans as well as our original dive plan. We were very well prepared for the dive and at about 3pm kitted up and entered the water. The first stage of the dive-plan went well although the viz was very bad. We gathered at the 40m grid and everyone indicated that they were OK, so we proceeded to enter the cave. My buddy and I were to enter last. We were to maintain physical contact during the dark stages of the dive and everyone's torch was

to be on before we entered the cave. I saw my buddy entering and followed her. At that stage I was certain that I was the last person in the formation.

At about 44 meters I felt some tugging on my left upper leg. I became a bit worried, as I thought there was nobody behind me. I wondered if I was just suffering from a bit of nitrogen narcosis, and decided to slow down until this strange hallucination has passed.

Just as I saw my buddy's fins disappearing down the slope, my torch died. The darkness was complete, but I still thought if I just maintained my finning action I would soon see the others' lights at the task force board, and I could rejoin my buddy. At that point something really bumped on my thigh and I looked back over my left shoulder to see if I could determine what it was. I got bumped on my head, my mask came off and suddenly my DV was out of my mouth. I don't think I was ever so close to panicking, but I realised that I had to stay calm, or else...

As I had no idea which way was up, left or right, I deflated my BC and waited until I felt the bottom. I retrieved my DV, breathed, got hold of my mask, cleared it and just sat there breathing for a couple of seconds. I then took my torch and

hit it a couple of times. It came on. My depth gauge was on 50m; I had plenty of air so I just tried to regain my composure. I knew this was the end of my dive.

What went wrong?

1. I was not the last person to enter the cave, which meant there was some confusion on the grid. We were all too concerned about the time and neglected the basics such as buddy pairs.

2. We reached the grid in just under 50 seconds, which means that our descent rate was more than double the recommended rate. That could have increased the chances of suffering from nitrogen narcosis.

3. The diver that entered behind me tried to get past me to get to his buddy, who should not have entered alone – they should have stayed together from the start.

4. I should have aborted the dive the moment I thought my mental capabilities were impaired and that I was suffering from the effects of nitrogen narcosis.

5. I should have maintained physical contact with my buddy! (If anything had happened to her, she would not have had any help!)

6. I should have had a backup torch.



WIN

Send your letter to us and win a Marine Life Species Guide

Here is a chance to be heard! If you have anything that you would like to share with OZDiver Magazine and other divers, send an email to Log Book at johan@ozdiver.com.au. Remember that letters have more impact when they are short and sweet. We have the right to edit and shorten letters. In every issue, the winning letter will receive a Marine Life Species Guide.



OZ News



New Year New Career: Becoming a PADI Instructor

Becoming a PADI Instructor not only means a new career, it can lead to a life of travel, adventure and so much more. To find out more about what's involved and how to get started, read on!

What is the IDC?

IDC stands for Instructor Development Course and it is made up of two parts; Assistant Instructor and Open Water Scuba Instructor. Most candidates take both sections together followed by sitting a PADI® Instructor Exam to become fully-fledged PADI Instructors.

If you are already a certified diving instructor with another training organisation you may not need to complete the Assistant Instructor portion but rather go directly into the Open Water Scuba Instructor course.

Who can take an IDC?

You need to be a certified PADI Divemaster who has been a certified diver for at least 6 months and meets the following requirements;

- have 100 logged dives before the Instructor Exams
- completed Emergency First Response Primary and Secondary Care(CPR and First Aid) training within the past 24 months



have a medical statement signed by a physician within the last 12 months.

- Be a current EFR® Instructor (or hold a qualifying certification from another organisation)

What will I learn during the IDC?

The IDC teaches you how to conduct all core PADI Courses from Open Water Diver through to Divemaster. You'll learn the PADI Standards and Procedures and how to find information you need in the PADI Instructor Manual. You'll also review:

- PADI Learning®, Instruction and the PADI System
- Risk Management and Diver Safety
- The Business of Diving and your role as an instructor
- Marketing Diving and Sales Counseling

In addition to studying these key topics you'll be reviewing your in-water skill demonstrations and learning how to deliver clear presentations for Confined Water and Open Water dives as well as for Knowledge Development presentations. Your public speaking skills will improve, your confidence will grow and your in-water skills will become perfectly honed.

Is it the right career choice for me?

If you like people, love diving, have a passion for travel and a thirst for adventure then YES! Becoming a PADI Instructor not only allows you to teach diving and share your passion, it enables you to make real differences to people's lives.

You'll teach nervous beginners and give them confidence, you'll teach teenagers and show them the value of responsibility, you'll dive with people of all nationalities and ages, from all walks of life and you'll give them one common gift – the gift of diving and a passion for the underwater world.

For most active divers, diving is more than a holiday activity, it's a passion and, for many, a way of life. You'll be giving this gift to each and every one of your students. Think back to your own recreational scuba diving instructors – they must have been inspiring for you to be thinking about following in their footsteps!

Find out more about becoming a PADI Instructor at PADI.com.



Divers given green light - ADS releases new position statement on diabetes and diving

The Australian Diabetes Society (ADS) has published a new position statement on diving for people with insulin-requiring diabetes.

ADS CEO, Professor Sof Andrikopoulos said people with well-controlled diabetes are able to participate safely in recreational diving.

"The ADS recognises that with appropriate preparation, experience and adherence to the new recommendations, people with diabetes are able to dive safely," he said.

However, the ADS still warns that diving should not be undertaken by people with hypoglycaemia unawareness, recent severe hypoglycaemia, or complications.

"Recreational diving places greater demands on the body; in particular on the cardiovascular, respiratory and metabolic systems," said Prof Andrikopoulos.

"Any sudden and unexpected alteration in consciousness due to hypoglycaemia can be extremely dangerous or fatal to a diver and their dive partner."

The new position statement provides healthcare professionals with criteria to assist them in determining a person's suitability to dive and protocols to ensure they dive safely. Diabetes specialists and General Practitioners are encouraged to be aware that divers are required to undergo initial and annual medical review by their treating physician and assessment by a doctor who has completed a post-graduate diving examiner's qualification.

In 2015, the ADS commissioned a working group including diving enthusiasts, clinical and research experts, and representatives from the Telethon Type 1 Diabetes Family Centre in Perth and the South Pacific Underwater Medicine Society. The group reviewed and revised the ADS position statement on scuba diving in people with diabetes. The new position statement is specific to recreational diving and is targeted at people with insulin-requiring (both type 1 and type 2) diabetes.

Bec Johnson, CEO of the Telethon Type 1 Diabetes Family Centre, has had type 1 diabetes since the age of 17 and qualified as a PADI Divemaster overseas in 2008. She has undertaken more than 500 safe dives and welcomes the new position statement.

"This is a real game-changer for divers. Australians with insulin-dependent diabetes can now

participate in this exciting sport.

"People with diabetes can certainly learn to dive safely and we commend the Australian Diabetes Society for giving divers the go-ahead," she said. 



AIDE

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Invitation

Australia's Largest Water Enthusiast's Event

From scuba and free diving, spearfishing, snorkeling, photography and conservation policies and practices to hi-tech equipment, hot dive apparel, super-cool gadgets, dive tours, dream holiday packages as well as expert training and education, this annual Expo event is where the entire industry comes together under one roof to provide water enthusiasts, young and old, beginners and professionals, the latest and greatest in the underwater world.

VENUE - The newly renovated International Convention Centre (ICC) in Sydney's spectacular Darling Harbour will be host venue for the collaborative event from August 3-7, 2017. AIDE2017 will occupy 20,000m² of floor space and run for 5 days. There will be an estimated 45,000 visitors and 250 exhibitors at the 2017 collaborative event. This is a not-to-be-missed event!

OUR OBJECTIVES - The aim of the AIDE and SIBS collaboration is to showcase products and services to visitors in one convenient location, so that individual interests and needs are met, either above or below the waterline all under one roof.

OUR INVITATION TO YOU

If you're keen in exhibiting or would like to get involved, please email us at: info@australiadiveexpo.com

We hope you will join us in welcoming the thousands of water enthusiasts to this great event!

For more information on the event, kindly visit the AIDE website at: www.australiadiveexpo.com 



Dive Schools / Operators / Organisers / Instructors

Do you have any interesting, newsworthy info to share with the dive industry? If so, we would like to invite you to send us your OZ News section for possible inclusion in the magazine (please note that inclusion is FREE of charge).

Here's what we need:

- Newsworthy stories (promotional material will not be accepted)
- Word limit: 100 words
- Text prepared in a Word document
- Accompanying high-resolution image(s) are welcome (please supply caption and image credit)

Please send to info@ozdiver.com.au 

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OZ DIVER



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Diving the Navy Pier

How often
do you need
a military
security
check before
you go on a
dive?
Only on one
of the most
amazing
dives ever!





I stood outside my hotel with my friends, excitement building as we waited to be picked up for the adventure we had come for, all the way across Australia to this small town on the Western end of the continent.

Very soon an amazing bus decorated in fantastic Aboriginal artwork stopped in front of us, and our friendly driver smiled cheerfully as we were welcomed aboard and driven to be kitted out for the dive. The anticipation built as we had our security

briefing - we could hardly wait to see the place. This was followed by a short journey to the navy base where the bus was boarded by an Australian Federal Police officer, who checked our ID and approved our entry to the Naval Jetty.

Then on to the pier itself, passing the huge VLF (very low frequency) radio towers and Defence buildings. Here we had to put our cameras away as we passed through a high security area, and went out onto the pier - that's all it is- a jetty protruding from the beach. Strange to think how good the diving could be under there!

As the bus drove down the pier, Ospreys launched themselves from the pier structure and circled above us. Having arrived, we then received a briefing about the dive and what to expect on it.

After getting into our diving gear and doing our buddy checks we made our way down to a lower platform where we could enter the water. We were informed the

tides were dropping and it was safe to now enter the water. A big giant stride off the platform and wow, the impact of the sheer amount of life hits you immediately, I didn't know where to look first, at the monster of a grouper (which was looking back at me!) or the huge school of barracuda, spangled emperors, sweetlips, trevally circling around...

After a mind-blowing dive we surfaced and the first thing I wanted to do was do it all again!

Where in Australia

At the far western edge of Australia, where the continent extends out into the Indian Ocean, is the town of Exmouth. Its location is very favourable for marine wildlife: it is at the northern end of the famed coral expanses of the Ningaloo Reef, and is a favourite place to see mantas, turtles and many huge grouper on the reef.

The reef lies on the path of the annual migrations of both humpback whales and

whale sharks, both of which may be seen in one short visit.

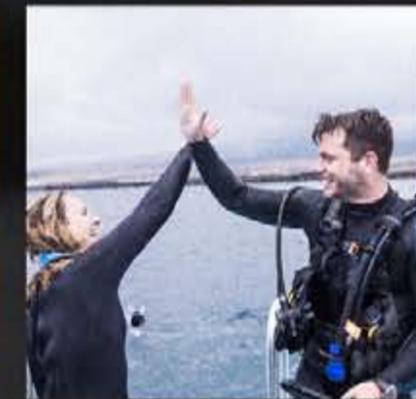
The Ningaloo Reef is 260 km long and is one of the longest fringing reefs in the world. It is a physically diverse coastline with rocky shores, sandy beaches, mangrove stands, tranquil lagoons, rich reefs and open ocean. The Ningaloo is a divers paradise, with amazingly high biodiversity, hundreds of corals, an abundance of fish, comfortable warm water, as well as all the big exciting stuff - which you never know might turn up on a dive!

Out on the reef the marine life is truly magnificent, with large schools of fish and rich coral reefs. The Ningaloo supports over 500 different species of fish, from the pretty, colourful, reef fish, to big, hunting, pelagic fish, 300 species of corals, the majority being hard corals, but plenty of pastel soft corals and sponges at the islands and, finally, over 500 species of molluscs, including shells, octopus, squid and nudibranchs.



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Brandon Hamara
PADI Open Water Scuba Instructor

TEACH



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to get started today!



By Dive Ningaloo



But there is another spot of great interest to divers that has just opened again, one that has even been listed as being one of the 'Top Ten' dive sites of the World: this is the Exmouth Navy Pier. This structure juts eastwards into the Exmouth Gulf, a large and usually sheltered body of water that was originally made famous by its prawn fishery. The pier has been open to divers in the past but was then closed for some years. Now, once again the Australian Navy is permitting scuba diving there, run by Dive Ningaloo.

The location

Exmouth is a small town in an attractive location sitting beside the Cape Range National Park. It is nestled between the Indian Ocean and the Exmouth Gulf, and a few kms to its north is a Navy base that was built in the mid 60s by the US Navy and is now managed by the Australian Department of Defence.

Today its most conspicuous features are a group of very tall radio masts at the northernmost end of the Cape, and its pier that juts into the Exmouth Gulf. Exmouth is also home to Learmonth Royal Australian Air Force base and the Bureau of Meteorology Space Weather Observatory which is a link in the global chain which monitors solar activity.

Diving the Navy Pier

Why dive the pier? Because it has the most marvellous accumulation of marine life to be seen anywhere, from sharks and giant groupers, through schools of pelagic fish, to fishes resting on the sea bed. The steel and concrete structure of the pier itself is festooned with attached life: corals, soft corals and sponges of the kinds you find on the reefs offshore, nudibranchs and a myriad of small colourful creatures cover every square centimetre of the structure.

The abundance and density of life, all packed into this relatively tiny area





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By Dive Ningaloo

of ocean, is the most astounding and memorable characteristic of the Navy Pier. There are several reasons why it is so rich in marine life. Firstly, the pier structure itself provides plenty of hard substrate onto which the corals and soft corals, sponges and many other animals and plants can attach and grow.

Secondly, it provides an oasis effect, a self-perpetuating feedback, in which more prey attracts more predators, where more hard bottom life attracts more grazers (and therefore more predators on them), and so on. Like an oasis in the desert, life accumulates here – an ecosystem that can usually only be seen across large areas is concentrated into one small space.

Thirdly we have the effect of the structure providing a 'roof'. In fishing terms, this is known as the FAD effect. FADs are Fish Aggregation Devices, a widely used and destructive fishing method, where a structure simply provides a covering under

which fish will always gather. Some FADs are fixed while others are floated across the oceans for days, during which time fish species that are usually wide ranging and highly mobile simply shelter underneath them, until the mother ship then comes up to it, spreads a net around it, and catches the whole lot, a fishing method that is as destructive as it is profitable to the fishing ships. But, in the case of the Navy Pier, there is no fishing – just years of fish accumulating beneath them, prey and predators alike, protected in huge abundance.

Fourthly, and specific to this area. There are big tidal movements. This supplies copious amounts of larvae of marine species from a wide area, such as the surrounding sponge gardens in the Gulf, and of course from the world-renowned Ningaloo Reef, so that there is a constant source of new life and larvae from a large surrounding area.

These factors all combine to create this



By Dive Ningaloo

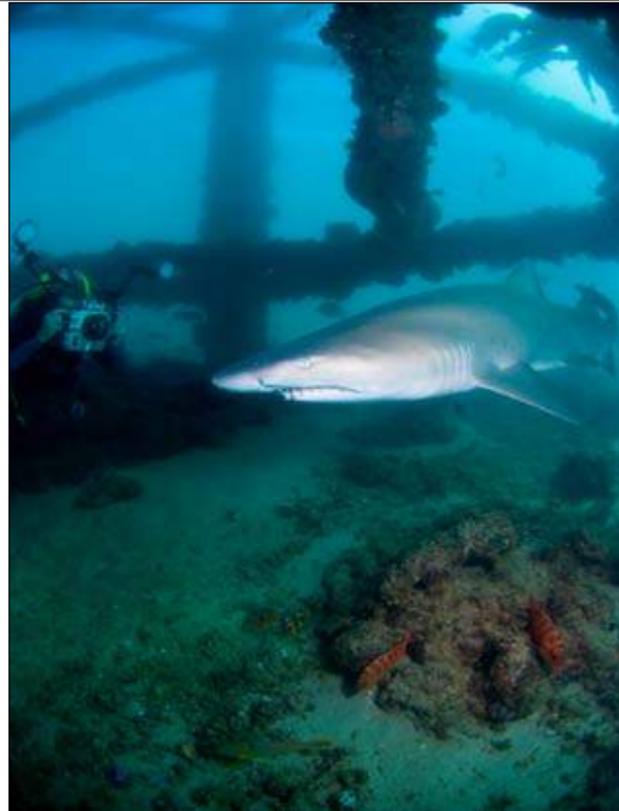
oasis. You will see huge abundances of pelagics (the free swimmers) the demersals (those that feed on the sea bed) and the benthics (those that are attached to the pier structure) all in this relatively small area. So do come and be a pelagic, and see it for yourself!

How does a day work when diving it?

Dives are all shore dives, done in groups of a maximum of 17 divers, and 3 staff. Times of day vary according to the tides. The only times to dive the Pier are at slack water because at other times the currents are too severe. Dive starting times are calculated in relation to tides, so while usually there is one dive in a day, sometimes there are two. The times can be found on the Dive Ningaloo online calendar.

Contact details and Bookings

Dive Ningaloo has the sole contract from the Navy to operate dives under the Pier. For bookings, and times of dives each day go to: www.diveningaloo.com.au



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The Tiger Shark

The Tiger shark is a unique species, differing in many ways from other Carcharhinidae family members. In addition, diving or snorkelling with this species will reveal that its true nature also differs considerably from its unjust reputation as the second most dangerous shark.

The Tiger shark has over 50 family members, including other well known species such as the Bull (Carcharhinus leucas) and Black-tip sharks (Carcharhinus limbatus). However, it stands out from other Carcharhinids for a number of reasons; it is by far the largest species in this family reaching lengths of 5,5m, it has spiracles (small slits behind the eyes which provide oxygen to the eye and brain), it has unique cocks-comb shaped teeth, and the most significant difference, unlike all other family members which use the placental viviparous method of reproduction, Tiger



sharks don't form a placental connection with the developing embryos. This method of reproduction is known as aplacental viviparity, where developing embryos are nourished by a yolk sac then born alive.

The Tiger shark is found in all the world's temperate and tropical waters, with the exception of the Mediterranean Sea. This wide-ranging species can be found both in the open ocean as well as in shallow coastal waters. Tiger sharks seem to prefer warmer habitats, migrating to warmer waters during winter months and moving back into the temperate areas during the summer months. However, a tagging programme in the US revealed that some Tiger sharks stayed in one location throughout the year while others travelled great distances.

The most distinctive feature of the Tiger shark is its stripe-like markings which run down its sides, making it easy to distinguish. These markings are most prominent on young sharks and fade more and more as the shark matures. Tiger sharks also have a noticeably blunt, squared-off snout, and the anterior (front) portion of the body is stout but becomes increasingly slender from the abdomen to the tail.

Like some other carcharhinid sharks (Dusky and Oceanic white-tip), Tiger sharks have a ridge running between their first and second dorsal fins, which is called an interdorsal ridge. This interdorsal ridge may play a minor role in streamlining the shark's body for more efficient movement through the water. These sharks also have noticeably large eyes equipped with nictitating membranes. These thin, tough membranes or inner eyelids are raised to cover the eye and protect it from damage just prior to feeding or whenever the shark feels its eye may be at risk of abrasion.

Tiger sharks have a wide range of feeding habits and are described as sluggish but capable of fast bursts. Moving through the entire water column (surface to bottom), Tiger sharks will slowly patrol an area looking for a possible meal. These sharks are known to be extremely opportunistic predators that feed on a wide variety of prey. The large size and versatile dentistry of these sharks enable them to target a wide variety of prey, ranging from benthic (bottom dwelling) crustaceans to turtles, other sharks, rays and large marine mammals such as dolphins and seals.

Tiger sharks have evolved a feeding behaviour that involves a rolling motion of both jaws, which cut in a saw-like manner. This motion, combined with the specially shaped teeth, allows the shark to cut cleanly through hard objects without damaging the teeth. Tiger sharks are also avid scavengers, taking advantage of easy meals in the form of dead or decaying animals. Studies on the gut contents of Tiger sharks caught in the



shark nets in KwaZulu-Natal reveal that the Manta ray (Manta birostris), Dusky shark (Carcharhinus obscurus) and Ragged-tooth shark (Carcharias taurus) are the most common prey species. Bony fish (teleosts) were the second most important prey group, with the Blaasops (Tetraodontidae) and Porcupinefish (Diodontidae) being the most common teleost species preyed upon. Dolphins (mammals) were the third most important prey group, with the Bottlenose dolphin (Tursiops aduncus) and Common dolphin (Delphinus capensis) being the most commonly preyed upon species of marine mammals.

The Tiger is the fifth largest existing shark, commonly reaching lengths of 3-4m and weighing between 385-635kg. The largest specimens are believed to attain a length of over 5,5m and weigh over 900kg. Female Carcharhinids are generally larger than the males from the same species. This difference in size may be because the females require more body space to accommodate developing embryos and require larger energy reserves for embryo development. Female Tigers produce a relatively large number of young, up to 80 per litter. However, the average litter size is around 30-35 pups, with the sex ratio of male to female pups often being 50:50. The Tiger's gestation period is believed to be between 13-16 months and length at birth varies from 56-71cm. During their first year of life the pups grow rapidly, increasing their length by 79% to around 1,5m – this growth spurt may be to minimise the threat of predation from larger sharks. Tiger sharks are expected to live for over 30 years. ☞

Organism Adaptations

It's all smoke and mirrors as marine organisms use their colouring to display and perceive visual signals or to camouflage them from predators

All oceanic creatures feature specific adaptations geared to provide them with a survival advantage, and colouration is no exception. Marine organisms generally sport colour schemes that are specifically suited to the light environment of their local habitat.

