

January - March 2019

OZ DIVER

AUSTRALIA'S PREMIER DIVE MAGAZINE

PLASTIC IN
OUR SEAS

USS
ARRON
WARD

POWERRAY

COFFS COAST
NSW

THE
CONTINENTAL
SHELF

MICRONESIA

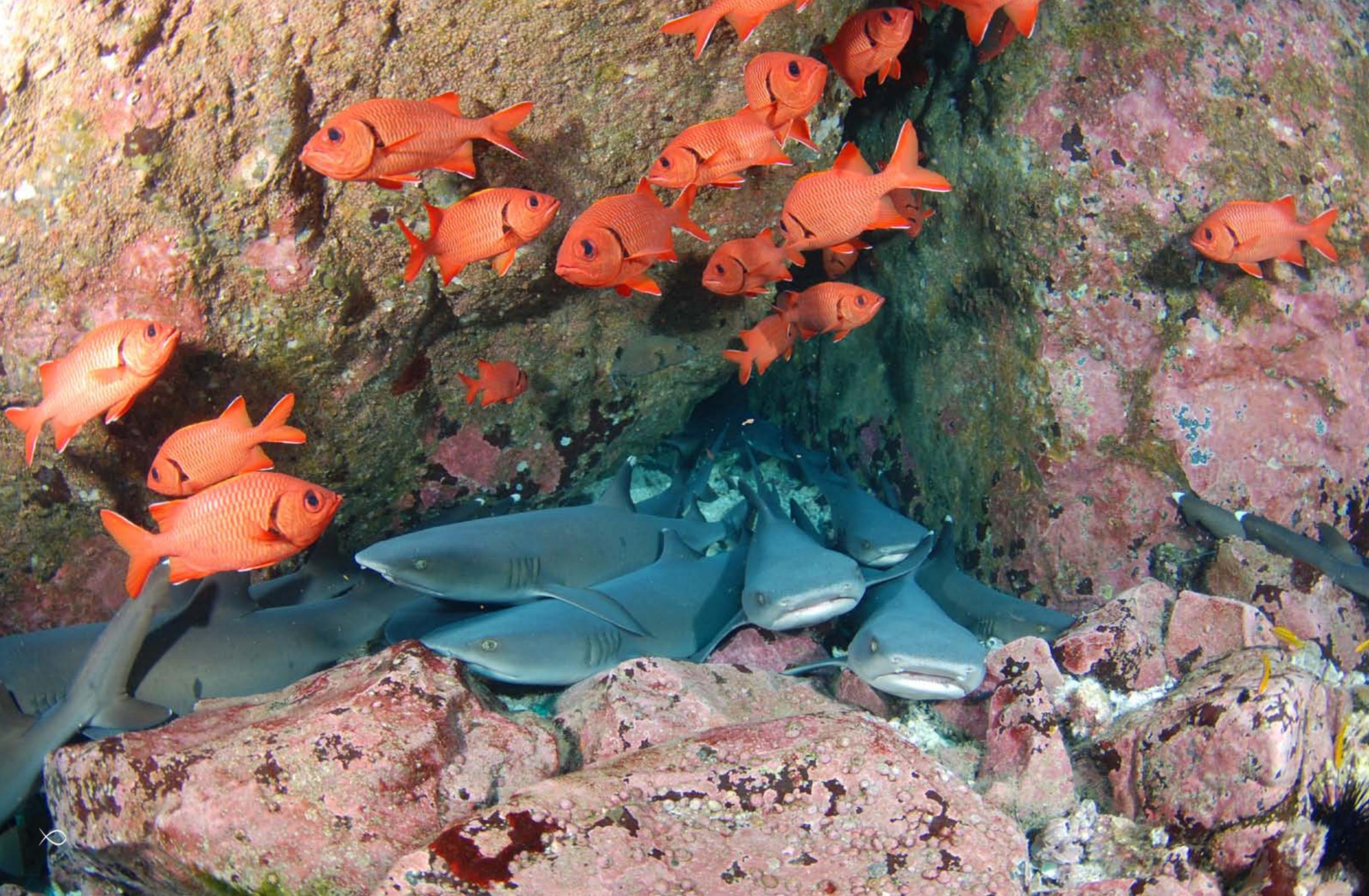


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OZDIVER

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

January - March 2019





Editor's Deco Stop

Summer is finally here and all of us are feeling the heat. Not only is the temperature heating up but this is also the busiest time of the year, if you are part of the diving industry.

The last couple of months have been really busy for me for one reason. Diving, diving and more diving.

This magazine is full of interesting stories and articles. With marine and ocean facts and we travel from Eastern Australia to Yap. We look at how to take better photos and if you can't, how to edit it so it will look better.

Like every other magazine this one is full of articles for the beginner diver to the more technical diver.

If you want to publish your articles or photos in OZDiver magazine do not hesitate to contact me.

I hope that you enjoy this edition and May you have a happy new year filled with fun dives.

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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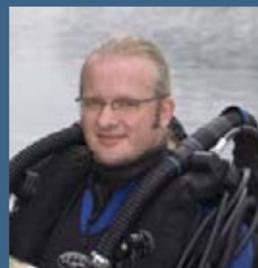
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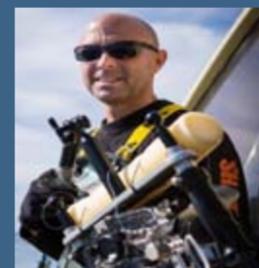
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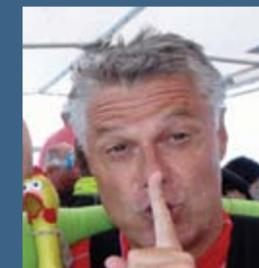
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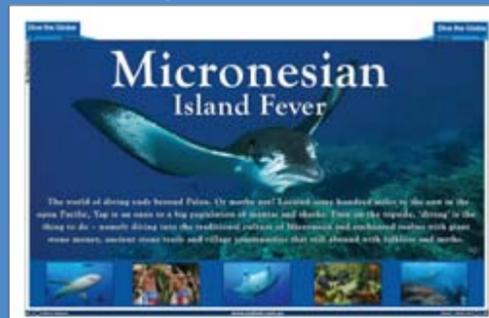
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FEATURE

Log Book



Sunday morning in mid-winter and one of the most beautiful sunrises one can imagine. The sea is as calm and as beautiful as it can only be on a winter morning, the sun rising in a bed of clouds and on the horizon six whales are playing in the morning sun.

Today's first launch is not like all the other days. We are not heading out to a dive site as we usually do – we are off on a whale watching safari.

The 10 people on the boat are unique in that they have never been out to sea before. What an amazing experience to see these 10 people look at the ocean in such awe.

Alongside the fresh morning smell of the ocean and with a slight breeze in the air, a female whale makes herself visible next to the boat as she slowly lifts her head out of the water. Right next to her, her calf slowly turns his belly towards us and the boat falls silent as everyone present revels in the marvels of nature.

This was the start of what was my best

ever whale experience. Six whales were playing next to us as if they were dolphins. With some next to the boat and two of them swimming just in front of us, we switched off both the motors to savour the experience.

One did a full bridge three times in a row while the mother and calf slowly moved along in front of us, rolling over with their fins out of the water.

One of the bigger males showed off by sticking its tail out the water while the sixth whale swam along on the surface with its back fins poking out of the water.

It was then that I realized that I had seen this behaviour before. Divers do exactly the same things... Is this because divers are also mammals? Well the answer is simple – whales have their buoyancy perfect and they can move their bodies any which way they want to. Some divers don't know how to do this.

This is a very common problem we encounter. Divers miss the most important

part of a descent – lift the inflator and dump all the air! Now with a half-deflated BC they try to start their descent and because they can't get down they turn themselves around. Head down and fins up, and this is exactly the same behaviour we see in the whales.

Divers use half the air in their cylinders trying to descend by swimming down with a half full BC instead of just keeping their heads up, lifting their deflators and dumping all the air in their BC's to do a controlled descent.

Then there is the vertical surface swim like the whale just moving along on the surface, also referred to as 'scuba snorkelling'. This happens when divers think they are descending but in actual fact they are just moving along on the surface – the most amazing feature of this technique is that when you look closely you will see the diver equalize every few seconds thinking that they are descending.

Once again, missing the vital head up,



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 info@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. 



deflator up, deflate and descend technique.

Then there is the ultimate whale impression: the bridge. This technique is very difficult as the whale starts from deep and thrusts himself up and out of the water completely, cleaning himself of parasites and pilot fish.

Most probably one of the biggest frights a skipper gets is when a diver does the bridge – it is a technique which is not performed that often, but we do see it occasionally.

Divers forget that air expands inside their BC's as they ascend, and all they think is, "this button means up." The two added together creates an extremely dangerous and fast ascent with the end result a view from on top of a full bridge from a diver breaking the surface with a fully inflated BC.

I would recommend that every diver visits their dive shop and signs up for a peak performance buoyancy course as soon as possible to avoid these embarrassing whale impersonations. 

OZ NEWS

Be part of AIDE 2019

After yet another highly successful 2018 expo, where we welcomed 59,753 visitors, we are once again collaborating with the Sydney International Boat Show (SIBS) to bring you an even more impressive 2019 event!

Taking place once again from 1 – 5 August 2019 at the International Convention Centre, Sydney with the same floor location and space, we invite you to explore with us the business of diving.

2018 SHOW RESULTS –

- 59,753 high-net-worth paying visitors
- 32,000sqm of expo space including marina
- Dedicated dive section of 2000sqm at the entrance of the halls.
- 53.9% are Professional attendees
- 23.7% visitors increase of interest in scuba diving compared to last year of 18.9%

WHY AIDE - SIBS and AIDE have created a platform that is unlike any other, cultivating and drawing the interests of water-lovers and scuba divers alike; and developing leads and sales for our exhibitors. Visitors to the show are high net worth water lovers. As such, we hope to match their interests with your product and service offering, or even create that interest where it may not yet exist.

BUSINESS OBJECTIVE - Brand awareness, brand engagement, lead generation and sales in both the short and long term are our main objectives for you and your business. Providing your brand with extensive exposure to the 59,753 loyal and affluent water-loving visitors not only adds to your bottom line figures, but also converts to our long-term goal of expanding the dive community. This is a great opportunity for you to bring about more brand awareness and engagement into your short and long-term sales funnel.

EXPO OBJECTIVE - Our aim is to give this niche market a boost and grow its community by inspiring, educating and encouraging more people to explore the underwater world. While dive is a thriving industry, there remains a fertile opportunity for products, services and destinations such as yours to gain from both existing divers and newbies to the sport.

OPEN FOR REGISTRATION

We warmly welcome you to explore the business of diving at AIDE2019 and how the expo can be beneficial for your brand. Exhibitor registration is now open.

CONTACT US

Email us at info@australiadiveexpo.com and visit the website at www.australiadiveexpo.com for updates. 



Australia's Inspiring Cavers - Richard and Craig upfront at OZTek

All about the Adventure

Richard Harris and Craig Challen will be presenting the complete story of this incredible rescue - the logistics, the politics, the hardships, the worry, the equipment, the schedule. Explained by the people who were there, ask questions and shake the hands of our real life cave diving heroes.

Celebrating 20 years of diving adventure, OZTek2019, is the only Australian bi-annual one-stop adventure into the dynamic world of diving, bringing together the world's greatest divers, scientists, explorers, trainers and photographers. Impossible to replicate, prepare to absorb the excitement, discover new adventures, destinations and possibilities.

Each presenter brings unique, inspiring, exciting and sometimes, sobering topics, directly to you. They provoke awe, provide knowledge, improve methodology and above all, entertain. Richard and Craig are two wonderful examples of the calibre of OZTek presenters.

As well as the incredible stories - there is MUCH MORE to experience...

OZTek2019 Dive, Training, Travel & Photo Show

Travel destinations, liveboards, Australian adventures, new technological innovations, equipment, training, photography (workshops, cameras, housings, strobes, lenses...), dive instruments, compressors, wet and dry suits ... everything a diver needs.