Reef fish which live near the surface take advantage of the plentiful light at shallow depths, and display a range of colours in order to signal to each other, safe in the knowledge that they can 'escape' if they are spotted by a predator. Certain groups of fish adopt colour schemes that warn that they are poisonous, dangerous or simply taste bad, while in other fish, changes in the colouration of an individual can be indicative of the fish's reproductive condition or even of its mood.

Another reason that reef fish display coloured lines, stripes and spots is that it helps to break up their outline – an effect known as disruptive colouration. In the open ocean however, there is little hiding place, and animals tend to take the more cautious approach of disappearing by

'blending in with the environment'. The method and colouring which allows an animal to 'blend in' with the environment, depends on the depth at which the animal lives.

Those at the surface (e.g. bluebottles) tend to adopt a blue colouring so as to match the upward scattering of blue light from the ocean, and thus appear invisible to predators from above (like birds). Being transparent is an effective form of disguise for many types of plankton (like jellyfish), but is not practical for larger organisms. Many of these larger animals, particularly fish, have flattened bodies which they cover with a reflective material.

In doing so they simulate a 'vertical mirror', which reflects the surrounding ocean colour and effectively makes the animal invisible from the side (known as silvering – e.g. hatchet fish). It is also possible for these animals to 'tilt' their bodies and therefore their 'mirrors', creating a flash of light which can be used to distract predators or to communicate with other members of the school (like sardines). Many open-ocean

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By Neil Swart Photos By Christopher Bartlett

fish and shallow-water predators use a colour scheme known as counter-shading, where the belly of the organism is silver or white, while its back is dark. When viewed from below, the white belly of the animal blends in with the highly illuminated surface waters, and when viewed from above the dark back of the animal matches the black depths – effectively providing camouflage from both angles (think Great White Shark). Similarly deep-water organisms employ all-round brown, black, purple or scarlet colouration, in order to blend in with the deep-water, low-light environment.

Some organisms, however, live at intermediate depths, or change the depth at which they live at different stages in their life cycle, and therefore either adopt a compromise of ideal colour schemes, or undergo changes in their appearance through the stages of development. Bioluminescence, the process by which organisms produce their own light, is common in marine organisms and is most often achieved by a chemical reaction which occurs in a specialised organ

named a 'photophore'. Bioluminescence occurs in animals living at all depths and is often blue/green in colour since these are the least absorbed colours in water and therefore the most efficient. The reasons for using bioluminescence range from a means of passive camouflage (i.e. counterillumination – where the light from the organism matches the downward penetrating natural light in order to eliminate its silhouette) to forms of active defence, such as flashes of light in the case of some phytoplankton and fish, to squirting clouds of luminescence by certain shrimps, squid, fish and worms.

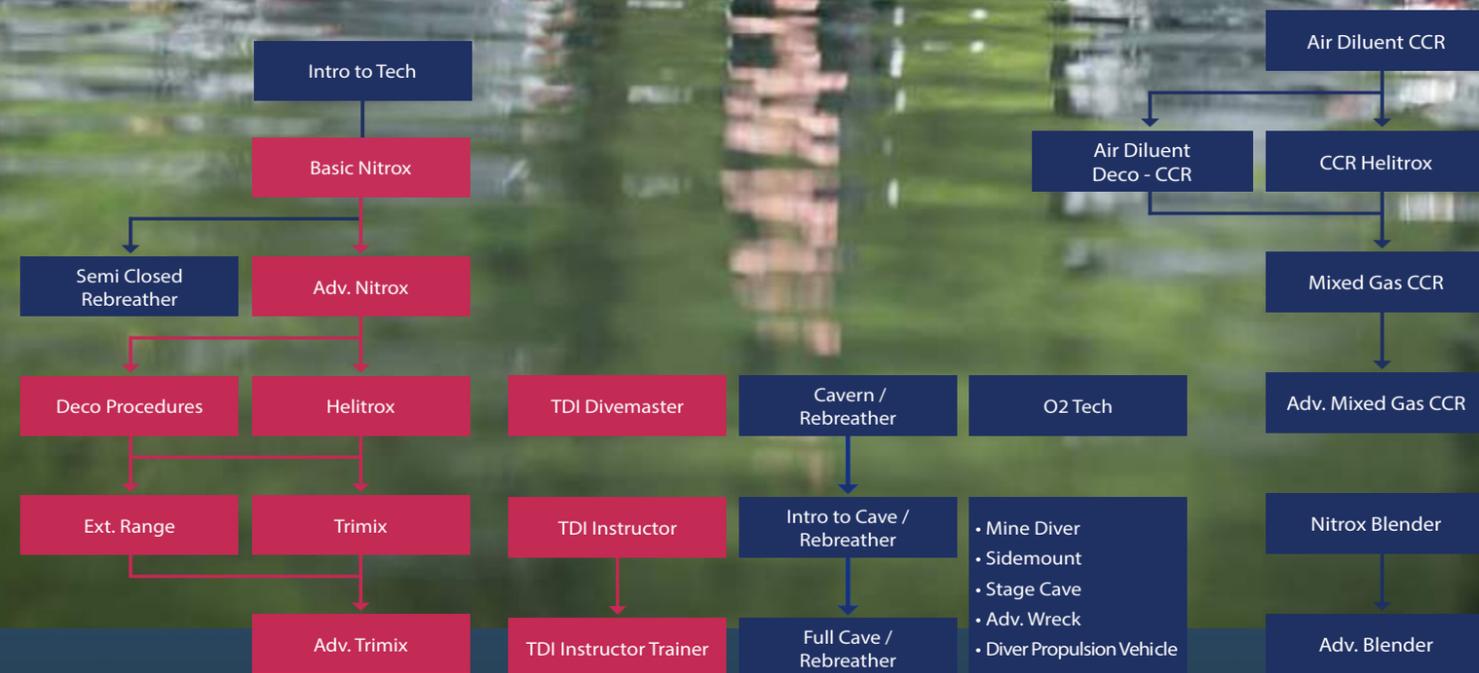
Bioluminescence is also effectively used for sexual displays in certain organisms (like fireworms and lantern fish) and may even be used as a hunting aid in the form of a 'lure' or 'flashlight' in the case of anglerfish. On the whole, marine organisms have developed a suite of specialised adaptations which allow them to effectively display and perceive visual signals, as well to camouflage themselves so effectively that they disappear into their oceanic surrounds. 



Tech Divers Trained Here



TDI



Tuna Resaved



In the ongoing quest to live a greener and more sustainable life, its no use bothering about the other people around you – it all starts much closer to home.

A couple of days ago, I overheard a group of people talking about endangered fish species and what can be ordered at restaurants. Nobody was too sure about Sole and Red roman, but they all knew that Bluefin tuna is off limits due to all the bad publicity. Someone stressed the fact that it's up to us, the consumer, to tell the restaurants that we do not want endangered species on our plates. Yes, that's a good start, I thought. But the thought got invaded with another person stating that it doesn't matter if we tell the restaurants that we will not eat the endangered fish species because the person at the next table doesn't mind and will enjoy their meal – endangered or not...

Unfortunately that is probably true for most of the green issues. "They don't do it so why must we?" or "if I don't take that the next person will come along and take it any way." But that got me thinking – it's not about them, it's not about what the next person will do, it's about ourselves. If we start taking responsibility for our own

actions, knowing that we are not eating the wrong crayfish or we are recycling, we are slowly but surely taking care of our own footprint. We, the consumer, do have a big say in what one will find on the menus and the shelves. As soon as we start to look at our own actions and see the effect we as individuals have, the picture changes.

Let's take tuna for example. Tuna falls in the family of Scombridae and there are over 48 different tuna species. Of these, the Bluefin tuna are not the only endangered species due to overfishing. The Indian Ocean yellowfin tuna, according to a report by the International Seafood Sustainability Foundation (ISSF), is also currently being overfished and will continue to be harvested from our oceans until it is labelled as endangered. But while the studies are being done, fishing continues...

These are not the only tuna species being commercially fished. Some of the other species include the Albacore, Bigeye

tuna and Blackfin tuna. Greenpeace International added these species to its seafood red list. This is a list of fish that is commonly sold in supermarkets worldwide and may have a high risk of being sourced from unsustainable fisheries – usually associated with by-catch. Something else of great concern. It doesn't matter what method of fishing is used, there is a by-catch of sharks, dolphins, turtles, other non-target fish and sea birds. Even labels on canned tuna saying "dolphin friendly", can't guarantee that there was no by-catch of the abovementioned fish species.

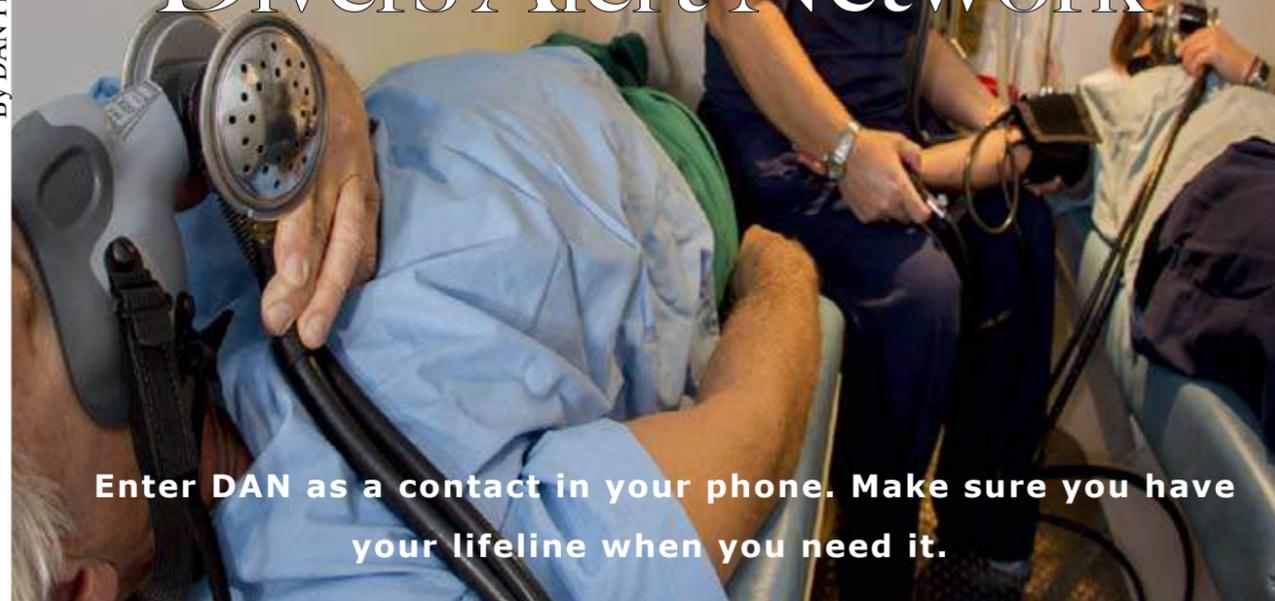
And that is only in the tuna trade. Prawn harvesting using trawling methods is one of the fishing sectors with the highest discarded by-catch, estimated at 70%. That means that only 30% of what the trawler nets bring to the surface is used. Trawling involves towing a large net across the seabed or water to catch the fish that live there. This is the most widely used commercial fishing method and also, by far the most destructive. It's not just prawns, but hake and sole that are also harvested in this manner.

But what has all this got to do with us? The guilty parties are the big guys and we cannot do anything about them, right? It is them who are overfishing our waters. Wrong! It is all about economics – supply and demand. As long as there is a demand, for example for tuna, there will be people supplying just that. Even if it means using unsustainable practices – as long as there is money in it for them. That is why we need to take the demand away, or at least decrease it. And that starts with the individual consumer – not the group next to you or 'them', it's the 'I'. Instead of always ordering 1kg of King prawns, start of by ordering it every third time, and then maybe just half a kg. Find out what species are not endangered and stick to those, even though you prefer the species in the red block with the critically endangered sign behind it's name because its taste is just pure heaven. Unfortunately the days of getting everything we want is over. It's time to start looking at our own footprint in a critical way. If we don't we might not have to care about our own footprint in the near future. ▣



Incident Insights with the Divers Alert Network

By DAN Photo By Stephen Frink



Enter DAN as a contact in your phone. Make sure you have your lifeline when you need it.

The Diver: An Australian living in India who was on a diving holiday in the Maldives.

The Diver's Experience: More than 550 dives completed over a 30-year period.

The Trip: A 6-day diving holiday.

The Dives

- Five dives completed within 36-hours.
- All divers were between 22m and 31m.
- All dives were on air and approximately 60 minutes in duration.
- On all dives the computer was set to default settings with no added conservatism, despite multiple days of planned diving at depths between 20m and 30m.

Dive Profiles

Day 1

Dive 1: 30.6m, 55 minutes, Surface Interval (SI): 1hr 56 mins

Dive 2: 30.6m, 56 minutes, SI: 5h 18mins

Dive 3: 22m, 64 minutes

Day 2. After a surface interval of just under 13 hours

Dive 1: 31.3m, 60 minutes, SI: 1 hr 58 mins

Dive 2: 31.2m, 65 mins

Onset of Symptoms

- Several minutes after surfacing from the second dive on Day 2, the diver experienced numbness and tingling on the right side of her body, including her arm, side and leg.
- The numbness and tingling extended to the left leg and under the right breast.
- The boat crew commenced oxygen first aid quickly. The symptoms partially resolved after 25-30 minutes, and fully resolved in her left leg after 60 minutes of breathing oxygen.
- The boat crew contacted the hyperbaric chamber on an island near Male and she was transferred there for evaluation and, if needed, further treatment.

Diagnosis

- Decompression illness (DCI) with peripheral neurological symptoms.

Treatment

The diver underwent two recompression treatments:

- 25th March at 1530: Comex18 Treatment
- 26th March at 0730: HBO US Navy Treatment Table 5

Recovery

Thirty minutes into the first treatment the diver's symptoms resolved, except for the abnormal skin sensation of "insects crawling" on her right leg and under the right breast.

After the second treatment, the Chamber declared the diver fit to fly back to Mumbai after only 24-hours despite having some residual symptoms. The diver was informed about possible therapy required for symptoms presenting during the flight.

DAN AP on-call staff and the on-call DES doctor both expressed concern at this short period and suggested that the diver wait a minimum of 72 hours between treatment and flying. In fact, given that she had residual symptoms the time should have been significantly extended.

The diver would have likely benefited from additional treatment. Despite DAN's advice, the diver was determined to fly, and flew home less than 24 hours after her second treatment.

Fortunately, the diver's symptoms did not substantially worsen on the flight, or subsequently, however, she still had a small numb patch on her leg and some residual tingling in the right leg that required additional treatments in Mumbai.

Initial Costs

- Chamber Treatment 1: US\$4,500
- Chamber Treatment 2: US\$2,500
- Doctor's Fee: US\$570

TOTAL (inclusive of GST): US\$8,474.40.

After returning to Mumbai, the diver received four further chamber treatments and various other medical services.

As a DAN AP Member with dive injury insurance, the costs relating to the treatment of her DCI and transportation were covered by DAN.

Analysis

This diver probably worsened the outcome by flying home so soon after her initial treatments, especially with unresolved symptoms. There was also a delay of 4 days between the treatment in the Maldives and subsequent treatments in India.

Delays in treatment, and flying prematurely, can both result in a worsening of symptoms and/or decrease the benefits of subsequent treatments. Had she remained longer in the Maldives (with or without further care) she may not have required further treatment on returning home.

Not Yet a DAN Member? Join today at www.danap.org

SAFETY TIP: Enter DAN as a contact in your phone. Make sure you have your lifeline when you need it. Visit "Emergency" at danap.org. Whilst all divers can call DAN for advice, DAN can only arrange an Emergency Evacuation and pay for associated treatment costs for current Members (within the limits of their coverage option). 



Global News

Explore a New World. Become a PADI Freediver™

Freediving is about inward power, discipline and control. If you've always wanted to enter the underwater world quietly, on your own terms, staying as long as your breath allows, then freediving is for you. Taking the PADI Freediver course is your first step toward discovering why freediving is becoming a popular way to explore beneath the waves.

Already into freediving? That's great! You should check out the PADI Advanced Freediver, Master Freediver or Freediver Instructor courses where you can advance your skills and learn how to make freediving your profession.

What will you learn?

The PADI Freediver course consists of three main phases:

- Knowledge development about freediving principles through independent study with the PADI Freediver Touch™ (or your instructor may conduct class sessions).
- Confined water session to learn breathhold techniques as well as static and dynamic apnea. Goal – static apnea of 90 seconds and dynamic apnea of 25 metres/80 feet.
- Open water sessions to practice free immersion and constant weight freedives, plus proper buddy procedures. Goal – constant weight freedive of 10 metres/30 feet.

How can you start learning now?

Contact your local PADI Freediver Center or PADI Freediver Instructor and get the PADI Freediver Touch tablet app. The Touch is an interactive study tool that gives you the background information you need to freedive safely and allows you to learn at your own pace. Your PADI Freediver Instructor will check on your progress and make sure you understand important freediving information.

Good news – the PADI Freediver Touch also includes all learning materials for the PADI Advanced Freediver and Master Freediver courses.

Visit PADI.com to learn more about PADI Freediver, or PADI.com/Blog to read the stories of professional Freedivers. 



Aaron Wong

Photographer, Author, Conservationist

Why I'm a DAN Member

I have personally experienced decompression illness and spent 10 hours (two treatments) in a Chamber. Thankfully DAN was there to support me, coordinate my treatment and cover the associated costs. I know the value of DAN, and won't enter the water without it.



www.danap.org

Asia Dive Expo (ADEX) 2017

The largest and longest running dive show in Asia is not just a normal dive show!

Organised by Underwater360 (UW360), Asia Dive Expo (ADEX) is the largest and longest running dive expo in Asia celebrating its 22nd year in 2017. It is not only a must-attend event for anyone interested or involved in the world of diving, but even for non-divers alike. The event has seen a continuous increase in visitors over the past few years, with ADEX Singapore 2016 attracting a crowd of over 55,000 across the three days.



Taking place from 7 - 9 April 2017, ADEX Singapore 2017 proudly presents world-renowned marine life artists, conservationists, photographers and professional divers talking about their passion and work involving the protection and celebration of marine life. It is an event endorsed by major organisations in the industry such as DEMA (USA), and the Singapore Tourism Board (STB).

This year ADEX is confronting Climate Change. Highlighting a very real and imminent threat to the entire world, ADEX will shed a light on what is climate change, how it is affecting our environment and how we can change our way to prevent the rapidly changing climate that we are experiencing.

The ADEX official publication, Asian Diver, has an annual ADEX edition to commemorate the event. The Big Blue Book, is the ultimate reference guide, with the bulk of the publication focusing on everything you need to know about climate change. This collector's edition features premium photographs, world-class articles, infographics and scientific overviews. UW360 Diverholic edition is the show guide for ADEX, Singapore 2017, and includes event information, speaker details and exhibitor listings. Diverholic will be out on newsstands in April, and there will be free at ADEX 2017.

Once again, the ADEX Singapore 2017 Opening Ceremony will be taking place on the first day of the event (April 7, 2017, 3pm), with esteemed guests and speakers including members of the Blue-Green Alliance. It is our utmost honour to have Dr Sylvia A. Earle as our Guest Of Honour International and Mr Jose Ramos-Horta as our Guest Of Honour Asia.

Highlights of this year's ADEX include Ocean17 speakers whom are renowned in various art style ranging from videography to photography and fine art. There will also be an appearance by Russian Champion Freediver, Alexey Molchanov, who recently broke a world record in Constant Weight (CWT) Freediving, reaching a depth of 129m in 3min 50 sec. We will also have our Climate Change Heroes who have been around the world taking part in amazing feats to raise awareness for the impact of climate change. Climate Change Heroes include: Benoit Lecomte, who will be swimming from Tokyo to San Francisco; Captain Peter Bethune who has traversed the world in his unique sea vessel, Earthrace, which runs on biofuels; Tim Jarvis who aims to scale all the peaks in the world with glacier ice left; and Alban Michon who ventures on expeditions to the arctic to film and study the impact of climate change.

ADEX Singapore 2017 brings together some of the most recognised and accomplished divers from around the world to speak at the event. With a strong line-up of over 120 speakers from 30 different countries, who will be covering topics from underwater photography and freediving to technical

diving and marine conservation.

As with all the previous shows, ADEX Singapore 2017 will host a variety of exciting events such as the Underwater Photo/Video seminars, TekDive Conference, Freediving Workshops, Activity Zone, free Scuba Try Dives, Meet the Mermaid sessions, Surface Interval, Film Festival and the Voice of the Ocean Photo/Video/Art Competition.

TekDive Conference

The TekDive Conference will be in its sixth year in 2017 and will be held on the second and third day of the event (April 8 -9, 2016). With divers constantly seeking to go further, deeper and linger longer, technical diving has gone global. The conference in 2017 will see some of the world's tek gurus grace the event and includes tek experts like Alex Santos, Gideon Liew, Edd Stockdale, Wu Li Xin and many more!

ADEX Singapore 2017 TekDive Conference will be moderated by David Strike, who is the recipient of the ADEX 'Lifetime Achievement Award' for Contributions to Technical Diving, a Fellow of the Explorers Club of New York, and co-organiser of the biennial OZTek Technical Diving Conference. For schedule listings, please visit www.adex.asia.

About Asian Diver

With articles drawn from the world's best underwater journalists, photographers and academics specialising in the vast region of Asia, Asian Diver magazine was created for the serious diver who understands the challenging lure of the deep blue. Twenty years on, Asian Diver has become a brand known around the world for its penetrating and unique insights into the world's richest dive regions. Featuring content that helps to boost the industry, the magazine promotes continuing education and increases knowledge and awareness of the sport. Aimed at industry leaders including dive agencies, equipment manufacturers, dive operators and especially those working on the ground - our intrepid instructors and dive leaders - Asian Diver strives to create a community committed to preserving the sport so well loved the world over.

Asian Diver is the official publication of Asia Dive Expo (ADEX), Historical Diving Society Asia (HDSA), China Underwater Association (CUA), Singapore Underwater Federation (SUF) and Shark Savers Asia Pacific.

For more information, please visit www.uw360.asia. 

Send us your news.

Do you have any interesting, newsworthy info to share with the diving world? If so, we would like to invite you to send us your Global News section for possible inclusion in the magazine (Inclusion is FREE of charge).

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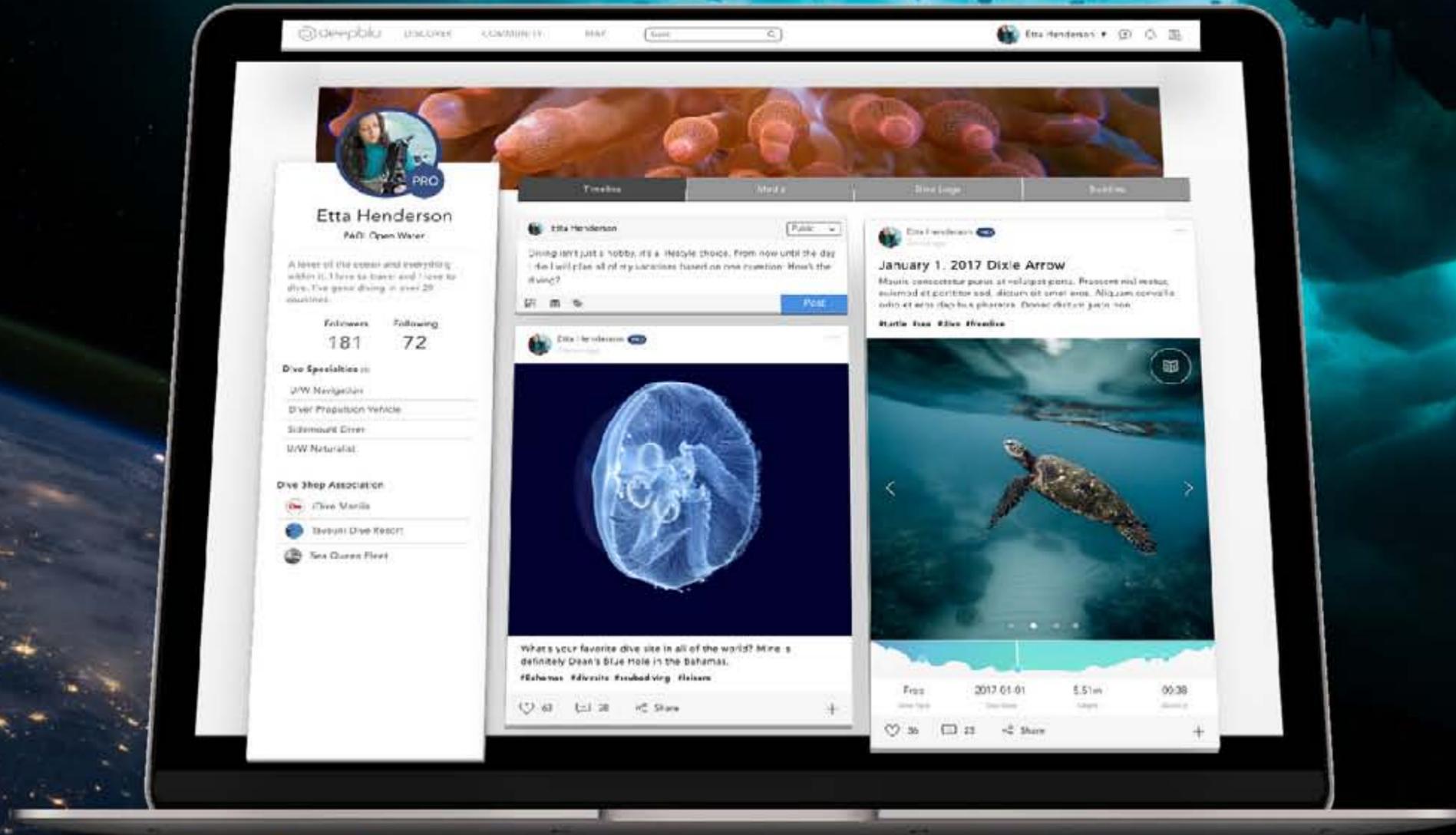
- Newsworthy stories (promotional material will not be accepted)
- Word limit: 150 words
- Text prepared in a Word document
- Accompanying high-resolution image(s) are welcome (please supply caption and image credit)

Please send to info@ozdiver.com.au



Deepblu Community

Be part of a global platform and share your dive adventures with others



By Walt Stearns and Underwater Photos

Wakatobi - A Natural Attraction

Off the tip of Southeastern Sulawesi, Indonesia in the Banda Sea, Wakatobi Dive Resort offers an unforgettable Blend of Pristine, Protected Reefs with Sustainable Luxury.

Photo: Didi Lotzxe



Dive sites that offer unusual or dramatic underwater topography have always intrigued me. And from what I'd been hearing, the site known as Blade was a prime candidate to add to my "favorites" list.

During the boat ride to the site from Wakatobi Dive Resort our dive guides described the Blade formation as a series of small seamounts running in succession, with two of the summits rising to within five meters of the surface. Bridging these two structures is a very narrow, elongated ridge. The profile this creates when viewed from either side, and at a distance (the water is that clear), resembles the serrated edge of a knife; hence the name.

Blade is one of the most distant sites visited by the resort's dive boats. Unlike the majority of the sites that are within a few minutes of the dive center, this one required a boat ride of almost an hour. But as soon as I entered the water, I

immediately realized that the wait had been well worth it.

Seen from above, Blade's profile almost defies description. I've had the opportunity to dive a great number of pinnacle formations, but this was something entirely different. This impressive natural formation resembles a massive medieval battlement, averaging just seven meters thick while running several hundred meters in length. On both sides of the Blade, the walls drop precipitously into the deep blue. It was enough to take my breath away.

Rising above a vivid backdrop of chromatic blue, every facet of this grand rampart was covered in coral. Adding to Blade's unique and highly picturesque topography is a comprehensive collection of giant sponges, sea fans and soft corals, providing fantastic photo opportunities no matter which side you decide to swim.



Photo:Walt Stearns

Underwater Nirvana

While I might question the validity of Jacques Cousteau having actually called the Wakatobi islands a "Underwater Nirvana," what I am certain of is that the description does fit. The majestic formation that is Blade is just one of many within the largest barrier reef system in Indonesia – a place where pristine reefs teem with the most bio-diverse collection of marine life in the world.

Above and Beyond

The reasons behind Wakatobi Dive Resort's ongoing appeal are obvious. Guests have access to pristine coral reefs and walls slightly more than a stone's throw away from a resort property providing sumptuous accommodations, gourmet dining, spa services and an attentive staff that know your name from the first day of your arrival. It's those special touches that go above and beyond what you come to expect that make this resort stand out.

When Wakatobi began welcoming guests some 20 years ago, the operation's infrastructure was more akin to a dive lodge than a resort. At that time, all aspects of operation from dive locker to kitchen, along with guest accommodations, were all housed in the Longhouse. Through the years, Wakatobi grew up, leaving such spartan amenities behind to become what could be described as a luxury dive resort that combines eco-friendly design with operating principles that continue to set industry standards for guest service.

Accommodations now include what Wakatobi calls their Ultimate, Gold Standard and Essentials selections. The Essential category includes the resort's nine Palm Bungalows, which feature classic Indonesian design blended with a comprehensive list of amenities.

Located just off the beach amidst palm trees and other tropical plants, the Palm Bungalows offer comfortable air-conditioned rooms with large beds and furnishings hand-crafted from splendid hardwoods. From the veranda you can savor nature's music in the form of birdsong and gentle waves lapping on the shore, while breezes rustle through the trees. And, at the same time, have wi-fi internet access.



Photo:Walt Stearns



Photo:Walt Stearns

At the other end of the accommodation spectrum, are Wakatobi's four villas. Set on a low ledge just above the beach, each villa is more than double the size of the Palm Bungalow, providing the opulence and spacious comfort of a five-star retreat with an unobstructed, yet private view of both the ocean and Wakatobi's spectacular sunsets.

Upping the ante, Villas One and Two are two bedroom, two bath models that feature a large deck with outdoor spa shower and plunge pool overlooking the ocean.

In between these choices are the resort's 15 Ocean Bungalows. Like the villas, these face the shoreline, and provide the same indoor amenities as the Palms plus a few additions. The most noticeable is a spacious Asian spa-style outdoor shower with tall privacy walls adjoined to the bungalow's indoor bathroom.

Creature comforts aren't the only area in which Wakatobi excels. Never before have I seen such a large and well-equipped restaurant kitchen in as remote a location as Wakatobi. Every meal is prepared by internationally-trained chefs with a

talent for creating a blend of delicious Indonesian and international cuisines. And the deserts are, well, let me put it this way: don't count on your wetsuit getting any looser during the trip!

The "pool" is open

Wakatobi is first and foremost a dive resort, so its no surprise that the diving infrastructure is first class in all respects. The Dive Center is a full-service facility staffed by a diverse and highly professional group of instructors, dive masters and guides who together speak over nine languages, from English to German and to even Japanese. This group can provide everything from basic instruction and refresher courses to advanced and technical training. The center offers a full range of Mares brand of equipment in their rental department and maintains a large cache of 80cu.ft./12L aluminum cylinders along with a fair number of 63cu.ft./10L and 100cu.ft./15L aluminum cylinders fitted with both DIN and standard yoke valves.

For basic diving activities, divers have the option of air or 32% nitrox supplied by two state-of-the-art nitrox membrane systems, fed by multiple water-cooled Bauer compressors. For the



Photo: Walt Stearns

technical crowd there are higher nitrox blends available, including pure oxygen, along with helium on special request for trimix.

Wakatobi also caters to the silent diving crowd. They can provide rebreather divers with 8/12 grade (797) Sofnolime as well as enough O2, dil and bailout bottles for up to 21 CCR divers at a time. Close to a third of these cylinders for rent are Faber 2 L and 3 L steels with inline rebreather valves, with the rest being 2 L/ 13 cu.ft. and 3 L /19 cu.ft. aluminum models fitted with DIN K-valves. For off board bail, options include 4.5 L/30 cu.ft. and 5 L/ 40 cu.ft. Aluminums. Divers needing something larger can choose the afore mentioned 80cu.ft./12L and 100cu.ft./15L aluminums.

Underwater photographers are provided with ample onboard storage space and dedicated rise tanks on boats, along with a climate-controlled room at the Dive Center with ample workbench space and numerous recharging stations in both 220 volt and 110 volt.

Daily diving activities begin with two-tank morning boat excursions that return guests

to the resort in time for lunch. Guests have the option of making an additional single-tank afternoon boat dive, or enjoying unlimited shore diving on the house reef, with dawn to dusk taxi boat support. Night dives by boat are scheduled according to demand.

Each diver is provided with a dedicated storage and staging area. When the day's plan includes, for example, the two-tank morning and night dive, your gear will be there and ready to dive when you step on board. This goes for just about everything else, including camera equipment – why carry it when the staff will eagerly do it for you.

Another nice touch is that the boats typically return to the jetty between the first and second dive, giving divers a chance to stretch their legs, and allowing late risers to catch the second dive. This flexibility, combined with the House Reef, provides the opportunity for guests to create an almost custom boat and shore dive schedule.

In my book, the thing that can make or break a great dive experience is the boat. Wakatobi's core fleet of dive boats consists of five enormous



Photo: Didi Lotzxe

vessels measuring 23 meters in length. Locally crafted, each boat is designed specifically for diving with a copious amount with deck space with ample seating and ample space for camera equipment, no matter the size.

While they may not be fast, they are impressively stable on the water, providing an enhanced comfort level that is elevated further by a full roof that provides overhead protection from sun and rain. Though these boats could easily hold two-dozen passengers, Wakatobi likes to ensure that guests have plenty of elbowroom by limiting the number of divers and/or snorkelers on board from 10 to a maximum of 14.

While a few sites like Blade, Coral Hill and Fish Wall may require longer boat ride from the resort, the majority are less than a half-hour boat ride away. Conditions at the sites themselves are mostly benign, and even more timid and less athletic divers will enjoy themselves, as there are rarely big seas to contend with. Instead, a collection of surrounding reefs and sheltering islands create consistently calm to mild sea states at dive sites, and deliver brilliant visibility in the 30-meter-plus range.

There are more than 40 sights regularly visited, each engaging in their own way. Many offer profiles that start a few feet from the surface with abrupt contours toppling down into the depths. The most striking are the collection of totally vertical profiles on sites near Sawa Island. Here, you will find walls that rise as shallow as knee-deep and plummet in vertical faces that reach well below 150 feet. With reef contours of this nature, it's easy to perform a series of extended multi-level dives without going into decompression.

Expect every boat dive to run 70 minutes in length, but you always have the option to end the dive sooner. Spending the latter portion of dives off gassing in the shallows can often be the most interesting part, as the tops of the reefs are just as vibrant as they are deeper down. The shallows are home to a parade of macro-size critters – from blind shrimp with their ever-watchful guardian gobies, to more flamboyant subjects like nudibranchs and broadclub cuttlefish. For those who are new to Indonesian waters, or who simply wish to see all the wonders of the reef, I would strongly advise you following the guides. The Wakatobi dive crew is especially



Photo:Walt Stearns

adept at locating the more cryptic forms of marine life, including the four species of micro-size pygmy seahorses that live in these waters. In addition to being astute hunters, guides are always at the ready to lend assistance when needed.

One of the little personal acts I have seen the guides provide is to assist underwater photographers who are trying to shoot a subject in places where corals can be easily damaged. Guides will position themselves as human tripods, providing a steadying grip that allows the photographer to focus entirely on the subject without fear of contacting the reef.

Even if you're not a photographer, Wakatobi's dive guides are just as attentive, taking every step to ensure the quality of your experience both in and out the water. The dive staff is equally respectful of guests who prefer a bit more autonomy. Thus, if a buddy pair wants to explore at their own pace, they are allowed the freedom to do so within the safe range of their personal experience and training. During the surface interval, in addition to snacks, water and beverages like coffee, tea or hot chocolate,

guests are given a refreshing hand towel infused with water and lemon grass. Having one those offered at the end of a 70-plus minute dive on a beautiful, pristine reef affirms that life is good!

The House Reef

In addition to the boat dives, Wakatobi's famed House Reef is available to divers and snorkelers between 5 AM and 10 PM. Accessible from both the beach and the property's pier, which spans 80 meters from the shoreline to the reef's drop-off, the House Reef offers a topography ranging from inshore grass beds and shallow coral gardens to a drop-off with a precipitous face.

At the edge where these two interfaces meet, the reef takes a sudden plunge from snorkeling depths straight down more than 50 meters into the blue. Down the wall's face, divers will find a wall perforated by clefts and overhangs, decorated with a dazzling array of hard and soft corals. Between these two realms is a sufficiently large and diverse range of subject matter to keep even the most avid enthusiast captivated for hours on end.

Over the course of a single dive, without even



Photo:Walt Stearns

needing to venture more than nine meters on either side of the pier, I have found up to seven different species of anemone fish. The reef's two-meter deep plateau is also home to a healthy population of small bluespotted stingrays, pipefish, octopus, nudibranchs and more living amongst the finger coral formations and grass beds.

Macro photographers with an interest in invertebrates will be especially pleased by the diversity of animals that can be found on this reef during twilight and evening hours. Divers with good air consumption will easily be able to make many of the dives here last for 90 minutes or more from the Pier and back again.

For buddy teams and single divers with solo diver certification, the resort also offers a taxi boat service to ferry divers to more distant portions of the House Reef.

The taxi service operates during daylight hours, and will even take guests to the neighboring site of Turkey Beach for a truly memorable drift diving experience as you utilize the current to bring you back to the pier.

For all these reasons, Wakatobi's House Reef has received numerous accolades and awards from magazines and websites such as TripAdvisor, which has called it the "world's best house reef dive." I have even dedicated a piece exclusively to it on my own site, www.underwaterJournal.com. Yes, it is that good!

When you add it all up, you are looking at one of the most pristine and bio-diverse coral reefs systems in the world, home to more than 600 species of coral, 3,000 varieties of fish, with an even greater number of invertebrates, all just a stone's throw from luxurious accommodations and delicious meals. Would I come back here again? Well, I have been here three times already, if that tells you anything.

What's in a Name

When people hear the name Wakatobi, many know it as a dive resort, yet others refer to it as a place. The correct answer is yes on both accounts. The very word Wakatobi is an acronym created by taking the first two letters belonging to four particular islands – Wangi-Wangi, Kaledupa, Tomia, and Binongko. The islands

themselves make up the four largest landmasses in the Tukang Besi archipelago located off the southeastern corner of Sulawesi in Indonesia's Banda Sea, 700 kilometers due east of Bali.

The origin of that name came about when an enterprising Swiss national named Lorenz Mäder opened a new dive resort in the region in 1996. Like many areas of the world, parts of Indonesia were falling victim to highly destructive fishing practices such as netting and dynamiting. Rather than just sitting quietly on the sidelines, hoping the neighboring villages' fishing practices didn't do too much damage to the surrounding reefs, Lorenz began negotiating an arrangement with them to reduce as much of that activity as possible.

The following year, Lorenz succeeded in bringing a halt to such practices inside a 20 square kilometer region surrounding the location of his resort by establishing a collaborative reef Conservation Program. To make this conservation program both environmentally and culturally sound, Lorenz devised a system whereby a portion of the funds from visiting divers would be paid directly to 17 local communities in the form of monthly lease payments and electrical power. In exchange, islanders agreed to respect the no-fishing zones created by the program and to cease net fishing and dynamiting on the reefs.

Following suit, obviously seeing a good thing happening, the Indonesian government expanded on the area first created by the Wakatobi Marine Conservation Program with the establishment of the Wakatobi National Park in 2002. Now managed by the Wakatobi National Park Authority, the Park encompasses an expansive 1,390,000 hectares of the Tukang Besi island group, including Tomia Island with its adjacent island Tolandono where Wakatobi Resort is located.

Less than a year later, Tukang Besi Islands became an autonomous region, which in the process decided to go with a new name of, you guessed it... Wakatobi! And it doesn't end there. In addition to the newly founded Wakatobi Regency, in 2005, UNESCO listed Wakatobi National Park as a tentative World Heritage Site, which was eventually added to the World Network of Biosphere Reserves in 2012.



Many see Lorenz as an amazing forward thinker for initiating one of the world's largest privately funded and managed marine protected areas in the world. Actually, his motive was born from a more pragmatic point of view. As Lorenz likes to tell it, "you can't pack up and move your resort, when the diving is no longer good. So it's better to do what you can to protect it to enjoy it now and in the future."

A Dive Resort That Makes a Difference

One of the facets of the Wakatobi Marine Conservation Program is that the resort both sponsors and organizes reef monitoring and cleaning projects, and enforces procedures that minimize diver impact on the environment. The resort itself recycles used materials to the fullest possible extent, and treats wastewater with biological agents to prevent excess nutrients from entering the sea. Local craftsmen are contracted to build and maintain resort buildings, and the operation employs a workforce of some 200 plus local people.

It is initiatives such as this that have won Wakatobi such honors as the UNESCO world heritage site designation, PADI's Project AWARE Environmental Award and other accolades for environmental initiatives. More importantly, the resort's practices have had a demonstratively positive effect on the local environment, and the ecological health of the reefs and grass beds surrounding the resort have actually improved in the years since its' founding.

Private Dive Experience Manager Program

There is no better way to experience Wakatobi than with a Private Dive Experience Manager (PDEM). This is a unique program that lets you build a custom dive plan to fit your individual needs and wishes. You work on a one-to-one basis with a dive guide, design your schedule, receive a private orientation and briefings, private taxi boat and shore diving. From animal-spotting and underwater photography to skills enhancement, even non-diving activities, your guide is there for you. The program is also available for snorkelers. For those opting to stay in one of the luxurious Villas, a private dive guide is included in the package.

Pelagian Dive Yacht

In addition to its land-based dive operations,

Wakatobi Dive Resort manages a 36-meter luxury dive yacht, Pelagian. Unlike the typical live-aboard dive boat, Pelagian offers truly commodious accommodations and an uncompromising level of personal service.