OZTek Diving Conference & Exhibition is much more than just another dive show; it's a dynamic event focused on excitement and tomorrow's diving possibilities. Come and celebrate with us.

For all up-to-date information go to: www.oztek.com.au 



How to Choose a Dive Shop

Curiosity and a thirst for adventure is why many of us become divers in the first place. But we aren't going to take the plunge with just anyone. Whether you're looking to avoid crowded "cattle boats," or the bad air boogeyman, here are some ways for finding the best dive shop for you.

Where to Start

Ask friends, family and your extended social network for recommendations. Online review sites such as TripAdvisor or Google can also be a good resource. Don't rule out a business for one or two negative reviews, especially if there are dozens of positive ones and the dive shop has responded in a professional way.



If you've perused the options and every dive shop has a near-perfect rating, how do you narrow it down? Focus on the things that matter most to you.

What's Important to You?

Consider what's most important to you: small groups or the lowest price. Do you like diving with a dive guide, or are you okay finding your own way back to the boat? Do you get seasick easily? If so, seek out a larger dive boat with a wide beam. Make a list of the amenities your ideal dive shop would have and start narrowing down your list.

In the end, you may need to simply call or visit the dive shop to make a final decision. Ask questions, and make mental notes of how helpful the responses you receive are. Does the staff seem enthusiastic about their local diving? How experienced are they?

How to Choose a Dive Shop for Your Scuba Certification

First off, don't let the cost of certification be the deciding factor. A reputable dive shop with an experienced staff focused on your comfort and safety is paramount. If you can't afford to go with a highly-recommended shop, contact the business. They may have seasonal specials, or offer a discount if you can take the place of a last-minute cancellation.

You should also know that a cheap scuba class... probably isn't. You may need to spend additional money for:

- Student materials (online training, books)
- Rental gear
- A certification fee
- Mask, fins and a snorkel
- Just be sure to find out everything you need to pay for the full course fees.

Other things to ask your dive shop about include: class size, what fees (if any) are incurred if you need to reschedule a training session, and where in-water training takes place. If you are on a tight timeline, have any medical issues, or have a student diver under the age of 15, let the dive centre know.

If you visit the dive shop, ask about the equipment you'll be using for certification. You can also inquire about the instructor's credentials and verify s/he is in good standing on PADI's website. The staff should be helpful and make you feel welcome.

When to Walk Away

In some circumstances, it's just better to move on to the next shop if:

- The rental gear is not well-maintained.
- The staff is unenthusiastic about their local dive sites.
- One of their divers tells you about a bad experience.
- You just have a bad feeling.

An easy way to find a great dive shop is to simply visit PADI's Dive Shop locator at <https://locator.padi.com>.

PADI Retailers and Resorts operate in more than 150 countries around the world and each one must adhere to PADI standards.

Just as scuba divers must earn PADI certifications, PADI Retail and Resort Members earn the right to fly the PADI flag. Dive centres that fail to adhere to our standards have their credentials revoked.

Dive operators that go above and beyond are awarded Five Star status and may receive additional recognition as an Instructor Development Center. Green Star and 100% AWARE businesses have demonstrated a commitment to protecting the environment. 

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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Coffs Coast

Dramatic underwater scenes make the Coffs Coast an ideal short break.



By Melissa Rimac



Along the Coffs Coast, thickly forested mountains nudge the sea, startlingly white-sand beaches are blissfully uncrowded, and the hyper-green rainforests and rural vistas are speckled with clear creeks and waterholes.

It's an Eden-like landscape that widens the eyes underwater also.

The Solitary Islands Marine Park is protected by 'Sanctuary' zones, resulting in prolific fish life - everything from too-cute clown fish and angel fish to blue gropers and hulking wrasse and large clusters of grey nurse sharks - along with plenty of pelagic action.

Stretching out along a section of the NSW mid-north coast where mountains nudge fetchingly close to the ocean and almost midway between Sydney and Brisbane, this subtropical region makes for a rewarding stop if you're driving between the two capitals. If you're a Sydney or Newcastle resident, you can get there before lunchtime if you set off early.

Situated such that it presents a confluence of tropical northern and subtropical southern species, the region has become a favourite long-weekend escape.

When I recently learned that Jetty Dive Centre now offers whale-swim trips, I organised a Coffs getaway pronto. The half-day whale-swim trips run from June to the end of October and typically, swimmers are treated with multiple whales swimming very close by.

We arrived just as pesky winds set in. But

never mind, this gave us the opportunity to explore some of Coffs' long, white northern beaches. Ours were the only footsteps on pandanus-fringed Sapphire Beach.

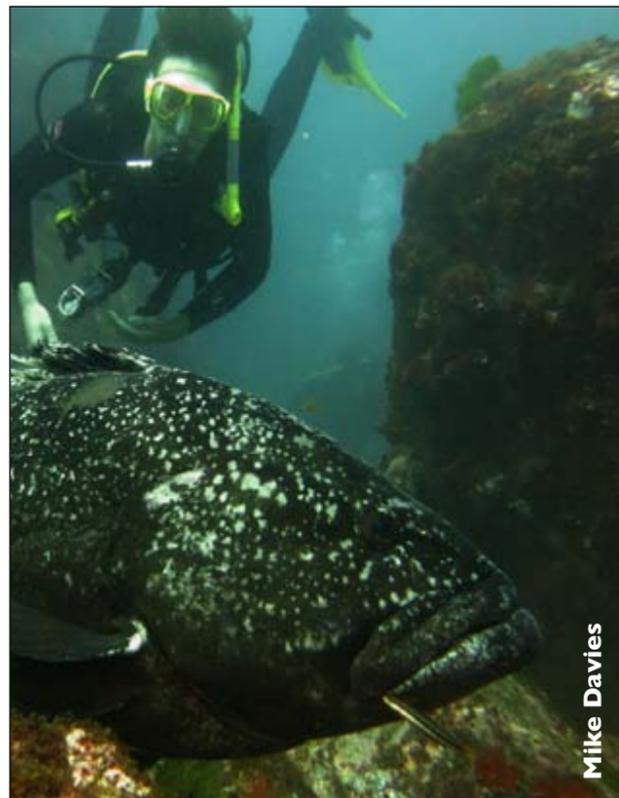
Walking up onto the headland, we spotted whales breaching and slapping their tails quite close to shore. This went on for ages and at one stage, there were two whales captivating us with their antics.

Another northern headland that offers spectacular views - along with kangaroos - is Look At Me Now headland.

Having time to chill out before getting in the water gave us a chance to relax and enjoy our homely oceanfront abode, The Breakfree Aanuka Beach Resort.

Set on a beach that's the perfect length for a morning run or power-walk before the hearty buffet breakfast, the resort is nestled into lush tropical gardens and provides a habitat for curious wildlife such as water dragons, bush turkeys and black cockatoos which fly almost startlingly close overhead.

At night, we lap up a drink and dinner whilst



Mike Davies



Mike Davies



Mike Davies



PEOPLE + COMMUNITY

Promote local dive education and infrastructure to ensure prosperity and growth in global dive communities.



HEALING + WELLNESS

Share stories in which diving leads to personal transformation, so that as we help heal the world externally, we heal internally as well.



OCEAN HEALTH

Take action and support global efforts that affect all divers, making sure that we have a healthy ocean. Key issues: Marine Debris, Marine Protected Areas.



MARINE ANIMAL PROTECTION

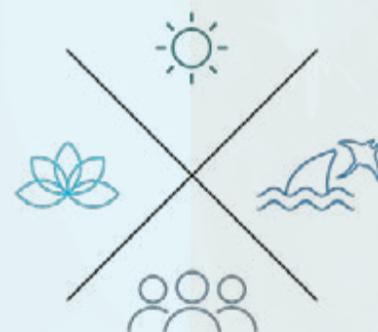
Protect marine life biodiversity by supporting organisations that work to implement protection laws, enact legislation and educate the public. Key issues: Shark and Ray Protection, Marine Entanglement, Sustainable Fishing.

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The Way the World Learns to Dive®

By Melissa Rimac

reclined on outdoor couches beside a fire. The soothing soundtrack of smashing waves is ever-present.

Happily the wind eased and we received a call to let us know that the whale – swim was on.

After selecting wetsuits and snorkelling equipment, we reached whales not far from the coast.

The boat is large and comfortable, with soft edges that enable a smooth, short slide into the water.

Our first swim had us in close proximity to 4 whales. The wind had churned up the water, but it was easy to imagine how magical the scenes would be given favourable visibility.

Our second immersion saw the whales swimming even closer to us – seemingly less than 10 metres away.

They made a lot of noise with their singing and blowing and arching out of the water. At one point we had more than 6 whales quite close around us, with one very curious whale swimming right underneath.

It's a giddy high to be out in the ocean surrounded by some of the largest creatures on earth, yet it felt so safe and comfortable. Although the crew are very professional in ensuring that protocols such as sticking together as a group in the water are followed, they're affable and relaxed.

The whale-swims are entirely weather – dependant and also subject to the whims of the whales. It's up to the whales to approach the swimmers – they usually do and crew have a sense of which whales may be curious – and swimmers need to keep still and allow the whales to approach, should they be so inclined.

Guidelines were emailed to us when we booked the trip; an encouraging change from other marine – life encounters where animals are chased and people splash about randomly.

We were hoping to repeat the whale – induced adrenaline rush the next day but the wind scuttled that idea, along with hopes for

an afternoon dive.

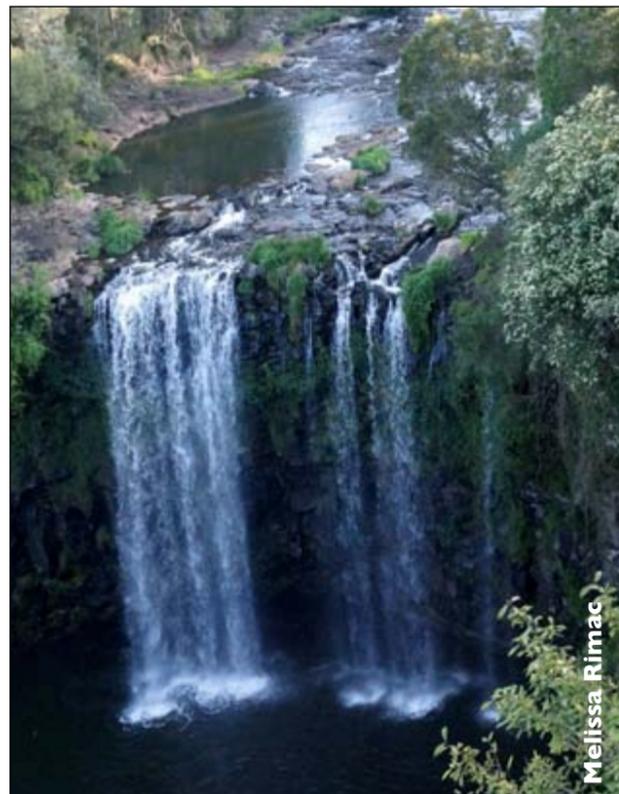
On previous dives here, we've been treated to an underwater feast for the eyes. A return trip has already been pencilled in for the early months of the new year, when there's a good chance of seeing manta rays. Leopard sharks, and increasingly, hammerheads also emerge when the water temperature climbs to 23-24 degrees.

January and February is also a great time here for non- diving companions. The Jetty Dive snorkelling trips head out regularly at this time of year to the spectacular Solitary Islands, rewarding with sightings of turtles, oodles of clownfish and dorys galore.

Snorkellers may see Grey Nurse sharks in about 10m of water if the visibility is good, especially towards September – October, when they move into shallower water.

In June – July, divers have floated amongst up to 80 Grey Nurse sharks. They're around all year but move into the shallow water in the cooler months.

Giant cuttlefish make an appearance and



Melissa Rimac



Mike Davies



Mike Davies

By Melissa Rimac

mesmerise with their mating dances during the winter months.

May to October is a prime time here for shark fans, with divers regularly admiring groups of up to 20-30 Grey Nurse sharks. In the caves and rock overhangs, black cod - a vulnerable relative of the Queensland Groper - make a year round home for themselves.

The Solitary Islands are also popular with Loggerhead, Green and Hawksbill turtles. Barney - named for her cloak of barnicles - is a resident loggerhead turtle who seeks out selfies with divers. When the Humpbacks make their way back to the Antarctic, whale songs are often heard by divers.

The 20- plus Solitary Island dive sites are extremely varied and most are reached in about half an hour.

Manta Arch has a topography that encourages close encounters with the Grey Nurse sharks. The diving depth here ranges from 22-28 metres and you're likely to see



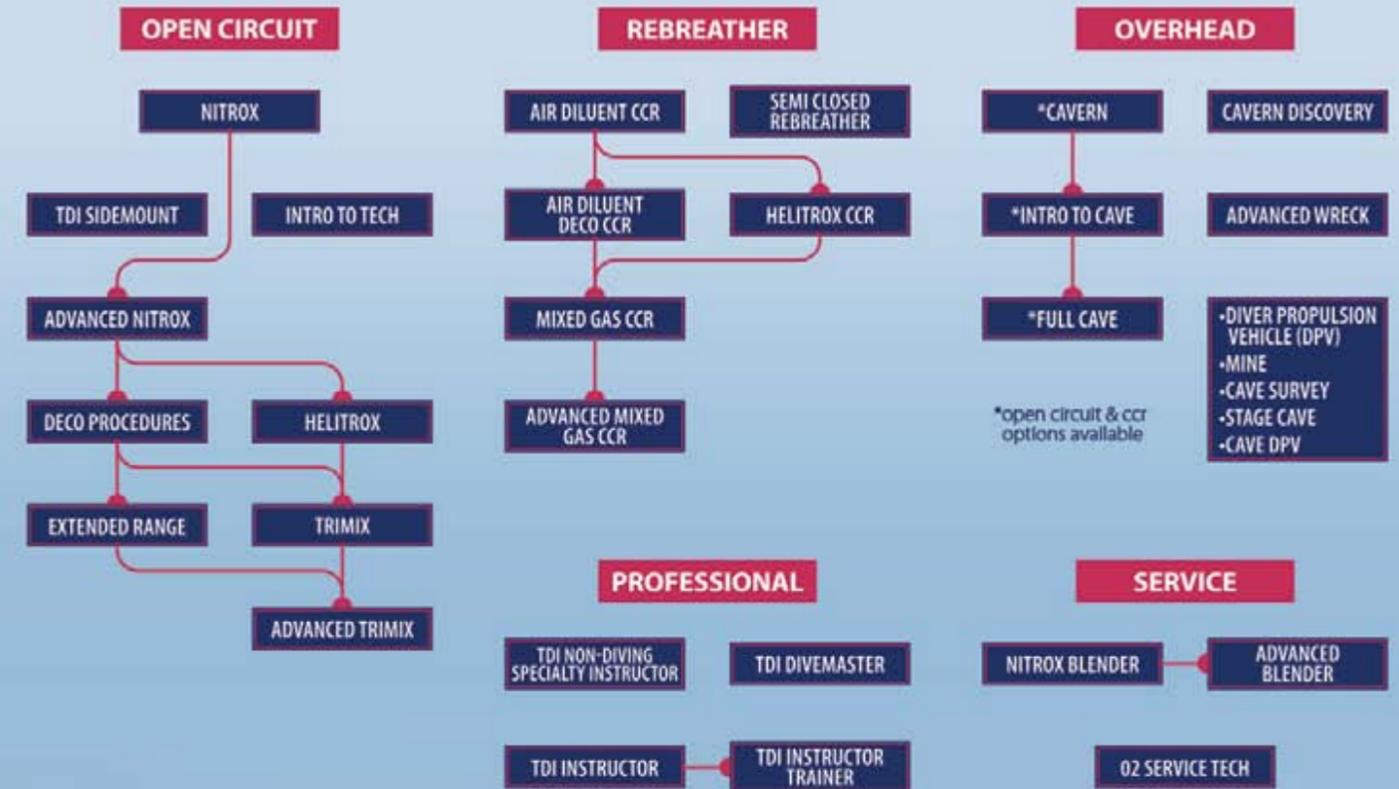
Mike Davies



Melissa Rimac



Tech Divers Trained Here



anything from the namesake mantas to nudibranchs.

Cleaning Station and Shark Gutters – depth 8 to 18 metres – regales with curtains of fish, swim throughs and caves and frequent black cod encounters amidst tropical fish. Drift Diving from Shark Gutters to The Gantry involves moving along a wall that attracts Turtles and Eagle Rays.

The Solitary Islands Marine Park is home to the east coast's southernmost prolific growth of corals, ranging from large plate corals to smaller branch types. The colours are earthy and they haven't been affected by bleaching events.

Whilst the dive sites and whale –swims are privy to ocean conditions, extremely contented days on land can be spent exploring the voluptuous scenery.

South of Coffs Harbour stretch a series of empty beaches fringed with the sort of settlements I thought had long disappeared from Australia's east coast.

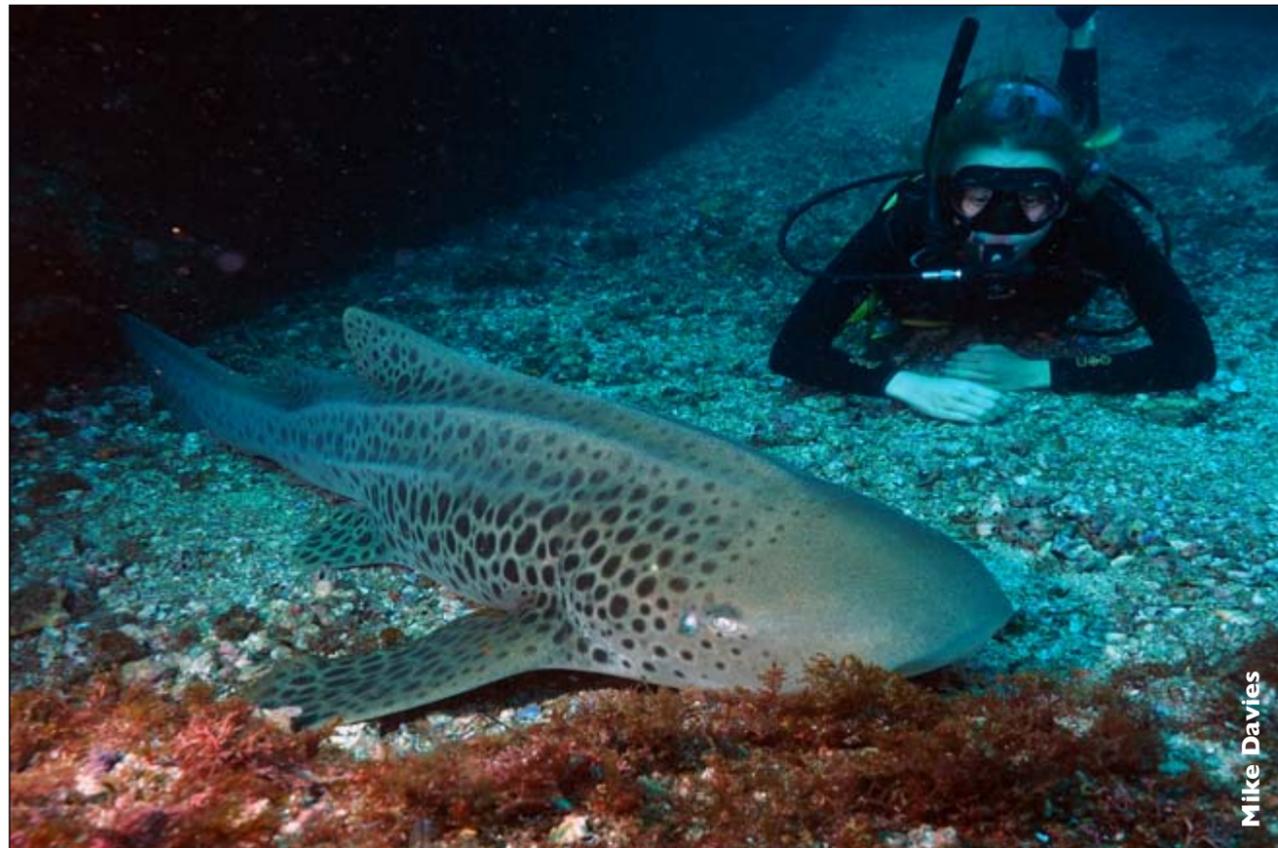
The sophisticated village of Sawtell is distinctive for the huge splaying fig trees that shade an enticing range of eateries and galleries.

Towards the south of Sawtell Beach, high tide creates deep gem- coloured swimming holes. Fish, cormorants and rays congregate here, so it's a good idea to bring a snorkel and mask.

A little further south, we drive through rural scenes to reach the sleepy, picturesque settlement of Mylestom. Here, the mountains-meets-ocean vistas that characterise the Coffs Coast are especially impressive.

Tucked away Tuckers Rocks has become another favourite. Reached by a road tunnelled by flooded gums, Tuckers Rocks is the sort of place where it doesn't matter if you've forgotten your swimmers.

Hungry Head Beach- a boundless unfurling of golden sand and sparkling water- also conjures the intoxicating sense of having an



Mike Davies

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entire beach to yourself.

Boasting numerous waterfalls that cascade into tempting pools, the road that coils from the coast towards the misted ranges that form Coffs Coast hinterland is aptly called Waterfall Way.

At the base of densely rain-forested mountains, the arty-chic historic village of Bellingen offers plenty of reasons to pause.

Surrounded by glowing green pastures, 'Bello' has a fetching bohemian vibe, a weekly market and enough atmospheric eateries and alluring galleries to fill an entire day.

By night, acclaimed bands play at intimate venues.

The World Heritage-listed Gondwana forests of Dorrigo National Park can be accessed by uncrowded walks; Crystal Shower Falls and the elevated Walk with the Birds boardwalk are just two of many splendid wilderness immersions involving minimal exertion.

A patchwork of forests and neon lime valleys rolls out as we drive from the time-frozen town of Dorrigo towards pretty villages of Cascade, Coramba and Lowanna.

Scattered throughout these foothills are the photogenic remnants of a timber-getting, gold-seeking heyday.

It's wonderful to get in the water here too - by wallowing in the rainforest- shrouded, crystalline waters of numerous swimming holes in the Orara Valley.

Escape Routes

Getting there: As well as the steadily - improving Pacific Highway, Coffs Harbour is connected by regular flights from Sydney, Brisbane and Melbourne.

Atmospheric Lodgings: Although close to town, the homely Aanuka Beach Resort has a far-flung vibe. www.aanukabeachresort.com.au

Whale -swims and Dive -trips: www.jettydive.com.au



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Devil Firefish

Opulent, dramatic and often obligingly posing for photographs, the spectacular devil firefish (*Scorpaenidea Pterois Miles*) is often the first undersea creature that a new diver remembers and can recognise.

Hovering over the sand in a sheltered part of the reef, these guys are nocturnal, hunting at night and resting up during the day. Their poisonous spines protect them from predators, and their brilliant and bizarre colouring helps camouflage them against the reef.

They are often incorrectly called lionfish (*Pterois volitans*), but in fact the lionfish is native to the Atlantic, while the devil firefish makes its home on the East African Coast and in the Indian Ocean. Both species occur in parts of the Indo-Pacific.

The difference is in the number of spines and the shape of the face. The lionfish has appendages around the mouth and they have 11 dorsal fins and seven anal fins. The devil firefish has 10 dorsal fins and six anal fins. The average diver can certainly be forgiven for confusing the names – after all who is going to count spines when you could be looking at the brilliant undersea world?

There are several species of devil firefish, but the most found is the *Pterois Miles* or

winged sailor.