Aboard Pelagian, ten divers will discover the outer reaches of the Wakatobi National Park, as the boat cruises through the islands of Tomia, Kaledupa, Binongko, Hoga, Wangi-Wangi and Buton - offering both reef and muck diving in one cruise. For the best of the Indo-Pacific's extraordinary marine life diversity, many divers opt to spend at least five days at the resort and continue the adventure on Pelagian. Wakatobi's guest experience staff will assist with arrangements for these combo bookings.

When to Go

There really is no part of the year that's a bad time to visit Wakatobi. Located a few degrees south of the Equator, Wakatobi sites is well out of the way of the Cyclone Belt (typhoons, hurricanes and tropical storms). Therefore, Wakatobi is also blessed with very consistent tropical weather conditions free of unusually windy or wet seasons.

The difference between air and water temperatures throughout the year are very close to one another throughout the year as well. Average air temps typically in the 26 to 31 C range with water temps between 25 C and 30 C. The same holds true for underwater visibility, which averages 30 meters year-round.

Getting There

To get to Wakatobi, the port of entry in Indonesia, is through Bali's Denpasar International Airport (airport code DPS). Due to the late afternoon and evening arrival schedule of international flights, visitors will need to stay overnight in Bali. Upon arrival in Bali a Wakatobi representative will be there waiting for you just beyond the immigration counter to provide assistance with your luggage and transport to a hotel.

Whether your visit is just for the night or includes a multi-day stopover, Wakatobi's ground staff will coordinate all logistics with expert ease. The connecting flight to Wakatobi is via a private charter through Guruda Airlines, which

takes place twice a week during the morning hours. The 2.5-hour flight aboard a 70-seat turboprop aircraft provides ample allowances for both checked and carry-on luggage, and arrives at the resort in time for afternoon relaxation, or for jumping right into one's first dive.

General information

Passports/Visas: For entry into Indonesia, you will need a valid passport of 6 months past arrival date and at least one totally clear page for customs and immigration. Currently, the government of Indonesia has relaxed visa requirements to visit their country. Nationals holding a valid passport are eligible to enter and remain in Indonesia without a visa for 30 days.

Health and safety: Consult your doctor and the resort concierge for specific information.

Language and local customs: Bahasa Indonesia is the official language. Islanders are Muslim; it is considerate to dress discreetly during village visits.

Electricity: The resort has its own power plant with multiple generators providing electrical

power 24 hours a day. All rooms are fitted with both German standard round two-pin and UK standard three-square-pin sockets delivering electricity at 220V 50Hz cycles. US type Socket adapters and voltage converters (for 110V supplies) are available to guests.

Side Trips: Because you will be passing through Bali, I highly recommend adding a few extra days to your travel plans to explore the island. A smart option is Wakatobi's Concierge Services packages.

From the moment of your arrival to final departure, they will make every arrangement - from hotel, dining and tours to all your airport transfers and baggage details. You are also provided cash in local currency and a cell phone pre-loaded with phone numbers for the concierge, local restaurants and personal numbers requested in advance.

Visit www.wakatobi.com for full details and guest services information, or email office@wakatobi.com. 



Photo: Didi Lotzxe

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Oh, Brothers!

A Red Sea liveaboard to the middle of nowhere

After six years of almost only diving from RIBs and spreading my clothes around my house, villa, or hotel room, I'd decided it was time to see if I'd enjoy a week on a boat with a bunch of strangers. As a frequent solo traveller, I wondered whether the close confines of a cabin with a random snorer would see me sleeping on the deck by the second night? The allure of remote dive sites, unreachable by day boat, was strong enough for me to give it a go.



42 miles off the Egyptian coast, The Brothers Islands rise up from the floor of the Red Sea, 800m below, forming two small, flat table-tops surrounded by steeply sloping fringing reefs. The larger of the two sea mounts, the cunningly named Big Brother, is approximately 300m long, is one kilometre from its sibling, has a lighthouse, a 12-man army garrison and would be a great location for a back-to-basics series of the 'reality' TV show of the same name. As the only reefs around, and washed by strong nutrient-rich currents, I was attracted by their reported combination of soft corals, pelagics, sharks and two good-condition wrecks.

Arriving last at the harbour in Hurghada the night before departure, and after the other guests had gone to their cabins, I was greeted by the shining, wide smile of Mimo, one of the dive guides. Over a welcome glass of fresh fruit juice, he explained where to stow my dive gear, and gave me some even more welcome news: the 20-guest boat only had 12 passengers and so I would have one of the eight below-deck twin cabins to myself. No sooner had I littered the spare bed with camera bits, books and t-shirts, I was introduced to Karim who kindly informed

me that some dinner had been kept for me and was awaiting me in the dining area. Splendid.

Covering six metres of the eight-metre width of the MY Blue Pearl, the mid-ship dining area was an open plan affair adjoining the lounge that led onto the outdoor dive prep area at the stern. In the wall towards the bow was a magic hatch through which Karim or his brother Karemi, the other steward, would receive platter after platter of food from chef Wael in the kitchen. Before the bow on the 36-metre long main deck were the crew quarters and rope storage area, and a small deck used at prayer time.

After reading the safety notices and emergency action plans pinned up next to the flatscreen TV in the lounge, I went outside and up the stairs to the shaded rear 'chill-out' deck, did a circuit passing the portside double cabin, the bridge, the front sundeck, the starboard double cabin, back astern and then further up to the flybridge. Even if I had had to share, there was actually plenty of room to find some personal space.



As Karim enquired as to how I would prefer my breakfast eggs the next morning, I took in my fellow shipmates, all liveaboard veterans and mostly return customers. We were an eclectic, if slightly Germanic bunch. A German-Dutch couple, two German father-and-son combos, an Austrian quartet made up of a father, his son, the son's wife and a friend. The 12th man was James, a Scottish, middle-aged, Libyan-based teacher and naturally my buddy.

Seated in the lounge, Pia, the trip leader and diving instructor, took us through the boat and dive safety briefings. Given that we'd be at least five hours from the coast, the equipment was reassuringly plentiful and in good condition, the briefings friendly but to the point. Pia laid out the itinerary in her "best Bavarian English, Ja?" It was simple: today would be spent on the coast diving at Gota Abu Ramada to check our gear, buoyancy and to get to know our buddies, as habitually strong currents off the isolated Brothers would be no place for faffing, as well as to do a night dive before heading east overnight.

Gota Abu Ramada is a shallow site, no deeper than 13m, with a large Australia-shaped reef with two large bommies off what would be the Perth coast (to the WSW). It was ideally suited to its purpose with no current, clear waters, small schools of blackspotted sweetlips and spotfin squirrelfish, morays, crocodile fish and a large school of yellowtail barracuda and goatfish to get me reacquainted with the camera settings. An artificial shark stuck on a knife as part of HEPCA's (Hurghada Environmental Protection and Conservation Association) shark protection awareness campaign, five metres below the surface, also amused the divers, who took turns to sit on its back during the safety stop once we had all demonstrated our ability to use an SMB competently. The night dive was my first from a liveaboard and was enhanced by the deck lights on the boat creating a full moon effect underwater, illuminating the bommies and the shark, and thus providing visual markers.

After a warming shower to wash away the goose bumps from a third hour-long dive in 24°C water, we were greeted by the aromas of a giant buffet. Once dinner was over, the captain set a course eastwards, as some



sat on the top deck watching the stars, and Karim and Karemi did a few card tricks in the lounge.

I awoke to the sound of water lapping gently on the hull below my open cabin portholes, the early-morning light peeping in. From the deck Big Brother and its Victorian lighthouse took on a red-brown hue as we boarded two RIBs and headed to the northern tip of the island. The legendary currents appeared absent from the surface, but we did a negative buoyancy entry and went straight down to 10m, meeting up above the beginning of the wreck of the SS Numidia, claimed to be one of the best wrecks in the Red Sea. She certainly looked huge and in good condition, given that she had spent more than a century exposed in her current-washed resting place.

Built in Glasgow in 1901, the 140m long, 6 400-ton Numidia was on her second voyage out of Liverpool bound for Calcutta with 7 000 tons of railway and general cargo when, in the early hours of July 20, Big Brother's lighthouse was sighted off the port bow and the Captain ordered a slight change of course to continue south passing alongside the island before retiring to his cabin. Fortunately for us, his orders were misinterpreted and the ship ploughed

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DEEP DOWN YOU WANT THE BEST

By Christopher Bartlett

straight into the northern tip of the island. No lives were lost, much of the cargo was salvaged, but the ship went down, her keel digging into a rocky ledge. Now she sits on a steep slope, her bow melded into the top of the reef, her stern some 72m below.

Hanging back, I let the others descend to try to add some scale to my pictures, capturing the lifeboat davits and the remains of the foremast in the centre of deck with a wide-angle lens as the group inspected the remains of the bridge and the engine room. Yet no image can convey quite how impressive this wreck is, dropping into the deep blue depths. Descending to join the group, going close to the wreck, I saw it was covered in soft corals and awash with burgundy and white striped Red Sea anthias and lionfish, accustomed to strong currents, sheltering inside. On this day there was no need, as with no current and good viz, conditions were ideal, and we spent the whole dive there, ascending past some coral-encrusted rolling stock bogies at 10m, before being picked up by the RIBs and taken back for breakfast.

After catching a few rays on the sun deck, Pia and Mimo said it was time for a shark

hunt on the southern plateau. As we were moored off the southern tip and in the absence of current, we would giant stride off the rear deck and return to the boat at the end. The plateau starts at a depth of 20m and slopes down to 40m, and is a hot spot for thresher sharks. As we reached 25m, Mimo's arm shot out, finger extended towards the unmistakable scythe-like tail of a thresher shark swimming through a school of fusiliers. It stayed within view for a couple of minutes before we lost it. We hung around 28m as long as our 30% nitrox mix would allow us, spotting a distant thresher twice more, before ascending to the top of the reef and chilling out with the sohal surgeonfish, before being invited to stuff ourselves again.

The next five days followed the same pattern: dive - breakfast - relax - dive - lunch - relax - dive - dinner - relax. Due to the normally strong currents, the isolated nature of the location, and the considerable presence of sharks, there is no night diving on the Brothers. In fact, on most nights we didn't need to get in the water to see them anyway. Whether you agree or not, it is accepted practice on liveaboards to throw organic waste overboard in the evening, and



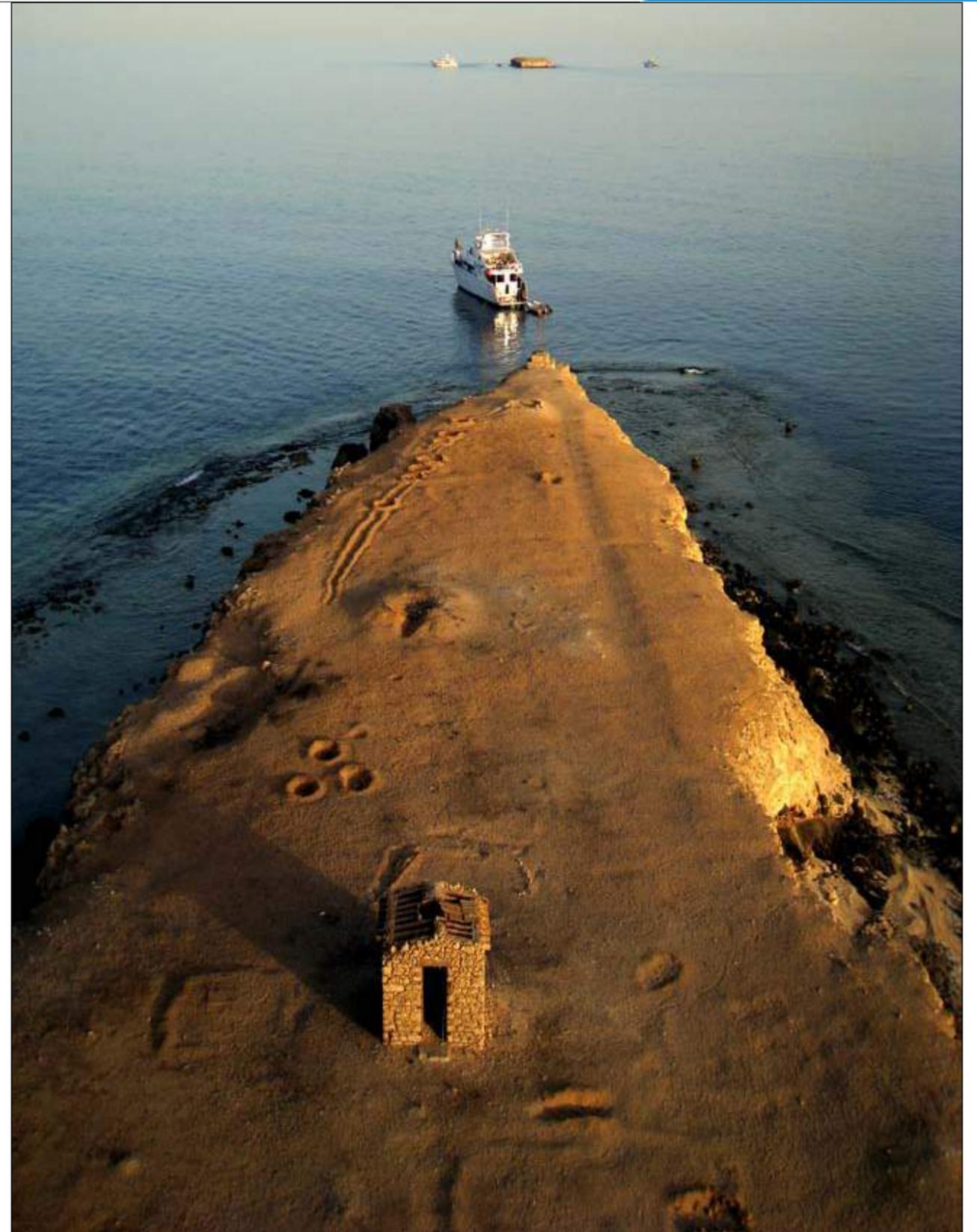
By Christopher Bartlett

the sharks seemed to be in on it, especially at Little Brother. Leaning on the side rails with the crew after dinner, we often saw oceanic white-tip and silky sharks patrolling around the boat.

Big Brother's other iconic dive site is the wreck of the Aida, a 75m supply vessel built in France in 1911 that sank on 15 September 1957 when resupplying the lighthouse and Egyptian army garrison stationed there. Approaching the jetty in heavy seas, she was slammed onto the rocks and abandoned immediately. After drifting north slightly, she went down south of the Numidia, just past the end of the island. Her bows no longer exist, but from her midships at 25m to her stern at 60m, she is in excellent condition, adorned with purple soft corals and hard corals, anthias, morays and the usual reef dwellers. She was the last dive of the second day, and the first dive the next morning when a gentle current helped us onto the Numidia and then along the wall past a large school of black snapper hanging on the

corner of the reef. The walls of Big Brother were also home to a friendly, 90cm female Napoleon wrasse called Mousie. After another successful thresher-spotting trip over the southern plateau, Mousie and I flirted gently for a few minutes, as if eyeing each other across a bar, until she sidled up, posing, tilting onto one side like she wanted to be petted. Our 15-minute infatuation was sadly cut short by my dive computer and my buddy's air consumption, but I reckon I'd scored.

On our last Big Brother dive we had a slightly stronger south to north current, and no sooner had we dropped in we were greeted by a juvenile giant manta, approximately 4m across, riding the current and flanked by a barracuda, closely followed by three grey reef sharks. The action wasn't over; as we loitered expectantly a 1,2m male Napoleon came amongst the divers creating a scene akin to a publicity-starved celebrity (quite appropriate given the location), willingly posing for the paparazzi. He left abruptly, diving fast, to chase off a small grey reef



Dive the Globe

Brothers

By Christopher Bartlett

shark sniffing around his patch. Moving north slowly, cornetfish hugged our tanks, using us for streamlining and cover as they looked for prey to ambush amongst the schools of anthias whilst we found pipefish amongst the gorgonians. As we moved closer to the surface, a manta cruised along below to bid us farewell. Big Brother had been excellent – could Little Brother follow suit?

It had two days to outdo its sibling and did not disappoint. After an uneventful 15 minutes deep in the blue looking for sharks we moved closer to the wall. A quarter of an hour later we had seen a male grey reef shark, two threshers, a curiously un-shy silky shark, an obviously pregnant grey reef shark and had been entertained by an even bigger male Napoleon wrasse.

The last four dives were just as impressive. The male Napoleon wrasse was often under the boat waiting to tag along on a dive, the pregnant reef shark (*Carcharhinus amblyrhynchos*) seemed to live near the mooring site, threshers milled around to the south below a magnificent gorgonian forest, home to a longnosed hawkfish, round the corner from a section of wall festooned with broccoli-like soft corals. In the normally washing machine-like shallows, we off-gassed with black-tongue unicornfish having parasites removed by cleaner wrasse, pufferfish, moray eels, orangespine unicornfish, barracudas and an octopus, thanks to the remarkably still waters. The icing on the considerable cake was provided by an oceanic white-tip and its accompanying pilotfish that came by to say hello.

It would've been unfair to expect the final day's diving in Safaga to compare, but Panorama Reef had interesting 7m high, mountain-like dome coral formations, anemonefish and two turtles. The snorkelling boats at Tobia Arba'a (a.k.a. The Seven Pillars) also provided much amusement from above and below the surface, and the shallow waters of the goldie-covered coral bommies were also home to blue spotted stingrays and lionfish. Rather than being a letdown, these two sites, two of the best in the area, served as a reminder of how spoilt we had been.

The whole experience had been excellent. There was plenty of room on the boat and I spent so little time in my cabin awake that

sharing would have been no problem. The constant sound of the ocean was soothing and we never had to share a dive site with another group. In fact, each buddy team often went at its own pace and James and I were frequently alone at the end of a dive, hanging out with the fish. In short, I can safely say that I am a liveaboard convert and would thoroughly recommend a trip to the Brothers.

Christopher travelled with Oonas Divers: www.oonasdivers.com and sailed with Blue Planet Liveaboards: www.blueplanet-liveaboards.com

Further more information from Indigo Safaris, email info@indigosafaris.com, the Tanzanian dive and safari specialist. 



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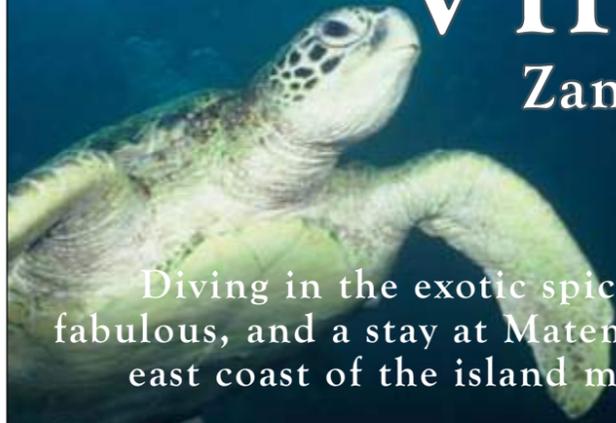
Dive Alert PLUS



By Fiona McIntosh

Matemwe Beach Village

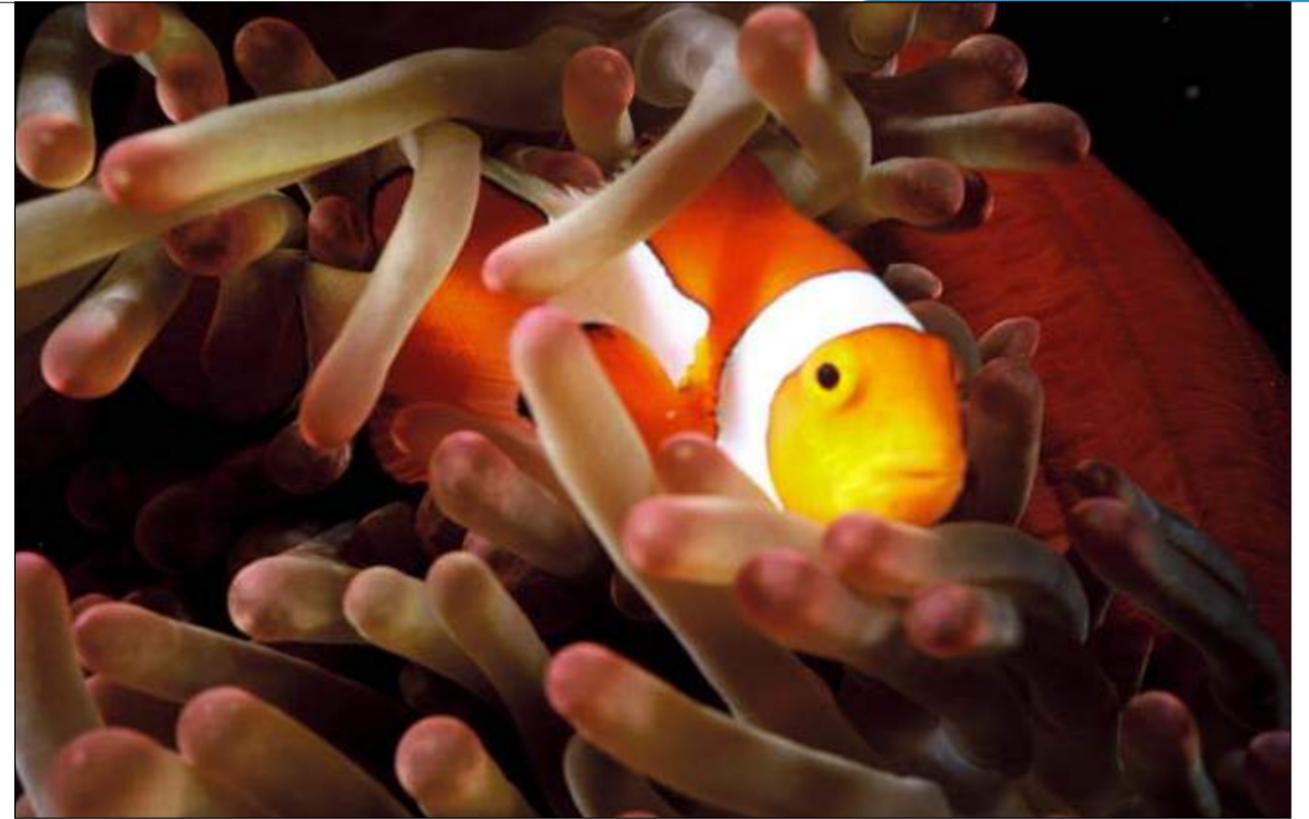
Zanzibar



Diving in the exotic spice island of Zanzibar is always fabulous, and a stay at Matemwe Beach Village on the north-east coast of the island makes it even more of a treat.