The spines of the devil firefish are venomous and a sting can be extremely unpleasant if not treated immediately with a protein poison antidote like acid or heat. Symptoms can include intense pain, throbbing or blistering, although I was once stung by one through the knee of my wetsuit and felt no ill effects at all – perhaps the venom was dispersed into the lycra. Different people have reported headaches, vomiting and breathing difficulties and even loss of consciousness.

Because of their venomous spines they tend to out-breed other species in areas under pressure, and there is concern that the numbers of these creatures is growing where there has been overfishing.

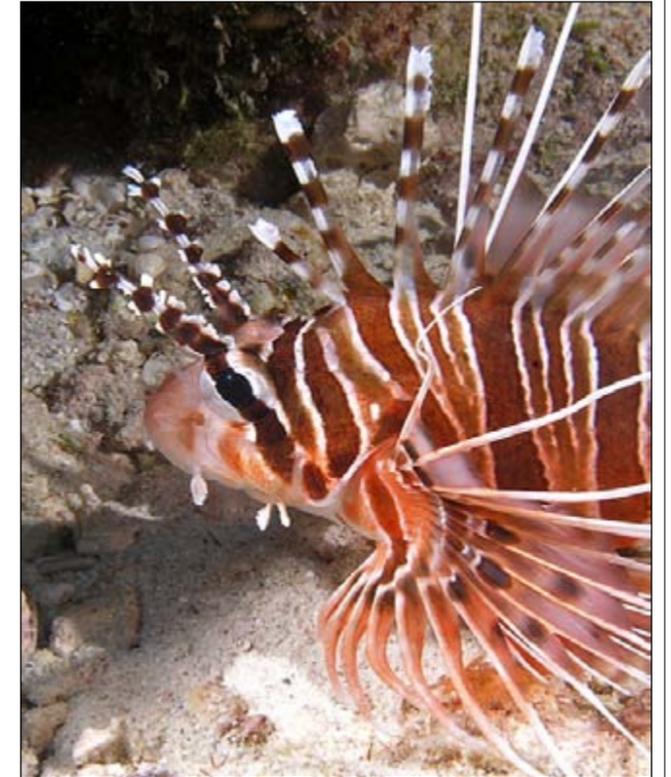
They have a varied diet and a voracious appetite, eating small crustaceans and fish, sometimes herding fishes with their spectacular wing-like pectoral fins and then engulfing the prey with their huge mouths. Watching them hunt is incredibly rewarding. I have seen them sucking in

water through their mouths and blowing it across the reef, hunting for crustaceans that might be buried beneath the sand.

Male lionfish are fiercely territorial, and will defend their territory against other species and other lion fish – and even divers. They raise their poisonous fins and thrust them forward ferociously, and it takes a lot of courage not to back off and steer well clear of them in this mode.

When they are ready to mate, the females become almost bridal pale in appearance and the male darkens with lust. A single male will have a harem of three or four females. As soon as the female is ready to mate she rises in the water, hotly pursued by the randy male. Near the surface the female releases her eggs and the male spreads his sperm. Then they revert to normal colour and sink back down to the reef. Between 3 000 and 30 000 eggs are dispersed and fertilised. The young larvae hatch after 36 hours, and they begin to feed immediately on microscopic organisms, growing to 1cm after 36 hours. From there their growth rate is rapid, possibly to avoid predation.

They appear to be relatively safe from predation, although some have been found in the bellies of sharks. Possibly the sharks are immune to their poison. ◀



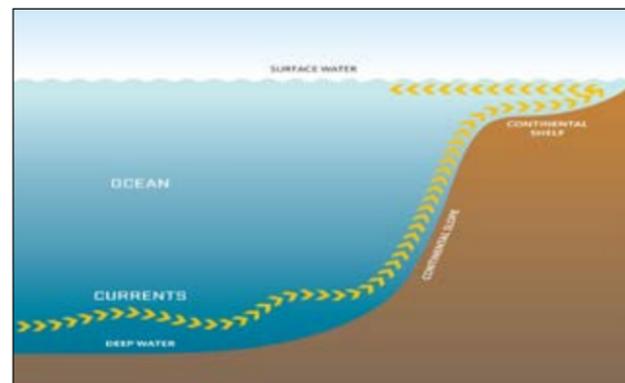
The Continental Shelf



As you may have learned earlier, the neritic zone consists of the water between the low-tide mark and the edge of the continental shelf. This zone can range from only a few to several hundred kilometres in width.

It is a significant marine ecosystem as it is the most biologically productive region in the ocean, and one of the zones in which we do a lot of diving.

The continental shelf depth seldom exceeds 200m. This tends to keep nutrients in the shallow, photic zone



and helps retain heat from the sun.

By being near the shoreline, in many regions the neritic zone also benefits from nutrients in river runoff.

Nutrients rising with currents from deep water at the shelf edges also make this zone biologically rich.

All of these factors combine to make coastal ocean ecosystems highly productive, as well as excellent dive sites.

Upwelling

Upwelling plays a significant role in the biological productivity of coastal ocean ecosystems.

This is because upwelling brings nutrients from deep water to shallow, more productive depths.

This is especially significant with respect to nutrients that sink to the relatively less productive bottom in the

deep ocean abyssal zone.

Wind causes upwelling by creating a current that pushes surface water near shore out to sea or down the coast. As the surface water flows away, deeper water flows up to replace it, bringing with it nutrients.

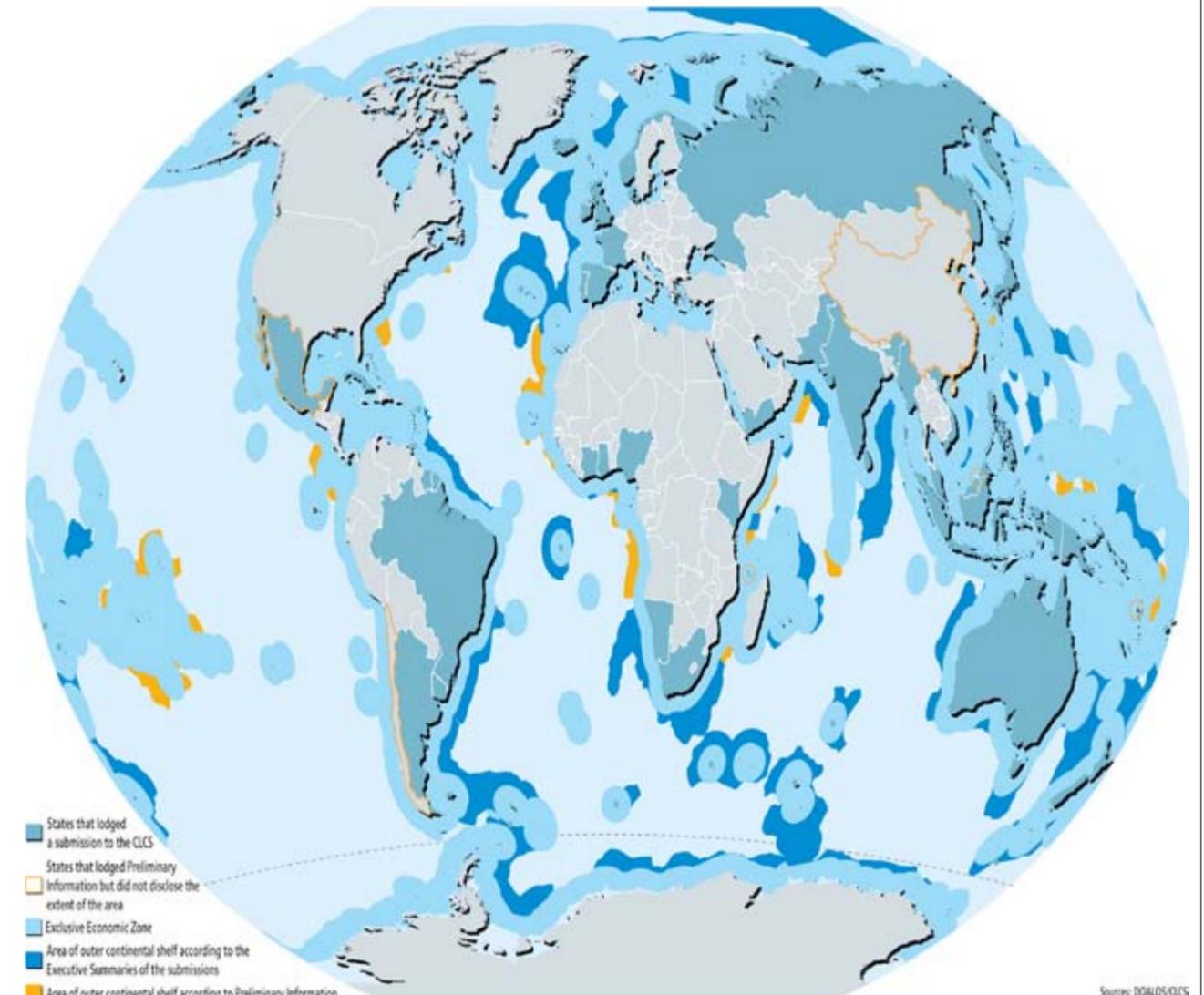
In most areas, you'll readily notice an upwelling when it's happening.

If the upwelling has just started, conditions are typically clear and cool. Sometimes you will see signs of related biological activity, such as schools of feeding baitfish.

A few days after an upwelling, the visibility often drops due to increased plankton growth from the nutrients in the water.

The role of upwelling is unmistakable because areas with the highest upwelling activity also have the highest nutrient levels, and generally, the higher productivity.

Examples include the waters offshore of Peru, the Bering Sea, the Grand Banks in the Atlantic and the deep water surrounding Antarctica. ◀





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"The reef systems here are some of the most pristine I have seen anywhere in my dive travels around the globe, and Wakatobi resort and liveaboard are second to none. The diversity of species here is brilliant if you love photography." ~ Simon Bowen



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Plastic in our Seas

Plastic in the ocean could be breaking down faster than we initially thought! It's estimated that as much as 10% of the all the plastic produced every year ends up in our oceans. The United Nations estimates that for every square kilometre of ocean there are 46 000 pieces of plastic, killing over a million sea birds and tens of thousands of mammals and turtles every year.

Traditional thinking has been that this plastic then continues to cause havoc for hundreds of years, gathering in areas like the Great Pacific Garbage Patch, also known as the Pacific Trash Vortex.

The Pacific Trash Vortex, discovered in 1997 by a Californian sailor, surfer and volunteer environmentalist, Charles Moore, is a large garbage patch of plastic stretching several thousands of kilometres created by Pacific Ocean currents. The currents have caused the plastic to gather in an area of no currents, called a gyre. Although scientists are unable to agree on the actual size of this plastic marine island – some estimate that it could be the size of Texas while others say it could be larger – the damage to sea life by this plastic death trap can only be imagined.

Initially it was thought that this large plastic rubbish heap was caused by shipping fleets that crisscross our oceans on a daily basis. Although the estimated 639 000 plastic containers thrown overboard everyday do contribute to this

gathering death trap, this only represents 20% of the overall plastic pollution that flows into our seas, with the other 80% originating from land sources.

As if one of these plastic islands of trash was not enough, our planet has five other oceanic gyres where currents can trap garbage, causing similar plastic islands. We are already aware of a similar island occurring in the Atlantic Ocean, aptly named the Atlantic Garbage Patch, but who knows how many of the other gyres host similar marine life death traps.

The actual damage these Garbage Vortices cause to marine life will continue to be studied for many years, but now new evidence shows that plastic causes another danger to everything that calls the sea their home.

Plastic could be decomposing faster than we thought

A recent study headed up by Katsuhiko Saïdo, a chemist with the College of

Pharmacy at Nihon University in Japan, has shown that some of these plastics could actually be decomposing in the sea, releasing potentially toxic chemicals into the habitat of all our marine life.

Scientists previously believed that plastics only broke down at very high temperatures and over hundreds of years. Saïdo's team, however, collected water samples from oceans across the globe and found that these samples contained derivatives of polystyrene, a common plastic used in disposable cutlery, styrofoam and DVD cases amongst other things.

To prove that there was a link between these toxic compounds and plastic, Saïdo's team were able to simulate plastic decomposition at 30°C, leaving bisphenol A (BPA) and PS oligomers in the water, the same compounds discovered in the ocean samples. These compounds are not naturally found in ocean water.

Finding BPA specifically in the water is a major concern as previous studies have shown that exposure to this compound can have an effect on an animal's hormone system. If an animal eats plastic, the plastic will not break down in the animal's system, but when the substance has been released into the animal's natural environment the substance may be absorbed by the animal. What effect this could have on animal's reproduction systems or ability to fight disease is anyone's guess.

Where does this leave our marine animals?

We previously thought that only actual plastic floating in the ocean could harm marine animals. Marine life is not always able to distinguish plastic from normal food and will often swallow your plastic bottle, take-away burger box or supermarket plastic packet (one of the trillion plastic packets produced every year).

This new research means that there are additional unseen dangers being created by the plastic we discard daily. Some scientists have questioned Saïdo's research, saying that 70% of plastic released into the oceans will probably sink before it decomposes and that not enough is known about whether the doses of BPA in the ocean will have any noticeable effects on the marine life we enjoy watching while diving at 25m.

The larger concern is that not enough research is being done on the overall effects our continued disposal of plastics is having on our marine life.

We know they are being affected to some extent, we know there are already many species on the brink of extinction, yet we continue, as the supposedly intelligent species, to use and dispose of millions of tons of plastic into our precious oceans. Plastic is not killing our marine life, we are. 



Dealing with Motion Sickness

Movement is an integral part of all the daily activities of the Homo Sapiens specie. For successful navigation of our everyday maze, it is important to be able to define the body's position and movement in three dimensions

The major components of this GPS are the vestibular apparatus in the inner ear, vision and specialised nerve-endings (proprioceptors), located in the skin, joints, muscles and ligaments.

The information derived from these various organs and structures is processed and integrated by a part of the brain known as the cerebellum.

From the cerebellum impulses are sent to various other components of the brain involved in the regulation and modulation of physical movement.

The structure intimately involved in motion sickness is the vestibular apparatus. This organ consists of millions of hair-like structures floating in a liquid substance (endolymph) in semi-circular channels of the inner ear.

Excessive stimulation of these hair-like structures of the vestibular apparatus by

abnormal movement of the head is what ultimately leads to the onset of nausea and/or vomiting.

The excessive stimulations of the vestibular apparatus leads to activation of other areas in the brain (which is closely linked to this GPS), which produce the unwanted manifestations of motion sickness.

This is also the reason why certain smells (such as fumes from an outboard motor) and sights (such as seeing your dive buddy donating his breakfast to the marine life) may trigger or compound the problem.

Signal derived from the eyes, may in some cases, have a stabilising effect. Fixing your eyes on the land (your only place of refuge at that point) may negate some of the effects.

This is because the input of the eyes to the cerebellum brings a false sense of stability to the sea of abnormal stimulation.

Obviously, each individual is different in his/her susceptibility to the abnormal stimulation of the vestibular apparatus leading to motion sickness.

Some individuals have congenital (in-born) sea legs, some only acquire these after sweating through a few unpleasant episodes and an unfortunate few may never develop this attribute

A few practical tips on avoiding the so-called 'Vomit Comet Syndrome':

1. Delay breakfast (especially a large one) until after the dive.
2. Avoid food and drink that delay emptying of the stomach (such as coffee).
3. Steer clear of food producing flatulence.
4. Excessive alcohol intake the night before and the resulting hangover may increase

your likelihood of contracting this unwanted state of health.

5. Manage your anxiety (especially relevant to your first few dives).

6. Sit wind up from the fumes of the outboard motor.

7. Try sitting in the middle of the boat (the area of least movement).

8. Focus on land if you feel the onset of the first symptoms starting.

9. Get in the water as quickly as possible after kitting up (although some divers even experience motion sickness in the water).

10. If all else fail, medicate. A number of over-the-counter drugs are available to combat motion sickness, such as Valoid, Trans-dermal and Hyoscine. 



Global News

MALAYSIA INTERNATIONAL DIVE EXPO (MIDE) 2019

Established in 2006, MIDE's year-on-year growth continues to contribute significantly to the dive industry in Malaysia and the surrounding region.

With another successful year in 2018, we are pleased to inform you that the Malaysia International Dive Expo (MIDE) 2019 will be held from 3 - 5 May 2019 at Dewan Tun Razak Hall 1, Jalan Rahmat, Putra World Trade Centre, Kuala Lumpur.

ATTENDANCE - MIDE2018 concluded with 10,536 visitors from 54 countries. We successfully brought together a total of 1034 exhibitors from around the world, and featured more than 1000 brands and generated RM7.45mil in sales.



TRACK RECORD - MIDE holds a solid record of visitors to the expo with approximately 145,000 visitors between 2006 and 2018, averaging minimum of 10,000 visitors yearly.

BUSINESS OPPORTUNITY - MIDE 2019 is set to welcome even more visitors, business entrepreneurs, tourism boards, dive agencies, brand manufacturers and distributors to utilize the platform we have created and designed in order to meet the highest expectations of both our visitors and every exhibitor.

SEAL THE DEAL - The expo is known as the hub for dive education, the purchase of dive equipment, courses and dive holidays. The anticipated sales turnover for 2019 is RM10 million.

There is no doubt MIDE continues to deliver significant growth in revenue for participating companies, which in turns encourage a positive and healthy economic growth in dive tourism.

TO EXHIBIT - MIDE warmly welcomes all dive business entrepreneurs and dive enthusiasts to be part of the "HOTTEST & COOLEST DIVE EXPO".

For more information, please visit www.mide.com.my or contact us at info@mide.com.my



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A Force for Good - PADI's Pillars of Change

"There are so many significant problems facing mankind, but as divers this is truly our cause. If scuba divers do not take an active role in preserving the aquatic realm, who will?" John Cronin, PADI Co-Founder.

Throughout its deep history, PADI has demonstrated a longstanding commitment to environmental conservation through its course offerings and alignment with organisations, such as the Project AWARE Foundation, to protect and preserve our ocean planet. Committed to safety through leading-edge diver education, PADI changes lives in deep and meaningful ways, uniting diver voices to speak for those that cannot – the fragile, threatened inhabitants of our oceans. Over time, this commitment has become an integral part of the PADI ethos. To be the best in the world, we all must be the best for the world by protecting the ocean planet we love.

PADI resolves to build a deeper purpose throughout the growing PADI network of nearly 25 million divers and dive professionals worldwide.

"The PADI organisation is committed to acting as a force for good," says PADI President and CEO Drew Richardson. "We're privileged to have a strong legacy to inspire us. By empowering divers and connecting them to the PADI family and global issues relevant to our industry, we can help people make the world better and be an even more powerful catalyst for change."

PADI's Pillars of Change

PADI is committed to supporting social and environmental efforts through its Pillars of Change, designed to empower divers with information to get involved with causes they care about in tangible ways. While remaining dedicated to safe and responsible diver education, PADI aims to make a significant impact on key issues facing the dive industry – and the entire planet.

Ocean Health: A healthy ocean is critical for humanity as a whole. PADI is taking steps to help manage this vital resource and how divers can be part of solutions that impact the health of our water planet. Issues PADI is focused on include; Combating Marine Debris and Plastic Pollution, Establishing Marine Protected Areas, Coral Reef Recovery and Restoration.

Marine Animal Protection: Earth's oceans contain nearly 200,000 identified species, but actual numbers may be in the millions. Protecting marine life biodiversity is critical to their survival and ours. By supporting organisations that work to implement protection laws, enact legislation and educate the public, PADI hopes to help establish balance in our aquatic ecosystems. Issues PADI is focused on include; Protection of Sharks and Rays, Ghost Fishing Gear Removal, Sustainable Dive Tourism.

People & Community: By providing more educational opportunities for people around the world to become PADI Professionals, and in turn teach the world to safely explore underwater, PADI can help foster prosperity, growth and a sustainability mindset in dive communities around the world.

Healing & Wellness: Many people have found hope for their futures through their journeys of becoming divers. PADI aims to help others find similar personal transformation and healing, both mentally and physically, through PADI's Adaptive Techniques Specialty course, as well as access to information platforms and stories of triumph over adversity, illness and hardships that testify to diving's healing power.

With more than 6,500 PADI Dive Centres and Resorts, 135,000 PADI Professionals and nearly 25 million divers around the world, the PADI network is a force for good with tremendous human potential to make an impact on critical social and environmental issues. PADI is dedicated to bringing the conversation to the forefront, and inspire actions that lead to a stronger global dive community and healthier ocean planet.

For more information or to get involved visit www.padi.com or your local PADI Dive Shop. 



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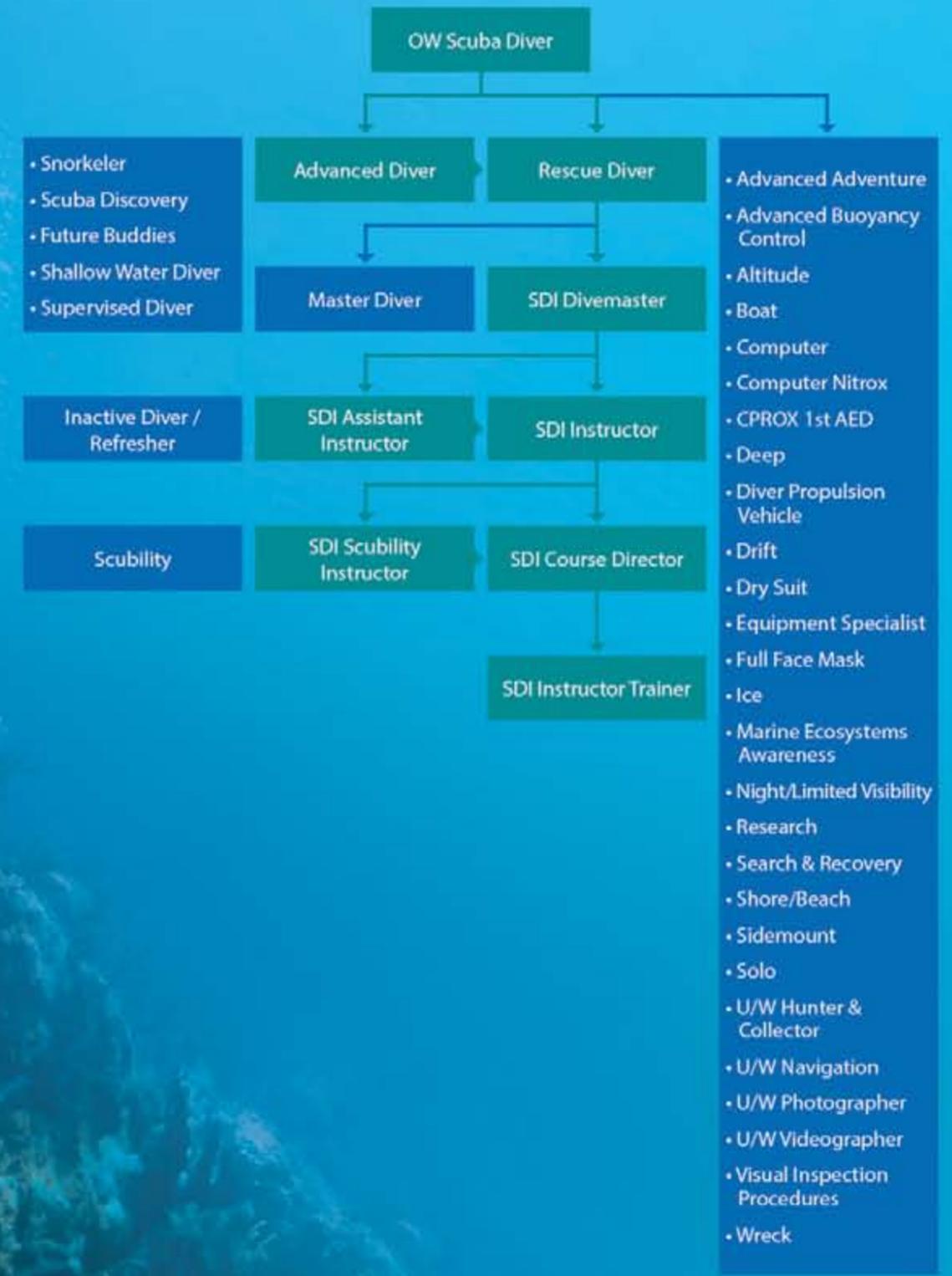
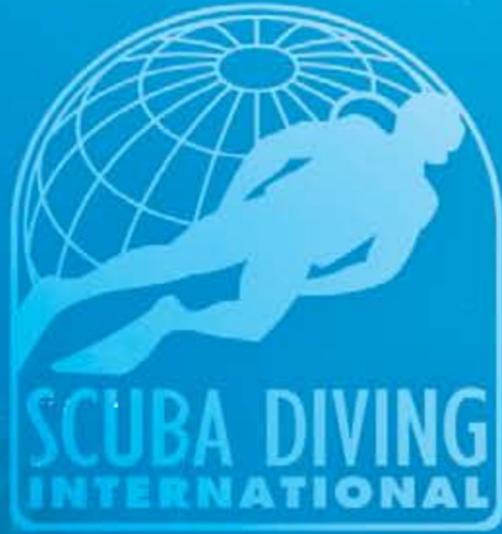
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Micronesian Island Fever

The world of diving ends beyond Palau. Or maybe not? Located some hundred miles to the east in the open Pacific, Yap is an oasis to a big population of mantas and sharks. Even on the topside, 'diving' is the thing to do – namely diving into the traditional culture of Micronesia and enchanted realms with giant stone money, ancient stone trails and village communities that still abound with folklore and myths.