The small, intimate guesthouse is located on its own on a palm-lined stretch of white sand beach, so you're far from the madding crowd and left with peace and tranquillity. Matemwe's biggest selling point as a dive lodge is that just off its shore is the world-famous Mnemba Atoll - the circling reef offers some of the best diving in East Africa.

The lodge consists of five thatched suites, each with one large bed, a single bed under the staircase and a barazza bed for small children. Each has an upstairs veranda where you can lounge around while reading or enjoying a siesta. The standard rooms are all en suite and the star of the show is the Asali suite.



Dive the Globe

Matemwe

By Fiona McIntosh

Set away from the main lodge, it's designed for honeymooners and romantics, with a double bed, its own plunge pool and two dedicated staff members to ensure your every need is catered for. In each room you will also find beach baskets, hats and kikois - little thoughts that make the stay even more special.

The lodge is centred around a large open-sided lounge, bar and restaurant area which looks directly onto the beach. There is a buffet dinner under the stars twice a week and having your toes in the sand while dining further adds to the tropical island feel. The staff are friendly and professional and while the lodge has a lively party vibe during happy hour at the pool, should you request a romantic dinner for two, they are more than willing to oblige and set the scene for a memorable evening.

The diving on Mnemba is superb and the reef is always in pristine condition with its breathtaking hard and soft corals on display. Moray eels peek out from their lairs, turtles glide past gracefully and large shoals of snapper and game fish frequent the waters.

The lodge has a 5-star IDC PADI dive school on site, which works in conjunction with their dive office in Stonetown. This means that the full range of PADI certificate courses are on offer, as well as snorkelling trips and other shallow water excursions for non-divers.

If you fancy a few days in paradise, then this is your destination!

For more information, contact +255 (0) 24 2238374, e-mail matemwebeachvillage@zitec.org or visit their website www.matemwebeach.net. 



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360

A backward role into history

On the other side of the earth in the middle of the Pacific Ocean you will find an underwater world that is full of artefacts and historical events. If you look closely on a map, in the middle of all the blue water you will see a range of islands called Micronesia, and then in the middle of these islands you will find a place known as Truk Lagoon. Truk Lagoon is the burial ground of hundreds of army and naval vessels full of historical facts of the World War II that found their final resting place on the bottom of the ocean floor.



By Johan Boshoff
In the year 1939, Adolf Hitler decided that he wanted to conquer the world and wanted to start taking over Europe. Not long after that, Japan saw what the Germans were doing and they decided that they wanted to control Asia and the Pacific.

Allies were formed and countries from all over the world joined the war – a total of more than 100 million military personnel were deployed to help the fight against the invasion from the Germans and the Japanese. The two wars merged in 1941 and became a single global conflict known as World War 2.

In the Pacific islands there were large naval battles at sea and on the islands until the Japanese made the mistake of attacking the American naval base at Pearl Harbour in Hawaii. The Americans were then forced to take part in the war and they dropped atomic bombs on two Japanese cities, Hiroshima and Nagasaki.

Truk Lagoon islands was the ideal place for the Japanese to set up its army base due to its deep lagoon. The high islands with tall mountains and the circling barrier reef also provided extensive natural protection. More than 1 000 merchant and war ships, including patrol boats, torpedo boats, submarines, tugs, landing craft, gunboats and mine sweepers moored in readiness for further deployment around the island. There were also five airfields supporting close to 500 aircraft with 40 000 of Japanese soldiers.

Truk was considered the most formidable of all the Japanese strongholds in the Pacific. This reputation caused an overconfident Japanese army to relax their vigil against invasion, in spite of US forces fast approaching from the east.

Supplies from Japan had almost ceased due to the immense successes of US submarines finally equipped with torpedoes which found their mark on delivery ships. The supply convoys

received nearly 90% losses en route to Truk, deprived the military base of food, fuel and new weapons desperately required to maintain their strength. By early 1944, US forces had combined a huge fleet of top line carriers, battleships, cruisers, destroyers and submarines for a major surprise sweep against Truk on February 16, 17 and 18. This attack, coded 'Operation Hailstone', caught the Japanese totally unaware, and led to one of the most successful US engagements of World War II.

But that was not enough, the US went back in April with a second attack, dropping hundreds of bombs and reducing the island to rubble with over 70 ships and 400 aircraft destroyed or sunk.

The war ended with the total victory of the Allies over Germany and Japan in 1945 with 60 million people losing their lives in the war (about 40 million of these casualties were civilians). World War II altered the political alignment and social structure of the world yet gave us divers one of the best spots in the world to dive – Truk Lagoon, 'the wreck diving capital of the world'. Around 20 years after the war, three pioneers of the oceans (Jacques Cousteau, Al Giddings and Klaus Lindemann), travelled to Truk Lagoon and discovered the sunken fleet of the Japanese. They discovered over 70 dive sites, most of them with shipwrecks still sitting in their defined anchorages within Truk Lagoon.

The reefs were covered in incredible scenes of war machinery, hard and soft corals, fish life and personal mementos. Today this dive destination is for everyone, from the recreational diver and wreck diving enthusiasts to the most experienced technical divers who want to rediscover the wreck diving capital of the world in crystal clear 28-29°C waters devoid of normal ocean currents. Divers have the option of swimming across decks littered



Wreck Explorations

Truk Lagoon

By Johan Boshoff
with artefacts or you can go through hundreds of swim-throughs, some made by torpedoes.

Penetrations and dive depths are nominated and customised to the comfort, needs and experience level of individual divers, but some wrecks are less than 15m below the surface. In some of the ship's holds, row upon row of aircraft, tanks, bulldozers, railroad cars, motorcycles, torpedoes, mines, bombs, boxes of ammunition, radios and thousands of spare parts for weapons can be seen. If you penetrate deeper into the wrecks, you can still find some human remains. Truk is without parallel – its ghostly remains create the world's greatest wreck diving in a wonderfully comfortable location. Go back in time and do your backward role on the Ghost Fleet of Truk Lagoon.

To be continue.....



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By Johan Boshoff





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Photographic Competition



Michael Westcott



Paulo Fernandes



Reuben Mein



Russ van Aardt



Tim Webb



Stan Anderson



Daphny Read



Stephen Watson



Winning Photograph

Whendy Frigr

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Submit your photo!

- Photographs may be taken above or below the water, as long as diving remains the theme.
- The Name of the photograph must be the photographer's name.
- Photographs must not be bigger than 5 MB per photo.
- Submit your snaps in high-resolution (at least 150 dpi) in jpeg format.

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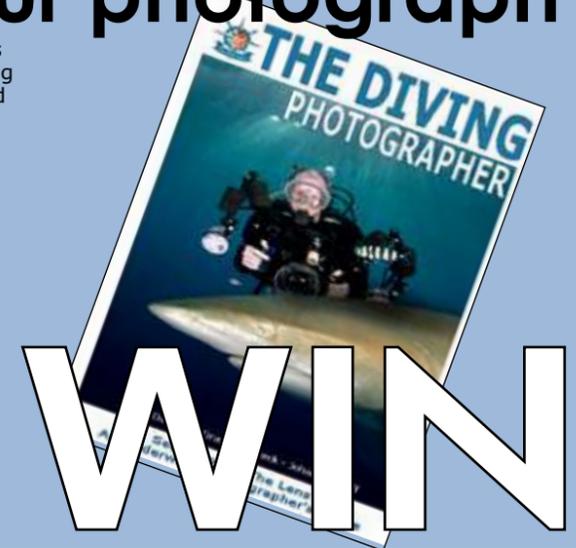


Photo School

Lighting

(Part 7)



Light is a critical aspects of photography. If you understand it, it can be your best asset, putting you ahead of most other photographers. If you don't, it will be your worst enemy in underwater photography. This is the most complicated technique to learn underwater because it necessitates some technical knowledge and may require additional equipment.

Photography is all about light falling on a light sensitive surface to create an image. The quality of the light determines the quality of the picture; therefore it is important to understand what

happens with light underwater.

Underwater light challenges

The density of the water partials absorbs light waves, therefore, the deeper you dive, the less light will be available. On deeper dives, you will have to make use of a flash, strobes or other external light sources to compensate for the loss of light. Because red is the colour with the shortest wavelength in the colour spectrum, it disappear first, followed by orange, yellow, green and then blues and purples. By using artificial light, colours can be restored. Another

disadvantage of underwater photography is that fact that everything appears to be closer than what they really are. You will have to move closer the get images crisp and clear to eliminate the risk of blurry images. Playing with light under water requires the photographer to have a basic knowledge of ISO, shutter and aperture settings which is not discussed in this short article. These settings will greatly depend on the type light sources you are using as well as the type of lens. Some lenses allow more light to enter the lens than others.

Ambient light

Ambient light refers to natural sunlight breaking through the water surface. On shallow dives, sunlight is sufficient to take pictures where a more evenly dispersed lighting is required. One of the advantages of underwater photography is the fact that you can take pictures directly into the sun. The sun can even be used as part of your composition. Captivating silhouettes can be created by hiding the sun behind objects. Sun rays breaking through the plants, overhangs or caver zones can create the most fascinating picture.

When shooting in sunlight, it is recommended that you do a manual or custom white balance. A manual white balance allows your camera to figure out what the natural colours are. If you wish to do a manual white balance, read up in your camera's

manual and follow the instruction. Obviously if you haven yet purchased a camera, the ideal is to look for a camera with the ability to do manual white balance.

Artificial light

Artificial light can be achieved in a couple of ways, depending on the type of camera you have or the amount of money you are willing to spend. Most cameras are equipped with a flash. If you wish to restore some colour, a normal flash can work wonders, but for more serious photographers or photographers who wish to take pictures on deeper or night dives, strobes should be considered as an additional light source. A normal torch can also be used to light up an object or create an interesting spot light effect to emphasis and object. You need to remember however that using any additional equipment underwater becomes task loading. Using a camera and torch may require more hands that what you may have available. Rather as a buddy to assist if you wish to make use of a torch to light up an object.

If you haven't yet bought a camera or additional light sources, speak to a couple of established underwater photographers to identify the best camera, lens, additional light sources and waterproof cases. This will give you a better change of buying tried and tested camera and light equipment. 



Photo Editing

Backscatter is when the internal flash or strobe of your camera underwater highlights particles in the water between the lens and the subject. This may even happen in seemingly clear water with good visibility. Many particles are not visible to the naked eye and when using a flash/strobe the photographer must always bear in mind where the strobes are pointing.

Even if the visibility is fairly poor, a good photographer should be able to take stunning photographs using the right lenses and careful strobe positioning. The key is to light up the subject without forcing particles around and in front of this to reflect. Unfortunately the bulk of the compact cameras on the market use the standard built-in flash when underwater. The flash is normally directly above the lens, in line with the point of view, so all photographs taken with the flash will light up everything between the lens and the subject. Camera manufacturers supply diffusers to attach to the housing to help soften and spread the flash to prevent backscatter and these tend to work fairly well, but definitely do not eliminate backscatter completely. The answer is to use external strobes which can be positioned in a way to light up the subject indirectly. There are dozens of positions to choose from depending on what type of lens and picture you are after. Below are the most commonly used strobe positions for the type of shot required.

The ideal position when using a fish eye lens/wide angle lens is slightly behind the camera and facing slightly outwards. Fish eye lenses capture 180°, so if the light from the strobe is pointing forwards or inwards then the edges of the picture may show scatter. If you want to capture something close up with this lens then the strobes will have to be moved closer to the housing, otherwise the subject will have

a shadow cast over it.

There are a few ways to light up subjects when taking macro photographs. A good way to light up small, stationary objects such as nudibranchs is to move the strobe over and on top of the subject. This position will light up the subject without lighting particles between the lens and subject. This is the best position when you have only one strobe. With macro photographs, other positions may be required as subjects may be tucked into a hole or partially obscured by their surroundings. For these photographs you will have to get in close to the subject anyway so you can move the strobe close to the lens, pointing directly at the subject. Backscatter is not normally an issue for these photographs.

Keep the strobes out wide of the subject, turned slightly out. The light will then evenly project towards the subject. If you only have one strobe, then position this either high above the housing or wide outside and then point it at a 45° towards the subject.

Fixing backscatter

We have selected free and easy software to explain to you how to fix your backscatter problems.

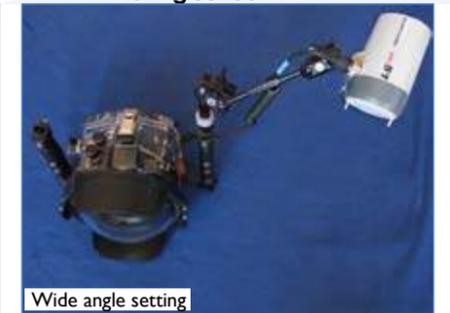
Gimp is a versatile, free programme which offers similar tools to Photoshop, the Rolls Royce of the industry. You may have read



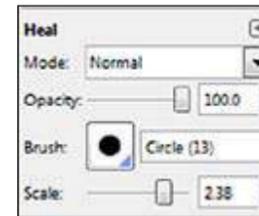
Normal setting



Macro setting



Wide angle setting



Clone Tool



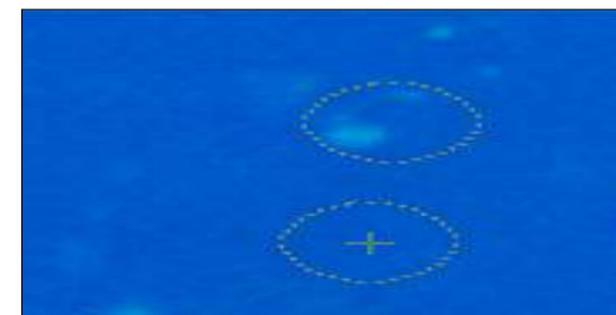
Heal Tool



Before



After



many Photoshop articles on how to fix your images, but the reality is that many people cannot afford to pay thousands of rand for software to fix their diving photographs. Let's leave Photoshop to the professionals and show you that similar results are possible to achieve with free software.

The Heal Tool is a close relative to the Clone Tool, but it is very smart when removing small particles from the water. The Heal Tool not only copies pixels from source to destination, but the area around the destination is taken into account before cloning is applied. The Heal Tool is very easy to use and quick to learn. The best combination, however, when clearing up Backscatter is a combination of

the Heal and Clone Tools. The Clone Tool is a little more brutal and replicates a selected area into the new 'target' area. This is especially useful when working close to edges such as the edge of the jellyfish in the picture below. The Heal Tool tends to use some of the edge when healing, resulting in smearing.

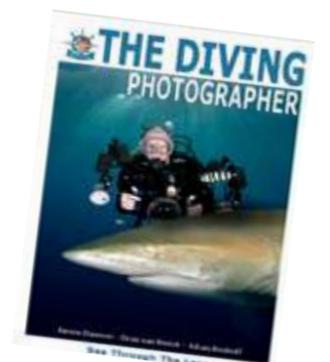
Click on the Heal/Clone icon and you will see the crossed plaster attached to the cursor with your selected pen shape (a circle as default). Select the source area to be cloned by left clicking Ctrl. This will leave a circle where you clicked to show you the area which will be used for the cloning. The cursor will now have a second circle (the target) attached. Position this circle in the area to be healed and left click. You will see the spot miraculously disappear. To heal or clone a line, just left click and drag the cursor over the line to heal this.

(heal-menu.jpg)

An important feature to use is the opacity of the cloning or healing. By reducing the opacity you will have control over the strength of the clone or area to be healed. This will allow you to heal the area in a much more accurate and controlled manner. You can also select the scale of your brush which is very important, especially when clearing up very small specks which are close together. ◻



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Discovering the deep side of the world

The life in the deep oceans was always a mystery for me. I had always been attracted to the deep oceans and that is why I think I started technical diving. I have been to more than 500 feet on a scuba dive, but now it was time to test my limits and go double that depth to 1000 feet. I wanted to go and see what it's like where the water is not blue anymore.

By Johan Boshoff
 On my last trip to Coco's Islands I was very surprised to see a submarine on the liveboard. The island of Coco's are located in the famous Coco's Island Marine Park in the Eastern Tropical Pacific, 550km southwest of Cabo Blanco (Central America) off the coast of Costa Rica.

I was very lucky to be on the Argo, the luxurious liveboard that was a rare combination of work ship and luxury yacht. She was designed from the keel up in 2008, to pamper up to 16 discriminating passengers in seven spacious, well-appointed staterooms. She is a 40m vessel with a full global reach.

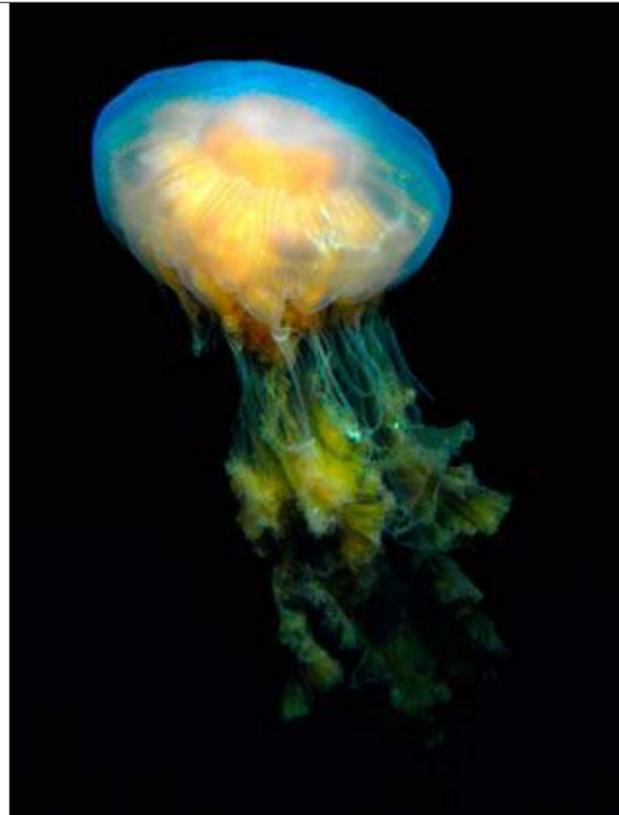
But on the back of the Argo was a submarine which immediately drew my attention. I was informed that guests could go to 300m and spend two hours there with no decompression – this was one of the best things that anyone could have told me and I was again like a small kid with a new toy! I was excited to explore the depths of the ocean with no risk in this submarine known as the DeepSee.

The DeepSee is a custom built one-atmosphere submarine, capable of carrying one pilot and two passengers down to depth of 1 500 feet. It is the first submersible designed and developed from its keel up with the ocean enthusiast, scientist and explorer in mind. DeepSee was professionally built by SeaMagine USA to exact specification under the rigorous testing and classification of the ABS (American Bureau Of Shipping).

Unlike most other submarines which require a support vessel to launch and retrieve the sub for each dive, DeepSee was designed to allow its passengers to safely board and disembark the sub while it floats alongside the mother ship.

DeepSee is equipped with 11 HID 150 Watt and 70 Watt lights, and a High Definition Video camera that will document all the DeepSee dives. DeepSee utilises the most advanced underwater navigation system, the USBL system, as well as Doppler navigation and forward looking sonar.

This allows the pilot navigating great accuracy when returning to the same dive sites when needed. Passengers can use their video cameras from inside the acrylic sphere,



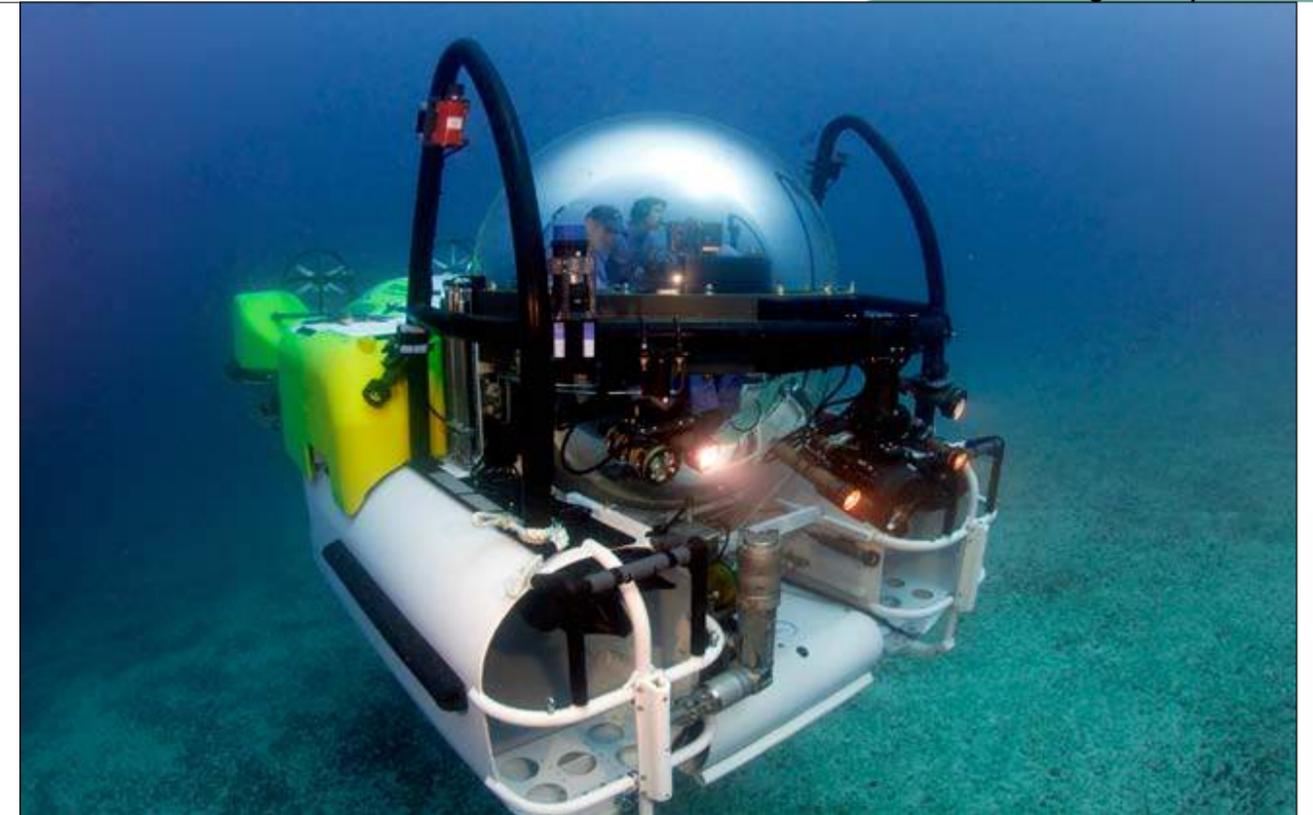
By Johan Boshoff

taking advantage of the sub's powerful lights. The perfectly clear 3,3 inch thick sphere literally disappears when submerged and offers the viewers an unparalleled and unobstructed 360° view of the undersea world. DeepSee has a six hour operational time and can reach 1,5 knots.

DeepSee has been operating around Coco's Island since March 2006 and has accumulated 1 300 dives. During our exploration around the island, they have discovered numerous different habitats and species varying in depth from 100m-450m.

Now I was the luckiest person in this world because I got to do two dives with the submarine – the one to 100m and then the next to over 300m. And as I said, I would be able to spend hours at that depth with no problems.

The first dive I went to was a place known as Everest that lies at 100m - unique sea mountains teeming with marine life. The base of Everest descends to 100m (300 feet) and rises to 50m (150 feet).



By Johan Boshoff
Everest is still fed by sunlight, hence it is very rich with corals, reef fish, rays and sharks. The dive starts on the foothills of the seamount, climbing slowly along the face of the wall towards the pick. During the dive, you are likely to observe schooling hummerheads sharks, mobula rays, silky sharks and big tuna fish cruising around the seamount.

One of the local residents of Everest is a family of groupers that normally comes to and have a closer look. This dive has a duration of around one and a half hours.

The second dive was the big one where we went beyond 300m. As we got to just over 215m we saw a ledge which they call The Edge it is a sheer break off the island plate dropping to the abyss in the form of a vertical wall. The wall stretches for quite a distance from north east to south west and is located 1,2 miles from the island.

On this dive, we explored along the wall where they often encounter mobula rays (never known before to live at these depths) crabs, morays, big groupers, frog fishes and

different unique deep-water critters. For me this looked like the end of the world before we entered the abyss.

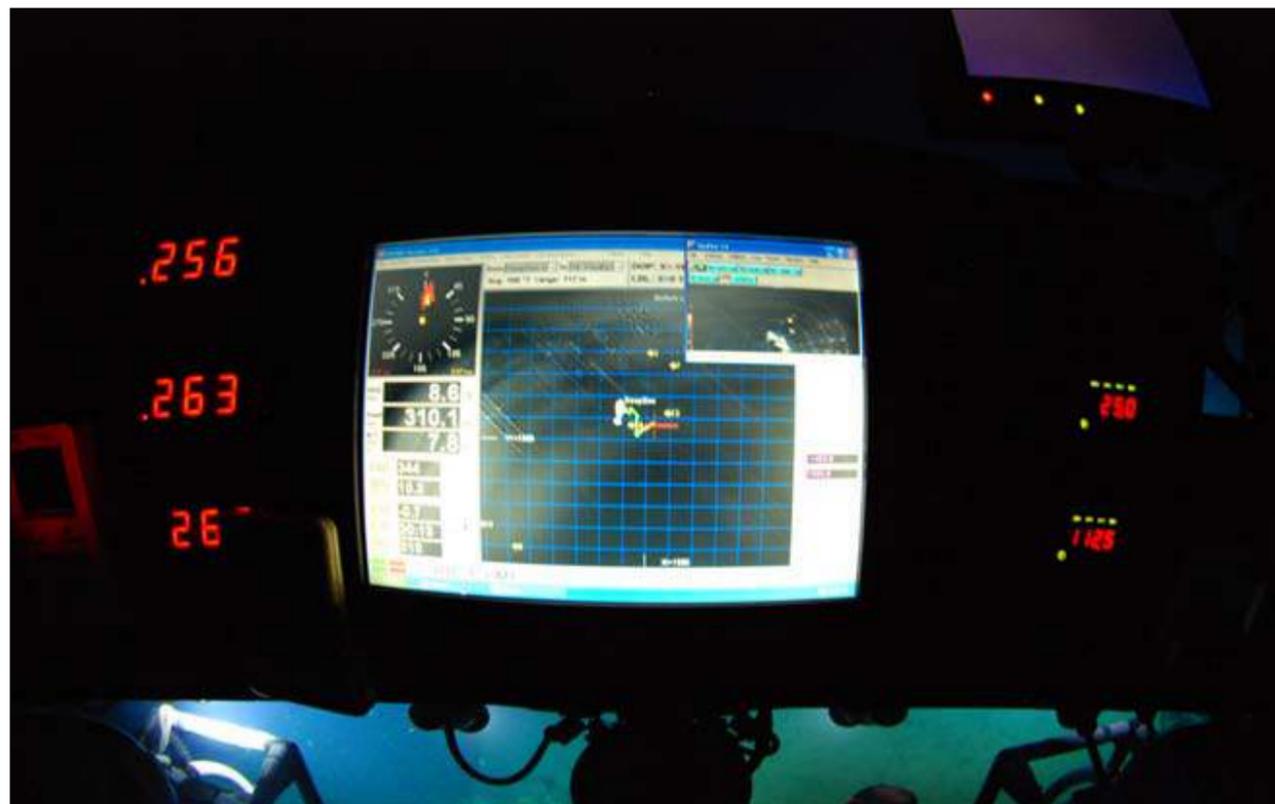
Just over the edge we left the mobulas rays behind and headed down along the break to deeper water. We explored the wall, which in some parts is a sheer drop, and on the others is a ledge of rock formations and sandy sloops.

In those depths, there is no penetration of sunlight. The fish, corals and fauna are unique and adapted to life in complete darkness.

We found exiting species of fishes such as the ancient looking Jello-nosefish (guentherus altivela), the goosefish and a few unidentified species.

The highlight of our exploration around Coco's depths was a deep-water shark better known as the prickly shark (achinorhinus cookie). There have been a few encounters with this shark at depths of 800-1 200 feet.

On the way back to the surface our pilot decided that we still had a lot of time left and



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DEEP DOWN YOU WANT THE BEST

By Johan Boshoff
we began to explore the rocks and boulders between 165-180m. Here we saw some of the deep species that most of us will never see in our life time. The dive duration was between two and a half and three hours – three hours that I will never forget.

Deep species:

- Fried egg jellyfish – Found at 80m-300m. Can get quite big for a jellyfish. Has a very peculiar behaviour when it clings to the wall and send its tentacles out to hunt.
- Goosefish – Basically a kind of a toadfish. Can be seen between 130m and 210m. Needs its sensors to feel the surface of the bottom, because his eyes don't adjust as well when he moves from shallower to deeper waters.
- Panama graysby (grouper) - Can be seen from 150m down to 270m. Can get quite big, up to 1,8m. Comes very close to the submarine when the lights are turned off. Uses the submarine's lights to hunt for threadfin bass or anthias.
- Guentherus altivela (jellownose fish) – Can be seen from 150m- 300m. Normally in groups of up to 25-30 individuals. Doesn't have any scales and has a skin like a moray.

Can grow to 1m long. Has sensors on its sides because the eyes don't adjust as well when it moves from shallower to deeper waters.

- Mobula ray – Similar to a manta ray. Can grow to 3,5m wing width. Has been seen down to 300m. Finds the submarine very intriguing and comes very close, probably because it feels the electricity the submarine produces on its electro magnetic field.
- Pontenus clementi (scorpionfish) – Can be seen from 150m-270m. Hunts threadfin bass or anthias. Very colourful, like most of the deepwater critters, for the reason that most of the critters at that depth can't see in ultra violet light, therefore strong colours become a great way of camouflaging at these depths.
- Prickly shark – Can be seen from 200-400m. Males can grow to 2,5m and females to 4m long. Not a pelagic shark, stays close to the wall or sandy slopes.
- Ragged tooth shark – Related to the sand tiger shark. Have been seen from 50m-190m. Known to prefer colder water. More common on the south side of Coco's Island. Group together, up to eight individuals at the Arch, one of the habitats the submarine visits on the south side of the island. ◻◀



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Shape Up

Does size matter?
Well that depends on who is asking and of course, who's
answering. But the burning question is:
Does shape matter?

Shape must have some implications; otherwise the 'weight loss remedy' wouldn't be worth the billion-dollar industry it is today, not to mention the recent upsurge of sports nutrition products. Both industries challenge one to change body shape to achieve a certain effect. Being a certain shape or size can certainly have its advantages. Just think of it – diminutive Pigmies can follow deer tracks in dense jungles, the tall Masai warriors can see for kilometres as they tower above the grasses on the plains, heavy Sumo wrestlers use the extra weight to bolster the battle while the smaller jockeys have the winning edge. One could speculate endlessly on the merits of shape and size. Ask any woman or look at the numerous glossy magazines on your newsstand. It's much the same in the underwater realm: shape matters.

If John Doe represents the average human – medium build, neither tall nor short, neither fat nor thin, then John Dory represents the average fish: vertically compressed or flattened from side to side. Blacktail snapper, bream and Soldierfish all fit this common fish shape, albeit with some modifications such as colour variations, fin design and eye size. The adults are all average shape – neither fat nor thin and average size. They are average swimmers and have average strength. They are your basic fish. The good looking fish are often the radically compressed – skinny fish. Radically compressed fish like the Butterflyfish and Angelfish don't need designer clothing to show off their figures. Instead their flattened bodies are emblazoned with brilliant patterns in bright colours to ward off predators. Swimming isn't their forte. Instead they use their slimness to fit into crevices in the reef to hide from predators – proof that shape does indeed matter.

Some radically compressed fish aren't swimmers at all. Paperfish and Waspfish rest on the reef, and as a result of their extreme thinness, the gentlest movement of water rocks their body as a guise resembling drifting debris. The strangely vertical swimming Shrimpfish are both radically compressed and elongated, a shape so extremely thin that if threatened, a mere half turn of their body renders them magically invisible. These fish use their radically compressed shapes for survival.

Those John Dorys that aren't so slim have more body power and hence more speed to escape predators, but often it's not sustainable power. Triggerfish and Coral rockcods expend their energy reserves mock

charging trespassers in the defense of their territory. Following these short sprints they recuperate in the sanctity of a rocky outcrop, revitalising themselves for the next intrepid trespasser. No matter how small the intruders are, they will challenge any newcomer – even scuba divers as many of you might have already experienced.

The more athletic types, the real sports fish of the underwater world, are not only slightly compressed but also elongated. The extra length adds muscle power to the body. The official term for this shape is fusiform but the more apt description is 'torpedo-like'. Tuna, Barracuda, Kingfish and Mackerel are fusiform in shape and built for speed. These streamlined fish have evolved to rip through the water as they patrol the open oceans. Sharks are also fusiform in shape, and theirs is the ultimate body shape that has withstood the test of time.

Taeniform shaped fish are usually small. These ribbon-like shaped fish may not have athletic speed, but they have grace and style. Dartfish, Fire gobies and Mimic cleaner wrasse bear the taeniform shape. Dartfish are interesting as they often mate for life. The couple hovers a few centimetres above the sand, rippling their bodies in perfect unison while keeping their heads perfectly still. Every now and then they break formation to nibble on passing zooplankton. Their taeniform shape is perfect to execute a nose dive into the sand to escape predators. Pipefish are extended taeniform versions – their bodies are too long for their small fins to propel



them effectively. As a result Pipefish tend to slide over the reef or hide away from any currents inside caves, their shape perfect to fit into the smallest of reef crevices.

Fish may even be considered depressed – in shape that is. This is known as horizontally flattened. These fish are frequently bottom dwellers living on sandy substrates. The body design is perfect for their habitat as sand cover their bodies, deceiving both predators and prey. Rays, soles and flounders are good examples of horizontally challenged fish. These fish prefer to lie just beneath the sand while the cryptically camouflaged Crocodilefish and Wobbegong sharks lie openly on top. These fish do not bother to swim far at all, yet they are capable of short bursts if need be.

Finally there are the seriously disadvantaged – the big fat globular shapes. Water is not an easy medium to move through (as any diver will agree). Add to that an awkward shape and the result is a fish that has just not got the physical abilities to move. Frogfish and Stonefish are examples of this sedentary lifestyle, squatting on the reef spending most of the day watching their surroundings like couch potatoes. They only move if pushed or shoved and, of course, if food is around. Other clumsy shapes are those that are box-shaped or triangular such as Boxfish, Trunkfish and Cowfish. These shapes are impossible to fit into a slit-shaped crevice and cause serious locomotion difficulties. This affects their lifestyles – if they don't swim close to the reef the currents will take them for a ride.

Pufferfish feature a bulbous, elongated body which is the exact opposite of streamlined. While they can get around they are neither fast nor slow. When frightened, the Pufferfish inflates, essentially losing all ability to flee – it's newly acquired balloon shape is incapable of any movement other than floating around, yet it is an essential survival technique. Other underwater oddballs such as Seahorses, for example, don't fit into any shape category. And yet their shape is perfectly designed for clutching onto their living quarters.

The shape of fish may determine lifestyle as in the globular shapes, or influence habitat choice in those who are clumsily shaped. The fusiform shaped are capable of swimming at high speed to obtain food, while radically compressed and horizontally flattened fish shapes are critical in the fight for survival.

For more underwater images and stories, visit www.peterpinnock.com 





Divers with diabetes given go-ahead to dive

The thrill of SCUBA diving is a draw-card for many people especially in Australia, where we are fortunate to have some of the best dive sites in the world.

Over the years however, for people with insulin-requiring diabetes it has been challenging to undertake this exciting sport. Diabetes mellitus affects a person's ability to break down glucose in the food they eat and to regulate blood glucose levels. In the case of type 1 diabetes, the pancreas no longer produces insulin. For people with type 2 diabetes, some insulin may be produced but is often not enough to adequately regulate blood sugar levels. One person every five minutes develops diabetes in Australia, that's 280 Australians every day.

Currently there are about 1.7 million people with diabetes (this includes all types of diabetes) nation-wide.

The Australian Diabetes Society (ADS) recently recognised that people with well-controlled insulinrequiring diabetes are able to participate safely in recreational SCUBA

diving. This has been outlined in a new position statement.

ADS CEO, Professor Sof Andrikopoulos said with appropriate preparation, experience and adherence to the new recommendations, people with well-controlled insulin-requiring diabetes are able to dive safely.

However, the ADS still warns that diving should not be undertaken by people with hypoglycaemia) unawareness (inability to feel a drop in blood sugar level), recent severe hypoglycaemia (unconsciousness), or complications. In the case of extremely low blood sugar levels or hypoglycaemia, a person may experience sudden and unexpected changes in consciousness, which can be extremely dangerous or fatal to a diver and their dive partner.

Due to increased ambient pressures underwater, SCUBA diving places greater demands on the body and in particular on the cardiovascular, respiratory and metabolic systems. A diver needs to be

able to respond to sudden changes in the conditions underwater, however, if a diver is suffering from low blood sugar, this can affect their ability to respond effectively.

The new position statement and guidelines provide healthcare professionals with criteria to assist them in determining a person's suitability to dive, as well as blood glucose management protocols to ensure safe diving.

The ADS commissioned a working group in 2015 including diving enthusiasts, clinical and research experts, and representatives from the Telethon Type 1 Diabetes Family Centre in Perth and the South Pacific Underwater Medicine Society.

Members included Dr Mervyn Kyi, Dr Barbora Paldus, Dr Natalie Nanayakkara, Prof Michael Bennett, Rebecca Johnson, Dr Catherine Meehan and Prof Peter Colman. The group reviewed the international literature on SCUBA diving and diabetes and updated the ADS position statement in line with current evidence. The new statement is specific to recreational diving and people with both type 1 and type 2 diabetes who require insulin.

One of the group's participants, Bec Johnson, CEO of the Telethon Type 1 Diabetes Family Centre, has lived with type 1 diabetes since the age of 17. She qualified as a PADI Divemaster overseas in 2008 and has undertaken more than 500 safe dives.

"This is a real game-changer for divers," she said. "Australians with insulin-dependent diabetes can now participate in this exciting sport." "People with diabetes can certainly learn to dive safely and with the right guidance and preparation there's no reason why people like me can't participate in this much-loved recreation," she said.

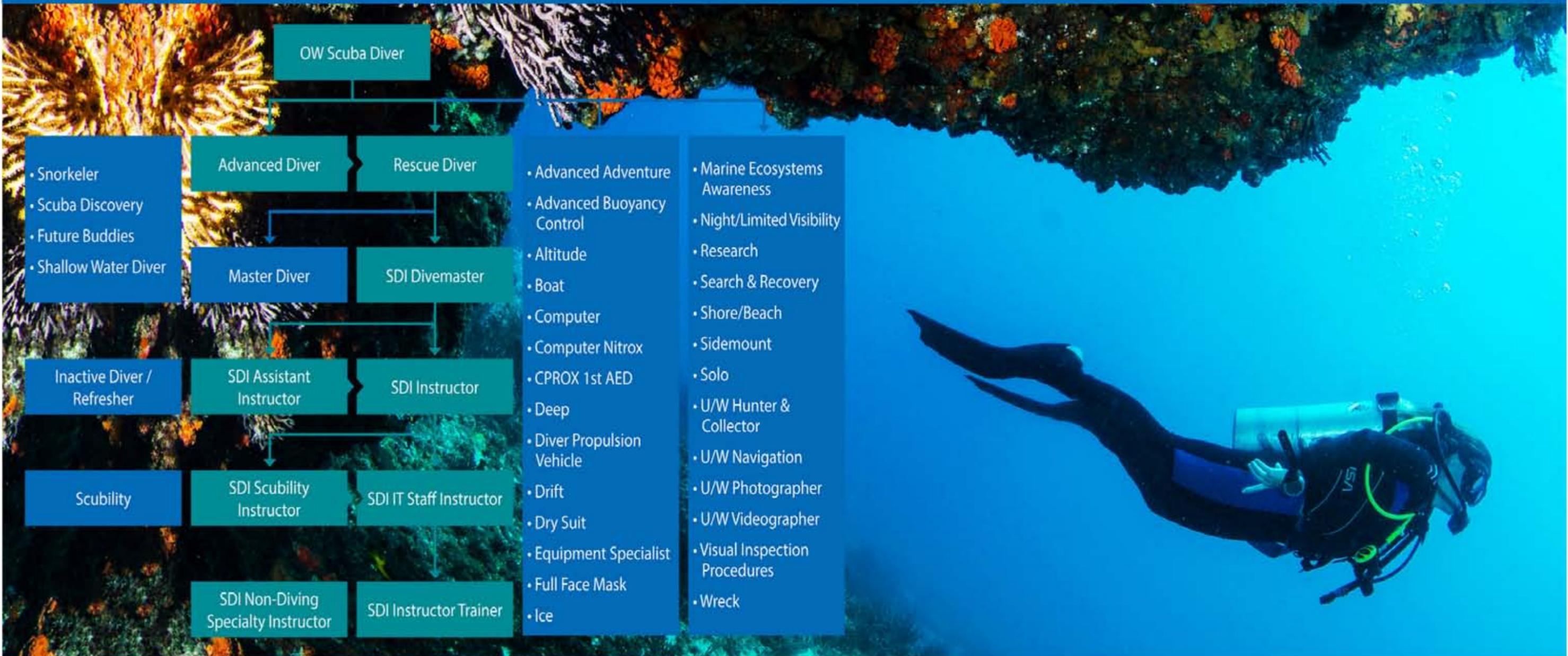
A copy of the new position statement, 'Insulin-requiring diabetes and recreational diving' is available to download from the ADS website at <https://diabetessociety.com.au/position-statements.asp>

Anyone with diabetes, who would like more information about the new guidelines and advice on how to dive safely, is encouraged to speak with their General Practitioner (GP) or healthcare specialist. 