"Snow White was there again!" Halfway up the ladder, Carolyn Jenson has a smile all over her face while some buddies are scratching their head with that troubled look.

Thanks to Gordon, our guide, we know better by now. "Snow White" is not your average product of nitrogen narcosis – Goofnuw Channel is too shallow anyway – actually she is one of the few white mantas ever reported. That sunny day in January, the gracious beauty of a ray is joined by five males to kick off mating season.

As is often the case, there are a few rules learned beforehand that turn a brief encounter into a spectacle never ever to be forgotten: everybody takes a seat on the sandy bottom, stops moving and concentrates on breathing slowly.

After a stop by the cleaning station the first manta approaches the group of divers and covers the sun over them like a giant umbrella. Hovering only a metre on top of them, this 'flying carpet' obviously enjoys the Jacuzzi from the divers' tiny air bubbles. For more than two minutes it does not seem to move at all as if time is standing still.

Over the years, more than 100 different mantas have been recorded by the Manta Ray Bay Resort/Yap Divers staff in Yap, which, since 2009, was the first manta ray sanctuary in the world.

And the quest is still ongoing: "If somebody finds a new one we have not recorded yet, they can give it a name," says dive centre manager Jan Sledsens. "If you have booked our manta guarantee package, and if you don't see one in twelve dives, we will refund you for your diving," he continues. Still, if you 'only' stick to the cleaning stations you will miss the steep walls meeting the abyss, the critters in the inner reef, the caverns and the deep indigo of the Pacific on the Eastern side of the island, where viz exceeds 130 feet many times.

And this is all without mentioning those guys with the pointed teeth. As we still attach to the mooring buoy of the divespot Vertigo the next day, the first black-tip reef shark starts circling the boat with solid expectations. Arriving on the reef plateau at 8m we already find four of them, and a

single look over the wall makes sure that the grey reef sharks have realised that they have company.

Shark diving couldn't be easier: at a depth of 12m, everybody is offered a seat on the coral floor torn down by the waves in this place. With a perfect view of the natural arena with a good amount of twenty sharks gliding over a 100m deep bottom, it is remarkably different from South African shark spots such as Aliwal Shoal or Protea Banks.

Video guys and photographers alike should not miss out on a shark feed. Every once in a while, silver-tips or the occasional hammerhead joins in. In the words of German underwater photographer, Frank Schneider, after his first dive there, "How's your flash card?" he says chuckling, "Mine is bursting with 379 shots."

Apart from mantas and sharks, schooling humphead parrotfish, turtles, eagle and sting rays, morays, barracudas and numerous other critters inhabit the hard coral gardens, which can be reached in a ten to forty minute ride on one of the



seven solid dive boats. There is also a pod of roughly 50 shy spinner dolphins in the island's south-east, and every once in a while there are surprise encounters with tigers and other oceanic sharks, sunfish and even a family of orcas, which showed up the last two years in September. While Yap is not exactly Lembeh Strait, macro fans will still enjoy the sight of various nudibranchs, black, yellow, white and purple leaffish, white mantis shrimps, ghost pipefish, whip coral crabs and different types of gobies and shrimps in spots such as Slow & Easy, a critter spot located only five minutes from the shore.

The cosy, family-run, 35-room-resort has the pioneering Yap Divers dive centre of the island, under its roof, which itself harbours the Manta Visions photo and video centre and plenty of dry storage room for housings and other equipment. Or, to put it in a nutshell, 16 booths, each equipped with electric looking glasses, a charging station with American and European style sockets and a spacious locker unit. Over the years, pros like Eric Cheng, Marty Snyderman, Andy Sallmon and Bob Halstead visited the Manta Ray Bay Resort as well as many TV



crews, including National Geographic. While there are no docking stations at Manta Visions to catch an immediate glimpse of your pictures, Yap's reputation for 'big stuff' extends to the screening of your images: the restaurant ship beamer screen measures no less than 18 feet and is used for the display of the day's best images and frames virtually every evening at dinner time.

A perfect opportunity to sneak in and connect your notebook while you're waiting for your blackened sashimi... Next August will also see the 5th 'MantaFest' shoot-out/workshop with pros Tim Rock, Frank Schneider and – once again – Marty Snyderman giving lectures and rewarding the winners of prizes sponsored by big names from the industry, such as Mares.

As two-tank dives are most common, the boats are usually back before 2pm, and those not going for a third one have the perfect opportunity to explore the island. Twice a week, Manta Ray Bay Resort offers cultural trips to Kaday, where the village elders explain traditional life in Yap to visitors, who enjoy a colourful and quite impressive dance performance as well as

By Daniel Brinckmann

the taste of betelnut, a slightly narcotic palm tree nut that most of the people on the island chew all day.

However, on its 18km length from north to south, Yap also offers pristine beaches, a plant life reminiscent of the choices available in your favourite garden centre, airplane wrecks and flak units from World War II as well as amazingly big mangrove jungles with a proper green roof just waiting to be discovered by kayak.

And don't mind the women from Yap's outer islands, who still love to do their shopping bare-breasted in the supermarket in Yap's 'capital', Colonia. Not covering their thighs on the other hand would be a no-go in Yap's culture, which to this day has remained unique.

On Rumung, a small isle north to the interconnected island triangle that is Yap's biggest and highest piece of land, people simply decided that they would rather have no tourists around, and thus it is only possible to visit the island in the company of a friend. Not that Yap, with less than 100



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DEEP DOWN YOU WANT THE BEST

By Daniel Brinckmann

hotel rooms and two planes a week is an overcrowded place anyway... "If you visit a place like a beach on your own," my dive guide Gordon says, "Make sure to pick a leaf from one of the trees." This is, he goes on to explain, a symbolic promise that you will behave well and respect the private property. And quite surprisingly, most of Yap's ground is private property.

At least once in a Yap stay, one should be back in the resort by sunset to take part in a special dive. This is when the mandarin fish start their famous mating dances. In less than 5m of water and located almost in walking distance from the dive centre, the submerged orgy often features five to six couples of these fish, which are often referred to as the most beautiful fish with their rainbow-like colours. And eventually, what could be better than to end a great day of diving with a fresh beer on an ancient sailing schooner that is permanently moored as a restaurant ship?

Bill Acker, the owner of Manta Ray Bay Resort and native of Austin, Texas, is proud of his place and probably the one and only micro brewery in the diving world. One that even has hops and malt imported from as far away as the Czech Republic and Germany for its two distinctive brands. While this day's underwater video is shown on the ship's big screen, Bill comes over for a journalist briefing, something he must have done a hundred times.

I learn that the man with the grey moustache who so many divers around the world known as the 'Manta Man', first arrived in Yap as a member of the Peace Corps.

Funnily enough, he only settled on opening a dive resort when one clever soul explained to him that large amounts of sharks and mantas are not your usual dive buddies. His resort is now moving into its 26th year as one of the few privately owned places in the diving industry.

His recipe for success? "Determination," he says, "Also, we have always done our best to improve, building a pool when people kept on asking for one, refurbishing the resort for \$1,4 million bucks four years ago when we felt it was needed, and recently

setting up a spa."

Adventurous stories of shark encounters and big game fishing for marlin on nearby Hunter's Seamount (he also runs deep sea fishing trips from his resort) are traded, and just a heartbeat later he is off home with his wife Patricia, a native of Yap, but not before he waves at the waiter to hand me another brew.

Nice folk... though not as nice as Carolyn, who comes over to my table, still smiling from cheek to cheek over her encounter with 'Snow White' and the sharks. "Isn't life wonderful?" the true Californian blonde beauty says and lets her eyes roam the lagoon's horizon. Yes, at least every once in a while, life is just perfect.

Yap travel information

Yap is located roughly 2 000km east of the Philippines in the Western Pacific. Yap Proper, the main island, is the most pristine destination in the Federated States of Micronesia to be reached on a regular airfare basis.



By Daniel Brinckmann

Getting there:

Fly to Philippines (Manila), or Japan (Osaka, Tokyo, Nagoya). From there, the only operating airline, Star Alliance member Continental Micronesia, offers flights to Yap via Guam. The Continental tickets can be bought through Manta Ray Bay Resort for a special discount fare.

Travellers need a travel passport that is valid for at least half a year.