Scuba Divers Trained Here



By Barry Coleman

What is risk management?

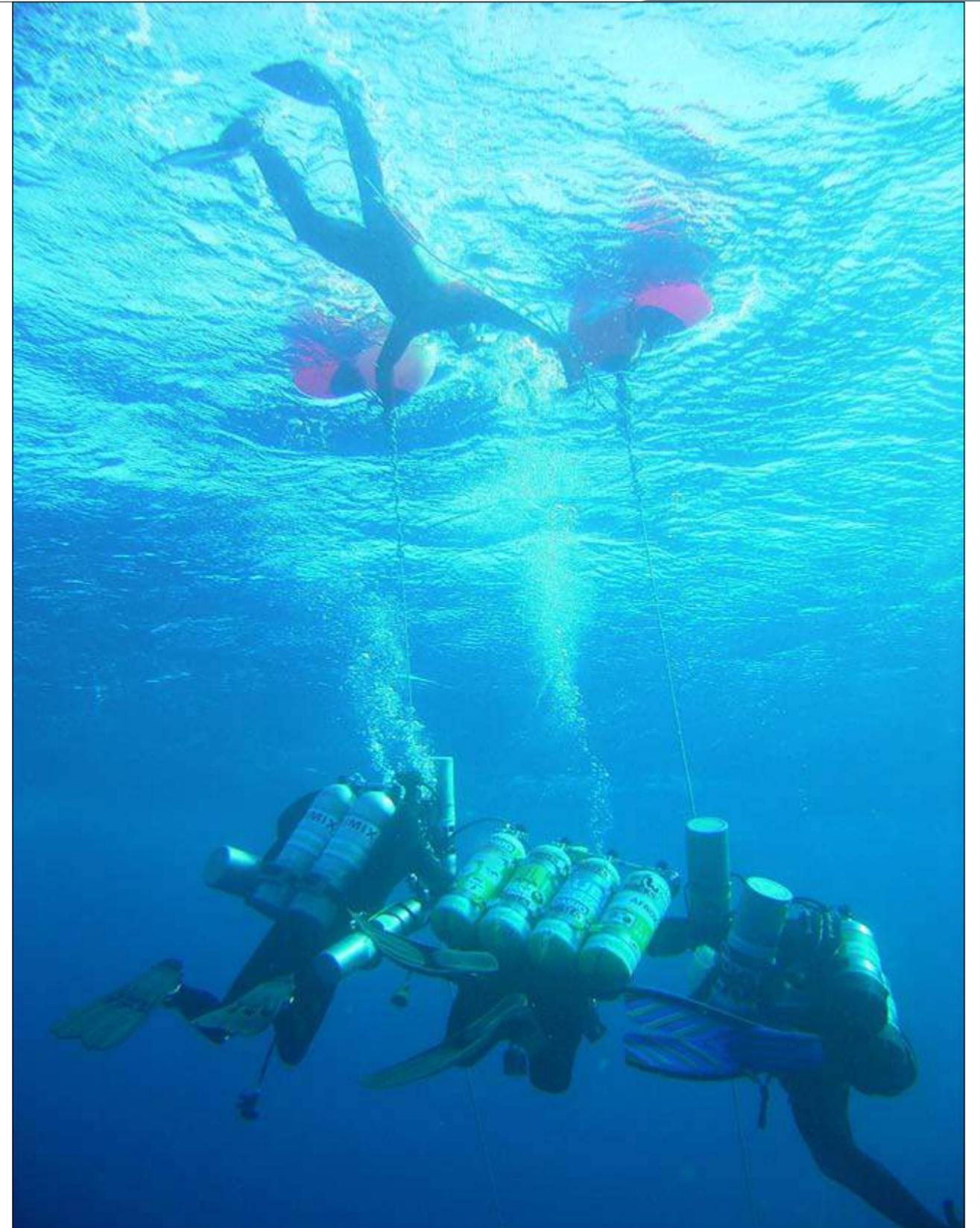


In a nutshell, risk management is the pursuit of thought that integrates recognition of risk, risk assessment, developing strategies to manage it and mitigation of risk for using emergency services.

The objective of rescue risk management (RM) is to reduce different risks related to the pursuit of diving to a level acceptable by society. The ideal RM process is to identify and select the risks with the greatest loss and the greatest probability of occurring and handle them first, then work down with the next lower probability of occurrence in descending order.

In practice this process can be very difficult and balancing between risks with a high loss but lower probability of occurrence versus a risk with a high probability and a lower loss can often be mishandled.

Then there are the intangible risks that have a 100% probability of occurring but are ignored due to the lack of identification ability. For example, when deficient knowledge is applied to a situation where



By Barry Coleman

the diver is diving beyond his/her training and ability, then the knowledge materialises and ineffective diving procedures are applied.

These intangible risks not only directly reduce the potential for a safe dive, but also reduce the ability to perform self-rescue and/or a safe rescue by other divers or emergency services.

Risk management also faces difficulties allocating resources, for example, time, money, manpower, equipment, etc. These resources may be spent on more profitable activities, which in itself is an intangible risk.

The trick is to find the balance between RM resource allocation to the benefit of planning a dive or dives – it must not be a once off plan and/or allocation, but a continuous and developing process which runs throughout all diving activities, applied/adapted and adopted from one past dive to the next dive.

What is the value?

The value can be broken down as follows:

1. Provides a framework for diving activities, which enables future planned dives to take place in a consistent and controlled manner.
2. Improving decision making, planning and prioritisation by comprehensive and ongoing learning processes.
3. Contributing to more efficient use/ allocation of resources, capital and time.
4. Protecting and safeguarding divers, equipment and emergency service resources.
5. Developing the knowledge of base divers, dive centres/charters and support personnel.
6. Optimising operational efficiency.
7. Improving the image of recreational diving safety.

Few reputable rescue training courses will consider the risk assessment of a dive by identifying potential risks and evaluating them in a formalised format. The intangible risk is that a diver does not have the intimate knowledge to accurately assess the risk, and in many cases they believe that they actually do have the knowledge through poor training.

To try and reduce this intangible risk to a minimum, the risk identification is approached in a methodical way to ensure that all significant activities have been identified and all flowing activities from these activities defined.

So what are the risks?

There are many possible risks that can be identified by using a table to facilitate the description and assessment necessary to ensure a comprehensive identification, description and assessment process.

Be careful of risks which are improperly assessed – time can be wasted in dealing with risk of losses that are not likely to occur. Unlikely events do occur, but if the risk is unlikely enough to occur it may be better to move on and deal with the risk that does in fact occur. A basic example is the risk that all the divers in the group run out of gas at the same time. It may occur but it is unlikely, so do not work on this, but rather the likelihood of one diver running low or out of gas after a deep dive. As such, plan to minimise this risk with either a cylinder and regulator attached to the safety stop at 5m or computing and gas matching the buddy team or group.

Does this just sound all too much for a recreational dive? There are many people who think this way, and generally, they are the people who end up being involved in the accident. Is life just not worth the little extra effort? 



Solo diving – is it a good idea?

Q & A

Nuno Gomes



My view is that solo diving should be avoided at all costs! There is no place for it in sport diving... To go diving on your own with nobody knowing that you have gone is completely insane.

There are, however, some situations

in technical diving where the best alternative is to do a 'solo' dive, at least for some part of the dive.

The following examples can be viewed as 'solo' dives:

- * Very deep record dives, although there would still be a support team of very competent divers.
- * Cave penetrations where the cave is very narrow. Here there would also be support divers in the more spacious part of the cave.
- * Nil visibility dives. Here one would have a surface tender and would be roped, thus the buddy would be on the

surface and communication would be through the rope or via radio when using a full face mask.

Basically, true 'solo' diving is not recommended as diving with a buddy or with a team (for technical diving) is by far the best option. Things can go wrong on any dive and your buddy or your team can give you a second chance to dive another day. ❏

Barry Coleman



I am sure that many divers, without knowing and without conscious thought, have practiced solo diving. They may have entered the water with a buddy or group, but found themselves far away from their buddy or another diver, effectively

diving solo. Is this any different from planning to dive solo and doing so?

Well yes it is, due to the fact that a diver

planning to dive solo has considered the risks and made contingencies, for example independent air source (bail out gas) and a possible second BCD bladder. The solo diver who is separated from the buddy or group and continues to dive has made no plans or contingencies and given little thought to what to do in an emergency because they were diving with a buddy. The diver who dives with a buddy and does not stay within a safe distance from the buddy is a far higher risk than the diver who has planned to dive 'solo' and made provisions for it.

No matter what training the diver has, at the end of the day it is about attitude and diving to a plan. ❏

Pieter Smith



Sport: The buddy system has been proven over many years to be very successful. Most dives in sport diving are done for that reason specifically... as a sport, therefore there is no reason to change what works and no reason to dive solo.

Technical: In technical diving there may be specific reasons why solo diving would be either easier or safer than diving in a team. These reasons could include ultra deep diving, exploration where back-up for the explorer is important and where the explorer can push further safely on his own and search and recovery where experience and/or conditions call for a solo effort.

These reasons must be thought through and planned thoroughly beforehand and a solo effort must be justifiable at the end.

I do not believe in solo diving just 'because the individual can'. Scuba diving is a buddy-system orientated sport that greatly increases safety. Solo diving is dangerous and must not be promoted. ❏

Pieter Venter



Solo diving for certain dives is the best option. When a planned dive is beyond the depth where, if anything goes wrong, a buddy will be unable to help, the only effect of diving with a buddy is to double the chances of anything going

wrong and getting both divers killed. I am talking about dives such as pushing personal depth limits beyond 150m to 180m, where the dive becomes technically so involved that the diver does not have time to look out for a buddy or even to be aware of his presence.

These dives are usually planned with contingencies for every conceivable technical mishap and the diver plans and trains to deal with these problems alone. If a buddy gets into physiological trouble such as a black out, the buddy will be compelled to try and help, which will more than likely kill him as well.

If anyone is prepared to take the risk to die on a dive he should not place a buddy in the position to kill himself for moral reasons.

With regards to training for solo dives, there are two aspects. The first aspect is to dive with a kit configuration that does not rely on a buddy for any foreseeable technical problems – a full redundant independent system. This is how everybody should dive technically anyway and this training can be done with a buddy. The second aspect is mental preparedness for an extreme solo dive – training can only be done solo when you are certain that your kit is fully redundant. Otherwise solo diving is not advisable, however, a solo dive can be a nice peaceful experience or logistically necessitated. If this is the case, then it should be trained for. ❏

GO DEEP with RAID

RAID Deep 40

RAID is proud to announce the release of the RAID Deep 40 program. We believe this is the most advanced recreational Deep Diver program in the dive industry. Innovative ideas and real practical training make this a very desirable course. The program seeks to bridge the gap between traditional recreational deep courses and technical diving. The aim is to have a deep diving program with seamless integration into higher levels of training. This means there are no conflicting ideas or procedures, just a system that encourages consistency between the programs. A unique feature of this program is that it allows the use of Trimix in recreational deep diving.

At RAID we are proud to have created a “REAL” deep diver program that has cutting edge ideas, sensible practical training and seamless integration to our other programs. This is a unique program designed with quality, consistency and competency for divers conducting deep recreational dives. A great addition to the RAID list of courses.

RAID Deep 40:

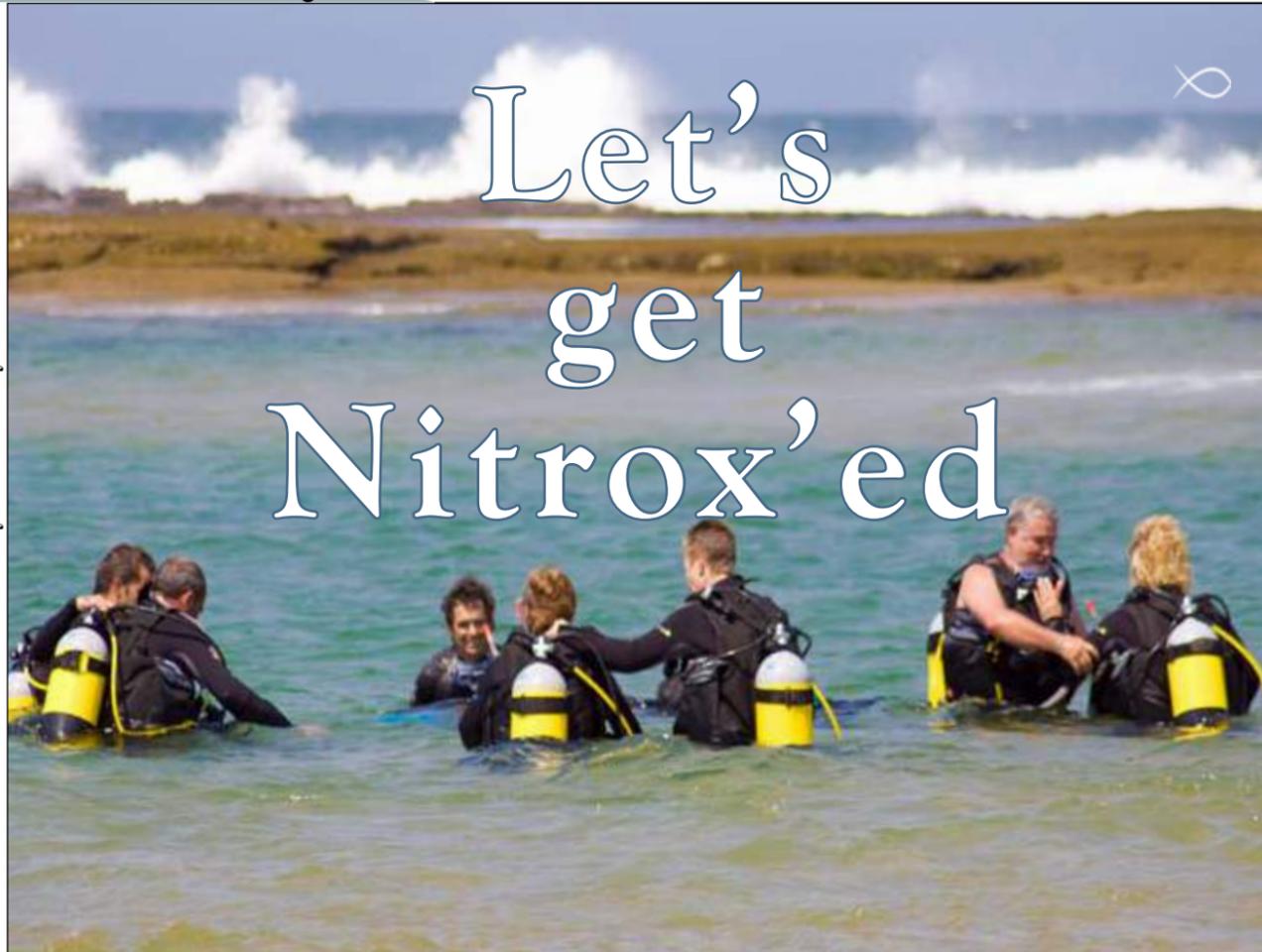
- Real deep diving procedures
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- Based on your competency and comfort

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Let's get Nitrox'ed

So what is nitrox and why should you consider diving with it? Simply put, nitrox is a mix between nitrogen (N) and oxygen (O₂). Air contains both gasses, 79% nitrogen and 21% oxygen which means that air can actually be considered a nitrox blend, thus next time you dive air you are actually diving a nitrox (EAN21) mix.

Nitrox is normally presented as EANx, translated as Enriched Air Nitrox and the 'x' is reserved for the actual percentage O₂ within the mix itself.

In recreational scuba diving there are two standard types of nitrox blends - a 32% and a 36% mix put down as EAN32 or EAN36 where the 32 or 36 number represents the percentage of O₂ in the mix.

Within recreational diving nitrox can be consumed up to a 40% (EAN40) oxygen limit mix.

Dive planning around nitrox is based on exactly the same principles as with normal air diving, the only difference is that EANx tables, looking exactly the same as air tables, are used showing different bottom times as well as different surface interval times.

Therefore it is very simple and easy to plan nitrox dives, the question now is why would divers want to use nitrox as a gas mix instead of normal air?

The simple answer to this is to extend the bottom time on the reef. A nitrox mix will increase the time you can spend at a certain depth.

Nitrox is usually used for mid-level depth dives, meaning that to experience its real effect it must be used between depths of 20m and 40m. A huge misconception is that nitrox will allow the diver to dive to deeper

depths - this is definitely not the case, and the increase of O₂ limits the depth that can be reached. For instance, technical divers search for great depth will limit the O₂ percentage content in their blends and rather add in helium (He) as an oxygen substitute.

Diving nitrox means the nitrogen up-take is slower because the supply is made less by the larger share of oxygen which translates into a longer bottom time. In addition to the extended bottom time, surface interval times will be shortened between dives which means that repetitive dives can be done in quicker succession.

Nitrox is a popular choice when scuba divers travel far to dive and want to get the most from their dive trips. For instance, when visiting the Red Sea, diving nitrox will be hugely beneficial because of all the benefits it offers. Considering the cost of a

nitrox fill, it usually is a bit more expensive than a normal air dive but definitely worth it if you think about the longer bottom time.

Using nitrox as the preferred mix does not mean the risk for decompression sickness is avoided because of the higher percentage oxygen.

Diving any mix should be treated within the gas rule set or calculations. When considering nitrox the operator will fill your tank to your preferred nitrox mix, but it is still your own responsibility to check and analyse your own cylinder and ensure that the gas mixture is correct and falls within the dive plan.

I do recommend considering a nitrox qualification if you want to extend your bottom time - it's a quick and easy course and well worth the time for the benefit. 



Regulators – second stages



Also known as the demand valve, the primary purpose of the second stage is to reduce intermediate or hose pressure to ambient pressure and deliver it to the diver on demand. In addition to the primary purpose, the second stage also provides an exit for exhaled air and air when the purge button is pressed.

The different types of second stage are:

- * Upstream valves
- * Downstream valves
- * Pilot valves

Upstream valves

This is the old tilt valve that is still used when the hose pressure is not constant. Activation is by a lever in contact with the water pressure measuring diaphragm. If the depth is increased or the diver inhales, the diaphragm distorts inwards pushing the lever.

The lever tilts the upstream valve off its seat allowing the air to flow. The manual purge simply acts on the diaphragm. A mushroom exhaust valve opens during

exhalation, allowing the air out but not the water in. The exhaust T guides the bubbles away from the face.

In the event of first stage failure and high pressure air coming down the hose, the valve will close tighter resulting in a hose rupture.

To prevent this, the first stages of these valves must be equipped with a pressure relief valve.

This is a very simple method of controlling the air flow. The most common form was the tilt valve found in early second stages. Today only a few regulators are designed with the tilt valve.



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Disadvantages:

- * To minimise the closing force the orifice must be kept small. This reduces air flow.
- * Air flow is further reduced by the opening rod passing through the orifice.
- * The tilt valves wear unevenly, increasing the chance of leaks.
- * In the event of a first stage failure, the pressure cannot be released and the hose can burst. To combat this problem, an over pressure relief valve is necessary on the first stage.

Advantages:

- * Upstream valves are simple and cheap to make.
- * They need no adjustment or tuning.
- * They can handle varied inter-stage pressure.

Downstream valves

This is the most common system used today. Modern first stages can now deliver a very constant hose pressure and so the second stage valve can be set precisely. The operation is almost the same as the upstream valve, except that the lever lifts a small rubber poppet off its seat, allowing the air to flow. Spring pressure closes the poppet once the diaphragm has been straightened.

The 'cracking pressure' or amount of force needed to open the valve can be precisely adjusted, using an adjustable orifice (seat) or by adjusting the lever height or spring tension. In the event of a first stage failure, the downstream valve simply free flows.

Downstream valves are used in most modern regulator second stages. The force of air opens the valve and this is balanced by an adjustable closing spring. Varying the tension on the spring will vary the opening pressure.

Disadvantages:

- * Downstream valves are more difficult to design.
- * More expensive to manufacture.
- * Only operates in a tight range of pressure.
- * Requires more care and maintenance.

Advantages:

- * A large orifice can be used for a better air flow.
- * The pressure is adjustable, allowing fine tuning.
- * In the event of over-pressurisation the valve will blow off.

Pilot valves

In order to get a marketing edge many manufacturers have brought out various models of pilot valves.

The characteristics of a pilot valve are:

- * Noticeable delay on inhalation and shut off.
- * High air volume delivery.
- * Complicated.
- * Temperamental.
- * The pilot valve allows different configurations resulting in various shapes and sizes.

The operations system is based on a small pilot valve being opened by the breathing action on the diaphragm. Opening this valve will drop the pressure in the chamber and allow the hose pressure to push open the main valve. On completion of the inhalation the pilot valve closes and the pressure in the chamber builds up and closes the main valve. The main valve is usually a small rubber pad about 2cm in diameter. The Poseidon Jetstream uses a collapsing silicone bag that when inflated seals the exit holes.

Like all diving equipment the type of materials used in the manufacturing makes a great difference to the quality of the product. Most second stages today are made from plastics –although lighter, cheaper and easier to make than the metal type, they are not as robust and long lasting. In addition, plastic housings are easily damaged during maintenance. Carbon fibre is also used today.

There are two main shapes:

Conventional, symmetrical with exhaust at the bottom:

- * Most popular.
- * Easy to strip and repair.
- * Most familiar to most divers.

- * Easy to clear.

Asymmetrical with side exhaust:

- * Often more compact.
- * Need to have the exhaust side lower in order to clear. This has caused several incidents with buddy breathing.
- * Can be used right or left sides.
- * Bubbles often interfere with diver's vision.

Design of exhaust ports

As the size of the exhaust port increases, so the exhalation resistance decreases. This can be significant at greater depths where the air is much thicker. Unfortunately the larger the exhaust ports the more difficult it is to control water ingress. Techniques to overcome this include having two exhaust ports and bevelling of the exhaust valve.

The Venturi effect

Moving air will pull still air with it, increasing the flow without further effort. Manufacturers use this principle in order to increase the performance of their regulators. Many have internal vanes to increase the Venturi effect, several have adjustable vanes that can increase or decrease the free flow effect with a switch. Others have increased this effect by spiralling the air flow. Harnessing the Venturi effect significantly increases the performance.

Cracking pressure or inhalation resistance

This is the amount of inhalation force needed to open the valve and start the air flow. This should be as low as possible. As the hose pressure on a good regulator is constant, this can be set exactly. It is adjusted by the factory or by a technician. In an effort to 'offer more', certain manufacturers have brought out models with a splined knob that changes spring pressure on the opening valve. By adjusting the knob the diver can adjust the cracking pressure. This may be useful in heavy surf to avoid a free flow on entry or diving in a current. The down side is a more complicated unit and reduced performance. The advantages are more market related than realistic. 



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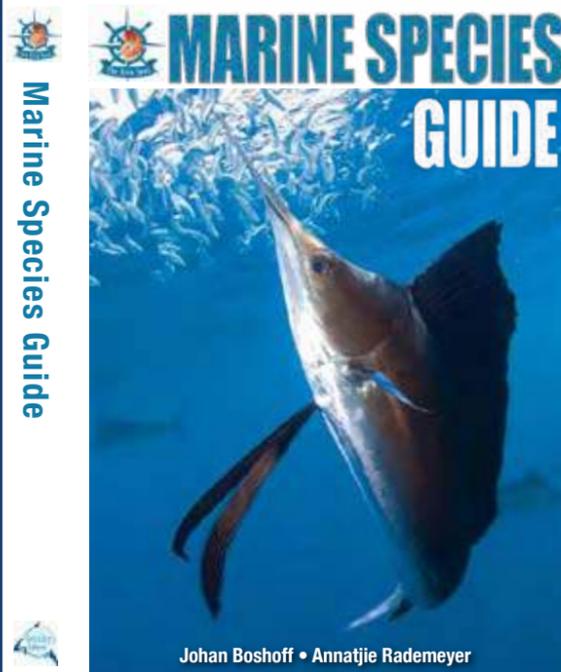
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Marine Species Guide –



Yes, it happened...I had to buy a larger bookshelf. The latest book from The Dive Spot has landed on our shores – The Marine Species Guide.

A book for both scuba divers and snorkelers to identify and learn all about the different fish species they will come across under water. The book covers most of the marine species found within coral reefs around the world. Line drawings of fish families simplifies identification underwater, while general behavior of the family along with other interesting facts are listed.

Information include common family names, aliases, biological family names, size, identification, general information, feeding preferences and where the families occur around the globe. Photographs of the most common of the species found when scuba diving or snorkeling are included and the fish families are organised for easy reference.

The book works very well in accompaniment with the Marine Species Slate, which can be taken underwater to help with fish identification.

To buy your copy for \$ 22, visit www.thedivespot.com.au or email info@thedivespot.com.au

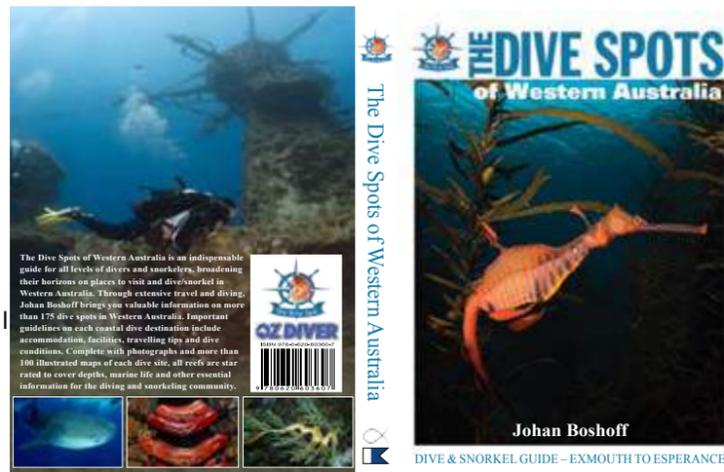
Johan Boshoff • Annatjie Rademeyer

A quick reference guide to the marine species found on coral reefs around the world

The Dive Spots of Western Australia

The Dive Spots of Western Australia is an indispensable guide for all levels of divers and snorkelers, broadening their horizons on places to visit and dive/snorkel in Western Australia. The book has more than 175 dive spots in Western Australia. Important guidelines on each coastal dive destination include accommodation, facilities, travelling tips and dive conditions. Complete with photographs and more than 100 illustrated maps of each dive site, all reefs are star rated to cover depths, marine life and other essential information for the diving and snorkelling community.

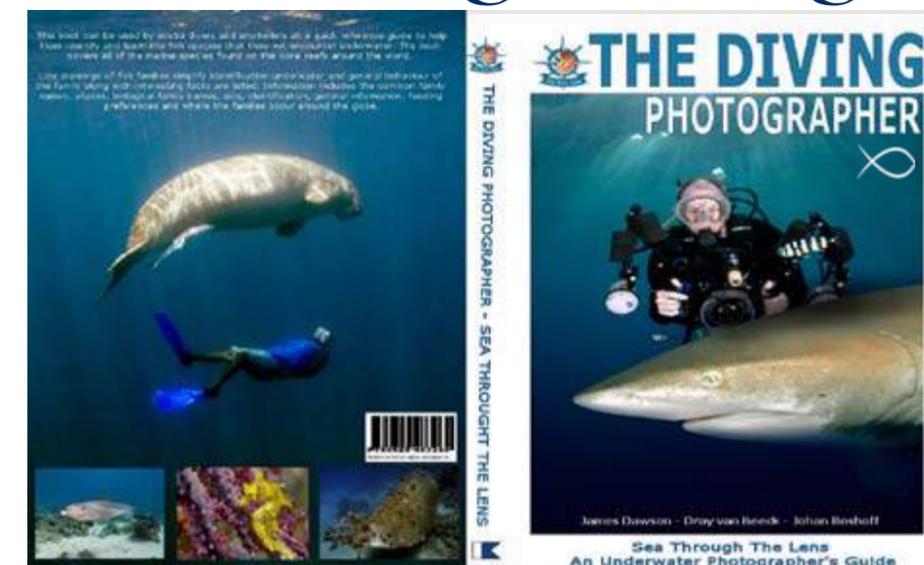
For more information visit www.thedivespot.com.au



The Dive Spots of Western Australia is an indispensable guide for all levels of divers and snorkelers, broadening their horizons on places to visit and dive/snorkel in Western Australia. Through extensive travel and diving, Johan Boshoff brings you valuable information on more than 175 dive spots in Western Australia. Important guidelines on each coastal dive destination include accommodation, facilities, travelling tips and dive conditions. Complete with photographs and more than 100 illustrated maps of each dive site, all reefs are star rated to cover depths, marine life and other essential information for the diving and snorkelling community.

THE DIVE SPOTS of Western Australia
The Dive Spots of Western Australia
Johan Boshoff
DIVE & SNORKEL GUIDE – EXMOUTH TO ESPERANCE

The Diving Photographer –



As scuba divers, we are not always the best photographers, but we do learn very quickly. And if we have a handy guide book, the time spent with our cameras underwater will increase rapidly.

This easy-to-use guide book for the diving photographer can be used by all levels of photographers. It helps you with choosing the right type of camera for your ability – although with all the information presented you will learn

so quickly that you will have to buy a better camera after working through the book! Preparing and setting up your equipment becomes a breeze with easy pointers on how to check and replace o-rings, quick tips on keeping your housing dry and other small things we usually forget to check.

The technical advice on how to perform manual camera settings, lighting techniques and editing the not-so-perfect shot was a great help. One of the main things I took from this book was learning to back up my photographs and then trying anything and everything with them in the photo editing programmes until it looks like the professionally taken shot that you have been aiming for the whole time. Some other topics covered are strobe positioning, ambient light, photographing wrecks, long exposures and equipment maintenance.

I must say that this book has proved to be a great help in improving my photographing and editing techniques. Photographer is available in all good scuba diving and book shops or online at www.thedivespot.com.au. Cost: \$20



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Here is a chance for your diving gear, books, software, apps and gadgets to be reviewed. If you have anything that you would like to share with the OZDiver Magazine and other divers, send an email to Log Book at info@ozdiver.com.au.



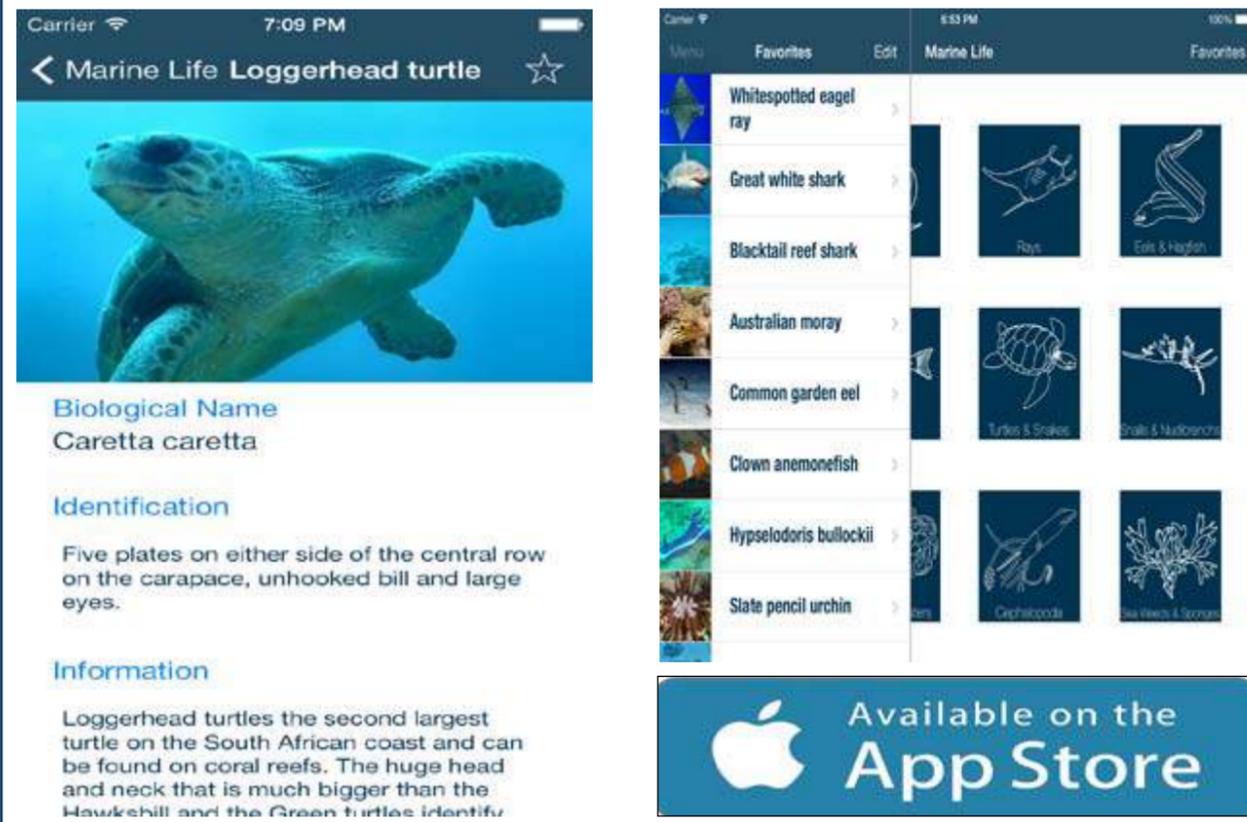
Marine Life app



A user friendly app designed to assist divers with marine life identification and at the same time learn more about the fascinating lives of our ocean dwellers.

Learn about your favourite sea animals at the swipe of a finger, with more than 4000 full colour photographs of sharks, rays, eels, nudibranchs, hagfish, snails, crabs, lobsters, sea weeds, sponges, cineraria, turtles, snakes, dolphins, whales, worms, crustaceans, shells, cephalopodan, urchins, sea cucumbers, starfish, birds and many more. Displays information such as common names, aliases, biological names, identification, families, gender, size, life stag and much more.

A leader in marine life identification and used in education programs all over the world, now available to you from Apple App Store for only \$6.



EZYFLAG for all Divers

I first thought of the idea of ezyflag back in 2013 when I became frustrated with the current flag on the market. Finding it cumbersome and difficult to use, particularly when it come to retrieving it after a dive. So I began my search for a better, easier to use flag. I looked in Australia with no success, and then overseas, but with the same result.

There was nothing out there that I felt fitted what I was looking for and so began my journey to develop one myself. Designing the flag itself was a challenge, taking over one and half years alone, but producing the flag was equally challenging, and all the jigs and components have had to be specifically designed and engineered for the purpose, by myself. After a further year of design, engineering, testing and several prototypes, the final product is made of marine grade stainless steel, has a 600 x 500 uv resistance flag which has a cross-support to strengthen it and keep it visible even in no wind conditions.

It is also able to hold a flashing light for night divers (a glo-toob is used, you can find them in most dive shops) and an anchor weight, both of which can be supplied as optional extras. The real difference is the flag's ease of use. With the current flag on the market, the line has to be wound manually around the float, which can be difficult and time consuming. The ezyflag however has a reel mechanism allowing the line and weight to be wound up very easily. The design also means that the reel and release sit below the float, allowing the flag to stay more upright in the water, even in rough conditions. The ezyflag dive system looks very simple, but it has been two and half years in the making.

Now on the market, the flag is already proving a hit with local dive clubs and instructors alike.

Further details can be found at our facebook page www.facebook.com/ezyflag, or by contacting Kevin on ezyflag@gmail.com or call 0407589315. Look out for the new model coming out in 2017.

Testimonial

STEPHEN FOULIS. Guys I wanted to. Say a big thanks for my ezyflag. I purchased one a number of months ago now following a chance meeting with Kevin. I have used my flag numerous times, it's so easy to use and works so well. Being an instructor it's so handy to have a simple surface marker that's deployed quickly leaving me to direct students down the shot and on with their skills. Even night dives are aided as the no fuss deployment and retrieval adds to the enjoyment. Thanks Kevin, A must for all divers.

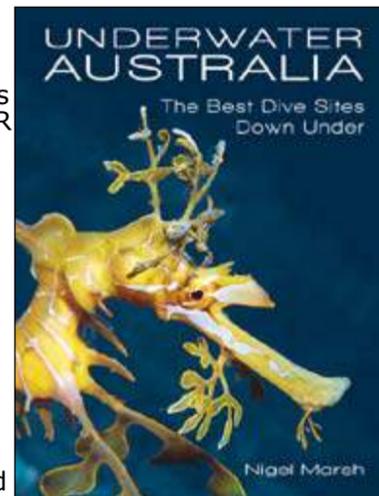


TWO NEW DIVE GUIDE BOOKS FROM NIGEL MARSH

One of Australia's leading underwater photojournalist, Nigel Marsh, has just complete work on two new dive guide books which will be available in book shops in January 2017. The first is a comprehensive guide to diving in Australia called UNDERWATER AUSTRALIA and the second is the world's first guide to muck diving, simply titled MUCK DIVING.

UNDERWATER AUSTRALIA

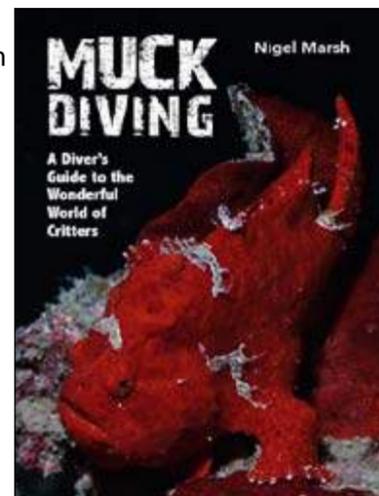
Australia is blessed with one of the most diverse marine ecosystems in the world. From its tropical north to its cool temperate waters, the land Down Under is truly a diver's paradise. Down Under, divers can explore amazing coral reefs, shipwrecks, walls, pinnacles, artificial reefs, kelp forests, sponge gardens and even muck sites. Australia is also a destination where divers can encounter many wonderful endemic species seen nowhere else in the world, such as colourful seadragons, cross-dressing giant cuttlefish, bizarre handfish and camouflaged wobbegong sharks.



The new book UNDERWATER AUSTRALIA is a complete guide book for the diver who wants to explore the best dive sites Down Under and also encounter the unique marine life found around this island nation. Throughout the pages of the book divers will explore every section of this great southern land, state-by-state and region-by-region. The 368 page guide book has a recommended retail price of \$A35.

MUCK DIVING

The oceans are full of fascinating environments for divers to explore; coral reefs, rocky pinnacles, caves, walls, shipwrecks and artificial reefs. But over the last two decades more and more divers have been attracted to a very different marine environment that has proved to be very rewarding – muck!



Muck diving is the exploration of sandy, silty or muddy sea floors, which might not sound very exciting or adventurous, however these environments are home to an incredible range of extraordinary critters that are not seen elsewhere in the marine world. MUCK DIVING is a captivating new book that dives into the realm of muck.

Full of magnificent pictures of weird and wonderful critters, this book looks at different muck environments, all the bizarre and beautiful muck critters and includes a comprehensive guide to the best muck diving sites in the Indo-Pacific region. The 352 page book has a recommended retail price of \$A29.99.

Both books are published by New Holland Publishers and are available at book shops in Australia, New Zealand and the United Kingdom. E-book editions will be available by the middle of the year.

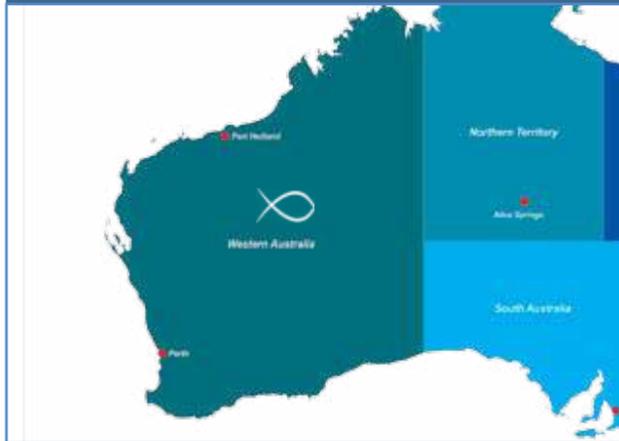
For more information about Nigel and his other books available please visit - www.nigelmarshphotography.com





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Western Australia



Perth Region

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 Web: www.westernbluedive.com.au

Underwater Explorer's Club of WA



Our club has a 12m purpose-built aluminum dive boat which can take 14 divers comfortably and is equipped with all appropriate safety equipment. We dive almost every weekend and have over 150 recorded dive spots around Rottnest and surroundings.

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 Web: www.uecwa.com.au



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South Australia



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Calypso Star Charters - Port Lincoln



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Glengowrie

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Victoria



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 Web: www.ausdivinginstruction.com.au

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Underwater Research Group of NSW



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South West Rocks

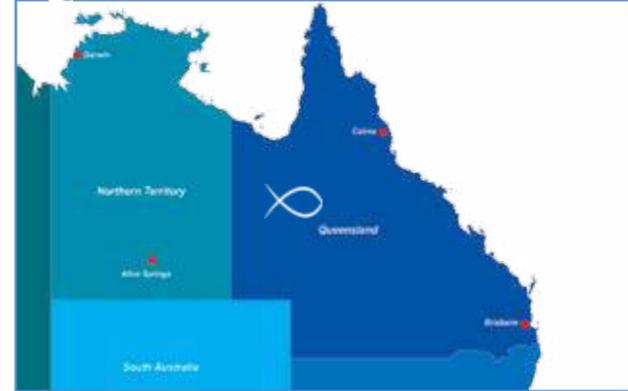
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OZ DIVER

A large, mottled green and blue fish, possibly a wrasse, is the central focus of the image. It is swimming towards the viewer. To its right, a diver in full black gear is visible, looking towards the fish. The background is a deep blue underwater scene with some bubbles and a rocky seabed.

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