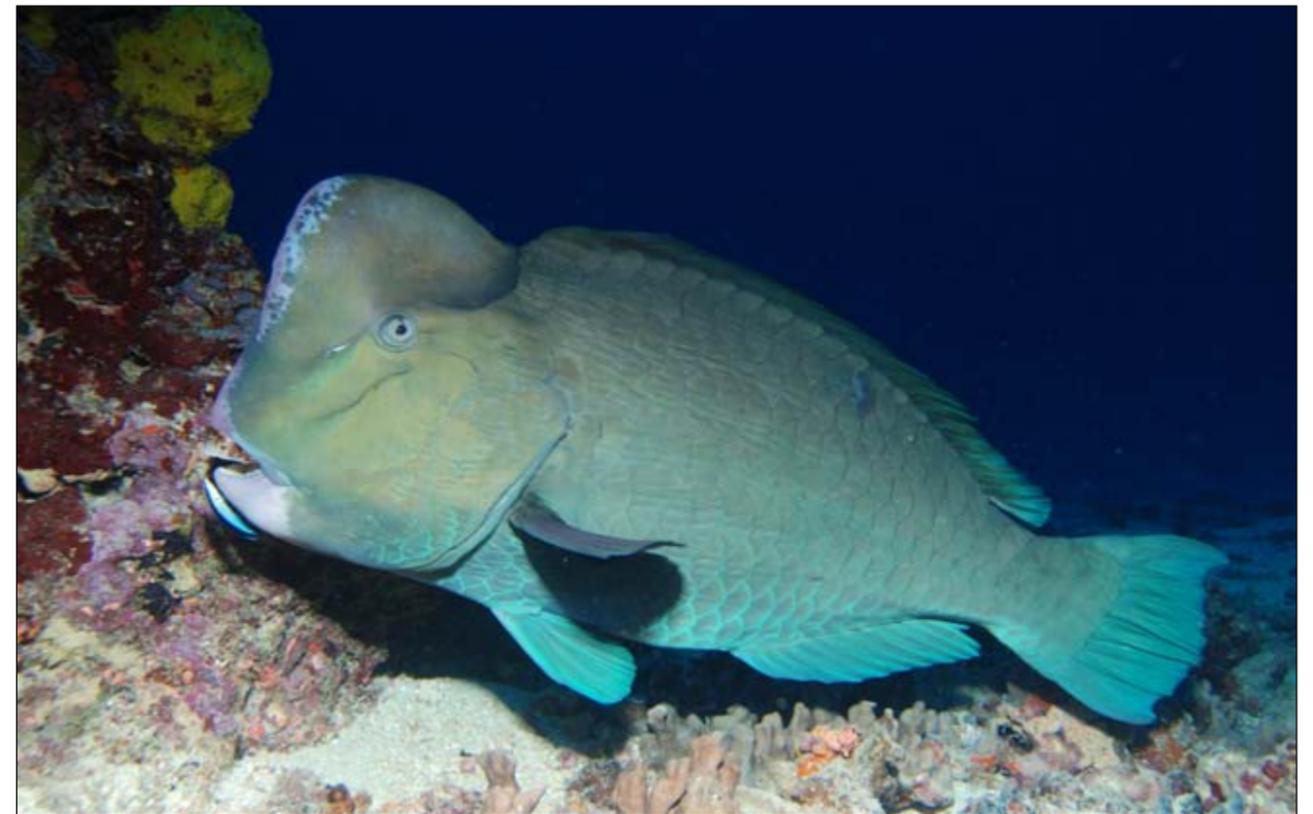
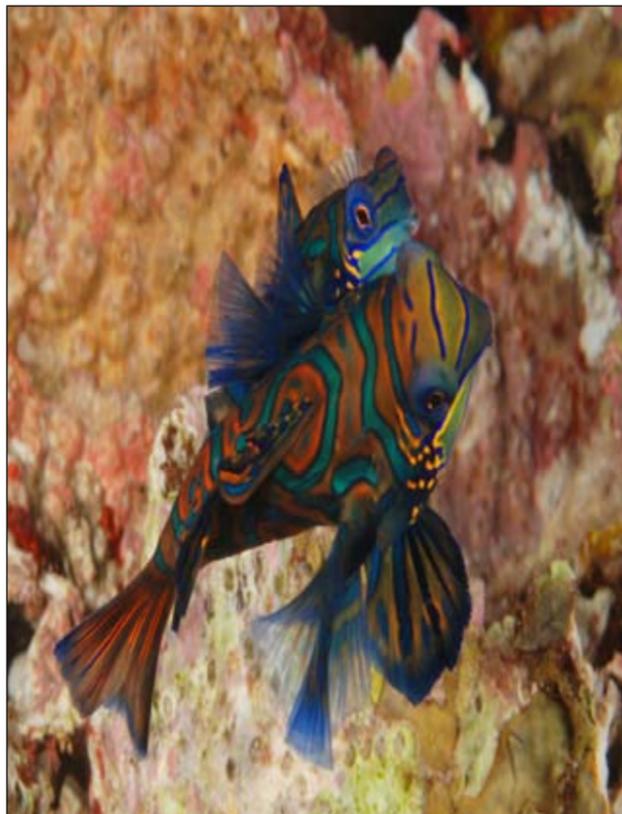
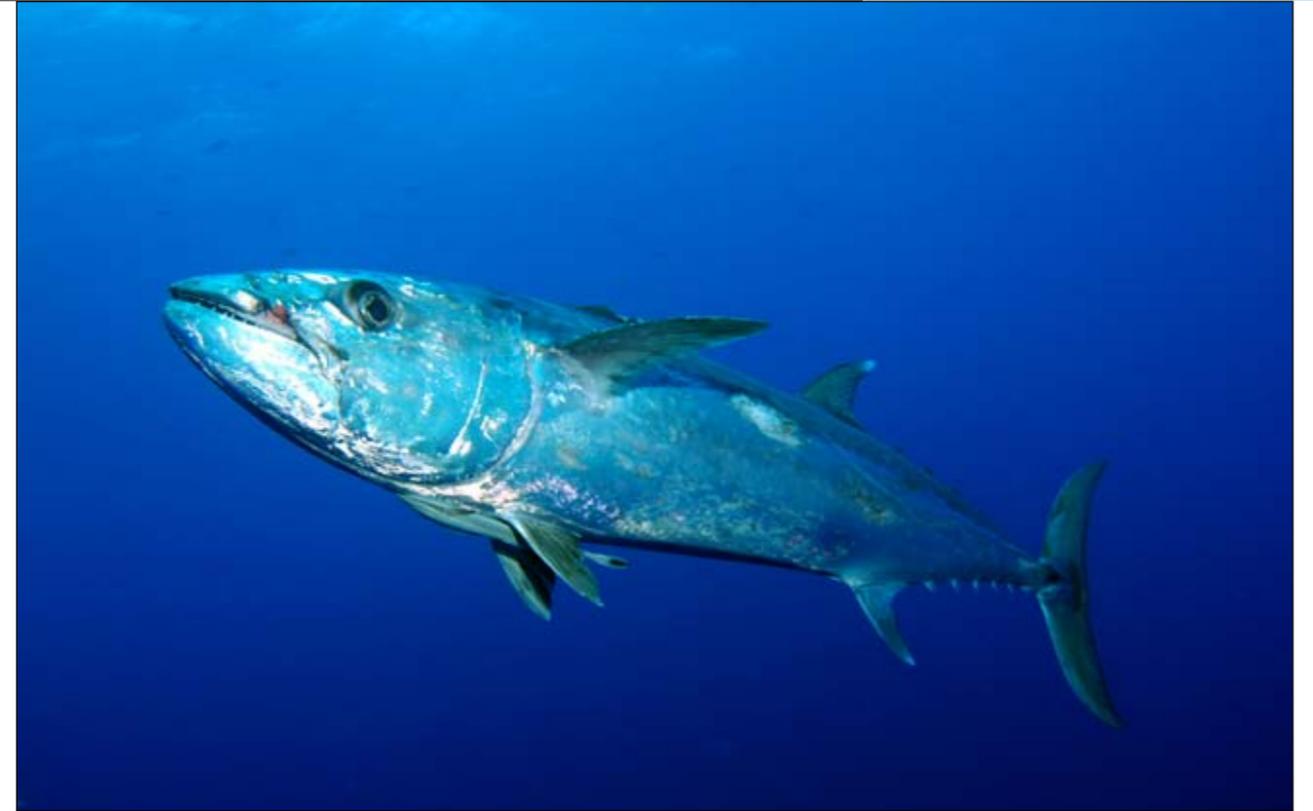
Accommodation:

Manta Ray Bay Resort has 35 spacious rooms (up to 50m²), which are individually designed and all equipped with air-con, DVD, phone and internet access. A fridge is available on request.

The deluxe rooms are either equipped with a private pool or a rooftop Jacuzzi.

A 200-year-old restaurant schooner called Mnuw ("Seahawk") serves as a restaurant and bar and is permanently moored in front of the pool.

Other than diving, Manta Ray Bay Resort offers kayaking trips in the mangrove



By Daniel Brinckmann

forests, island and cultural tours, fly fishing and deep-sea fishing as well as beach shuttles.

Climate and health:

Yap is a tropical all-year-round destination. There is less rainfall and lower temperatures from November to May; the time between December and April offers the chance to see mantas mating.

No special vaccinations required, no malaria risk. The hospital located near to the resort offers a two-person decompression chamber operated by Yap Divers.

Money:

US Dollars are accepted. There is one ATM in Colonia. Price level similar to South Africa, no special fees for diving or visa.

Manta Ray Bay Resort offers payments through credit card (Visa and, Mastercard).

For more information, visit www.mantaray.com and www.mantafest.com



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After completing Science of Diving and Professional Dive Guide, you automatically earn the coveted Divemaster rating, and the ability to assist Open Water Instructors. Your next step on the SSI career path is Assistant Instructor.



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Stingray City

Grand Cayman is home to a legendary dive location – Stingray City and possibly the world’s most popular 4m dive you’ll ever do.



By Angelique Rausch
To understand Stingray City we need to understand the Cayman Islands geography. Grand Cayman is a pinnacle of an underwater mountain and its cliffs are the great walls we can dive. These cliffs go down as deep as 5 000m... To the north we have the North Sound, a big horseshoe-shaped harbour between 3-6m deep.

On the edge of the North Sound there is a fringing barrier reef. Coral formations break the surface and can reach up to 4m of the water.

As long as there have been people living in the Cayman Islands there have been fishermen. Fishermen would take their boats out of the North Sound into the deeper waters to catch the fish but it gets really rough out there. So they would come back through the barrier reef and anchor up in the shallow water and clean their catch.

Due to a massive mosquito population, the fisher preferred cleaning their catch out on the open ocean as on land, the mosquitoes were known to occasionally suffocate livestock. As they cleaned their catch the bits they didn't want (fins, scales and guts) would be thrown overboard. Pretty soon, the southern stingrays started associating boats stopping and anchoring with being fed.

Today we're limited to the amount and type of food we feed them by the Department of Environment. In Grand Cayman there are roughly between 80 000 to 120 000 cruise ship passengers visiting the island annually and it's a \$120 million industry. With the large number of tourists visiting Stingray City, it was needed to add laws to protect this natural grouping of southern rays (*Dasyatis Americana*).

Found in tropical and subtropical waters of the Western Atlantic Ocean from New Jersey down to Brazil, they have a flat, diamond-shaped disc, with different colours such as mud brown, olive, grey and white underbellies.

As you get out of the canals with your boat, the North Sound's crystal clear Caribbean

blue waters lie out in front of you. On wind-still days you can travel in your boat looking down in the clear water and see seastars on the bottom of 4m deep water. Once at the site you are briefed on how to interact with these friendly, puppy-like creatures. These stingrays have been interacted with for the last 30 years and are very used to people.

The stingrays range from 30cm up to 2m from wing to wing and can weigh up to 60kg. They are ovoviviparous, meaning that they have live young – they will swim into the mangroves and have live pups but they leave them there. They have no parental care.

The places you avoid touching the stingray are on top in the middle of the body where there are three ridges of spines, literally three lines of rough bumps that form an armour plating for the stingray. The second place to avoid is the mouth of the stingray.

They don't have big strong teeth but do have very powerful suction, similar to a very strong vacuum cleaner and a jaw that can give you what is known as a stingray love-bite or 'hicky'. Lastly, the stinger, the barb everyone is afraid of, but it's literally a black point half way down the tail that is sharp. Due to where the barb is located on the stingray's tail, it is a purely defensive weapon. The only way to hurt yourself on the sting of a southern stingray is by you putting your full body weight onto the barb.

It's difficult to describe the feeling when you jump into crystal clear Caribbean waters, drop down to your knees on the sandy seafloor and see majestic creatures flying towards you looking for their afternoon snack. Here you can break all the diving rules you've learned – go ahead and feel the stingray's velvety smooth bellies.

They feel like portabella mushrooms and they will swim through your legs, over your head and invade your personal space. Amazingly, they really do seem to enjoy the attention and all the stroking and

touching they get.

The dive guides accompanying you tend to handle the food (frozen squid) in a sealed container and feed the stingrays individually. The dive becomes very much like a feeding frenzy and once the food has been eaten, the stingrays get bored and go off in search of other divers, better known as feeding groups.

We, as instructors and dive masters, play with these stingrays every day and we know a lot of them by name. The one with no tail is called Frisbee and then there is Sally (the biggest one), Pushy, Chopper, Cindy, Jamie, Tri-pod and Romeo. All the stingrays have different markings and different personalities.

Stingray City is amazing and simply nothing can prepare you for that first rush of adrenaline.

The balance of nature and enterprise is a curious mix and experiencing it first hand is a rare treat. 



RAID ANNOUNCES

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www.Diveraid.com

Sudamala Suites & Villas

The Artistic heart of Majestic Sanur

Sudamala Suites & Villas, Sanur, an artistic haven in the heart of majestic, historical Sanur, rebrands Ares Steak & Pasta restaurant and highlights traditional arts at Sudakara ArtSpace.

Sanur is the quiet – and eldest - child among Bali's half-dozen-or-so established tourism centres. It is simple and undemanding. It doesn't stamp its feet and make a ruckus like Kuta; not bold and glamorous like Seminyak. It keeps to itself, confident and self-assured. Mature. If you seek bright lights, late nights and yakkity-yak cocktail parties, look elsewhere. If you seek an authentic, deeply cultural experience in a village atmosphere – seek Sanur.

Historically speaking...

Over the years, sometimes-forgotten Sanur has played host to some of the world's most glamorous personalities. Originally a fishing village, from the late 1920s Sanur emerged as a cultural and artistic hub, attracting a host of famous artists and intellectuals who set up home in the seaside town. Luminaries such as the Belgian impressionist Adrian Jean Le Mayeur, Swiss modernist Teho Meier and Mexican illustrator Jose

Miguel Covarrubias all called Sanur home. Anthropologist Margaret Mead and husband Gregory Bateson compiled research for their definitive tome *Balinese Character: A Photographic Analysis*, in Sanur. Inevitably the colourful artistic crowd drew other like-minded visitors who were fascinated by Sanur's tropical landscape and bohemian community.

New hotels were built to accommodate Europe's wealthy socialites, Hollywood celebrities and visiting royalty. Through the decades, Sanur has welcomed a glittering galaxy of stars such as Greta Garbo, Charlie Chaplin, Jackie Onassis, Elizabeth Taylor, playwright Noel Coward, and Mick Jagger and Jerry Hall, who wedded here. In response, several modern high-rise hotels were built, drawing criticism for their impact on the traditional village ambience. A law – happily still in effect – was subsequently passed restricting construction of any building to the height of Bali's coconut palms.

A beach destination...

While it has grown and expanded over recent decades, now spilling out over the nearby Bypass, Sanur is still, in essence, a beach destination. Its offshore reef, with its gentle ocean waves, creates a waveless lagoon with onshore winds that make it a favourite for wind-powered thrill-seekers like kite- and wind-surfers. Along the foreshore is Bali's only really integrated esplanade – a paved beach-side pathway which runs the entire length of Sanur's extended water front. Walkers and cyclists share the pathway; able to stroll and pause as they please to admire the sea views, or the plenitude of shops, stalls, restaurants, bars and hotels.

Enter Sudamala...

Nestled in the midst of this great historical setting, at the southern end of Sanur where the coastline sweeps away to the west, Sudamala Suites & Villas is an oasis for those who crave an authentic artistic and cultural experience. The warmth of the staff, the luxuriously appointed rooms, intuitive



service, and many thoughtful artistic pieces placed in and around the resort, form the Sudamala taksu, or cultural spirit. More than just a hotel, Sudamala Suites & Villas, Sanur is a serene space where guests are invited to rejuvenate their mind, body and soul. Each of the resort's spacious 34 suites and villa suites is an intimate retreat with a sophisticated collection of décor that combines a touch of classic contemporary design enriched with traditional Indonesian ambience which evokes the grand elegance of a bygone era. Remaining true to its concept as an art hotel, the door to each room in Sudamala is a unique piece –hand-crafted by local artisans.

Sudajiva Spa offers a range of carefully selected treatments that have been crafted to enhance and rejuvenate both inner and outer wellness. At the adjoining Suda Ening, a dedicated meditation space, continue your Sudamala journey and indulge in complimentary yoga classes.

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An artistic haven – Sudakara ArtSpace... As an art hotel, at Sudamala's heart is the Sudakara ArtSpace, Sanur's largest professionally curated art gallery. Sudakara has a continual calendar of exhibitions of fine art and recently announced the premiere of the 'Eternal Line' exhibition which unites two great and very different Balinese artists with works inspired by the ancient traditions of 'Wayang' shadow puppetry.

'Eternal Line', which opened at Sudakara ArtSpace in December, 2015, runs until February 3, 2016, and features the paintings of Mangku Muriati, a traditional artist whose paintings grace some of Bali's most venerable temples and private homes. Alongside Muriati's works are those of Teja Astawa, a son of Sanur whose big, bright contemporary canvases also owe a debt to

Balinese traditional painting and the great folk storytelling traditions of 'Wayang', while at the same time gleefully flouting the rules. Steak, pasta and more...

In 2015, Sudamala Suites & Villas, Sanur re-launched its prime, curbside, all-day dining restaurant as 'Ares Steak & Pasta'. The restaurant refocused and pared back the menu, beefed up the quality, and made a commitment to play to its strengths as the artistic district's home of sublime steaks, signature sauces and pasta nonpareil.

Ares Steak & Pasta is poised to claim the mantle of Sanur's leading lounge lizard lair, art maven haven and creator of comfort food for connoisseurs, with its colourful sofa-style seating, fairy-lit al fresco vibe and prime street corner location in the beating heart of Bali's most venerable precinct of art, heritage and culture.

Sudamala Suites & Villas, Sanur also offers its guests complimentary use of bicycles to explore the village of Sanur at your leisure – and a stretch of beach with dedicated facilities for Sudamala guests is only a short leafy stroll away.

Purifying waters...

Sudamala Suites & Villas, Sanur derives its name from an ancient story in the Mahabharata epic. It tells the tale of Sadewa who, through his sacrifice and purity of spirit, is able to save the beautiful Dewi Uma.

Paying homage to the spiritual roots of its name - linking the epic poem, the resort and the temple - Sudamala Suites & Villas Sanur offers its guests a unique opportunity to undertake a purifying pilgrimage to the Tirta Sudamala Temple in Bangli.

The bathing ritual which purifies the soul is known locally as 'penglukatan' and is part of the daily cycle of colourful religious rituals at the Tirta Sudamala Temple. There's more to life in Sanur than meets the eye, and the spirit of Bali's rich heritage radiates throughout the island.

Arts and spirituality are simply the way

of life on the 'island of the gods' and the purifying legend of the Sudamala, the 'taksu' of the ancient epic, lives on in the Sudamala Suites & Villas, Sanur and in the purifying waters of the Tirta Sudamala temple.

Let yourself be captivated by the legendary arts and culture of Bali and rediscover the timeless allure of the village of Sanur.

Adding to its ever-expanding boutique resorts portfolio in the eastern part of the archipelago, after the establishment of Sudamala Suites & Villas Senggigi, Lombok, Sudamala Resorts welcomes three newest properties including the charming Amed Lodge by Sudamala Resorts in Amed – Bali, tropical getaway and dive paradise of Sudamala Resort, Seraya - Flores and soon to be opened Sudamala Komodo Labuan Bajo.

For more information see www.sudamalaresorts.com or email info@sudamalaresorts.com



Secret Sanctuary

Discover Amed Lodge by Sudamala Resorts

Sudamala Resorts, one of Indonesia's fastest growing boutique resort companies, is setting an exciting hospitality standard in Amed, Bali, with the new launch of its new lodge brand with the opening of Amed Lodge by Sudamala Resorts. Situated along the highly desirable Amed strip on Bali's eastern coastline, approximately 95 kilometers from Ngurah Rai Bali International Airport, Amed Lodge offers a tropical sanctuary where the Balinese old world charm and serenity are still in abundance.

Sudamala Resorts, one of Indonesia's fastest growing boutique resort companies, is setting an exciting hospitality standard in Amed, Bali, with the new launch of its new lodge brand with the opening of Amed Lodge by Sudamala Resorts.

Situated along the highly desirable Amed strip on Bali's eastern coastline, approximately 95 kilometers from Ngurah Rai Bali International Airport, Amed Lodge offers a tropical sanctuary where the Balinese old world charm and serenity are still in abundance.

Nestled in a quaint seaside village, Amed Lodge's rustic cottages overlook the Indian Ocean waters along the Jemeluk Beach. The Karangasem regency is famous for being the home of majestic Mount Agung, as well as breathtaking dive sites,

spectacular views and stunning sunrises. Built to incorporate an admirable collection of rustic timber wood, Amed Lodge has been thoughtfully designed to complement its natural surroundings.

The seven eclectic cottages all different and incorporate quirky designs. Each room is fully air-conditioned for personal comfort and comes with a tropically-inspired bathroom.

No two are alike. The lodge also features a refreshing swimming pool and an intimate dining space, Suda Café, serving delightful coffee and international and local cuisines, as well as a relaxing beach deck.

Exhilarating underwater activities are also provided by the lodge in cooperation with highly-experienced dive operator.

eScuba a bright idea

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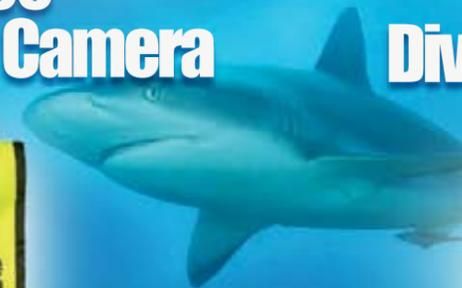
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Touted as a diverse dive destination with distinctive underwater splendour, Amed often features in the bucket list of diving and snorkelling enthusiasts from around the world. The entire sea is home to a wide variety of healthy corals and an impressive array of tropical creatures.

Some of the best diving in Amed is directly in front of the hotel with the world famous US Liberty Shipwreck only 10 minutes' drive away, along with an out-of-this-world night dive experience at Seraya Secret Point, delightful Coral Garden and Kubu, which is a dive site ideal for beginners.

The dive sites generally allow for enjoyable dives and are suitable for all levels of competency with mostly year-round visibility that is fair to excellent.

Amed Lodge belongs to a picturesque part of the island that answers the longing for old Bali. With enchanting sunrise and sunset views to mark the passing hands of time, it caters to the needs of couples or individual travellers.

As the perfect base for those seeking the vibrant underwater life or are curious to discover an unseen side of Bali, Amed Lodge offers a getaway experience like no other.

Sudamala Resorts is a boutique Indonesian hospitality group that operates resorts in Bali, Lombok, and Flores. This includes its flagship Sudamala Suites & Villas, Sanur and Amed Lodge by Sudamala Resorts in Amed - Bali, Sudamala Suites & Villas Senggigi - Lombok and continues its expanding to the eastern part of archipelago with Sudamala Resort, Seraya on Seraya Kecil island and soon to be opened Sudamala Komodo Labuan Bajo where both resorts are located in Flores.

For more information, please visit: www.sudamalaresorts.com.

For reservations, requests and further information, please contact +62 363 278 7651 or visit www.amedlodge.com



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USS Arron Ward

The Solomon Islands are steeped in history from World War II, in particular the epic naval & air battles of Guadalcanal. There are so many wrecks of ships and aircrafts here, that the area was given the name Iron Bottom Sound. One of the most famous wreck dives in the area is the USS Arron Ward.



By Neil Bennett
Built by the Federal Shipbuilding & Drydock Company, the USS Arron Ward was launched on 22 November 1941 as a Gleaves -Class destroyer. The ship was named in honor of Rear Admiral Arron Ward before heading off to serve in the conflicts of Guadalcanal in the Solomon Islands.

The USS Arron Ward was an impressive ship with a displacement of 2060 tonnes & a length of 106m, capable of reaching 35knots.

Her armament was no less formidable with an impressive list of weapons. Today her 5" guns can be found still pointing to the sky's as she went down fighting, as if in a symbolic gesture of defiance towards her enemies.

Armament's:

4 × 5 in (127 mm) DP guns,
6 × 0.50 in (12.7 mm) guns,
4 × 40 mm AA guns
5 × 20 mm AA guns
5 × 21 in (533 mm) torpedo tubes
6 × depth charge projectors
2 × depth charge tracks

Having already seen heavy action in Guadalcanal, the USS Arron Ward was severely damaged & returned to Pearl Harbor for repairs, not before her gallant actions received commendation's for an example of fighting spirit in the heat of battle.

After rejoining the fleet The USS Arron Ward was again involved in the midst of battle whilst escorting the ship LST-499, off Togoma Point.

Upon this ship was a junior grade officer, Lieutenant John F Kennedy, who later became the President of the United States.

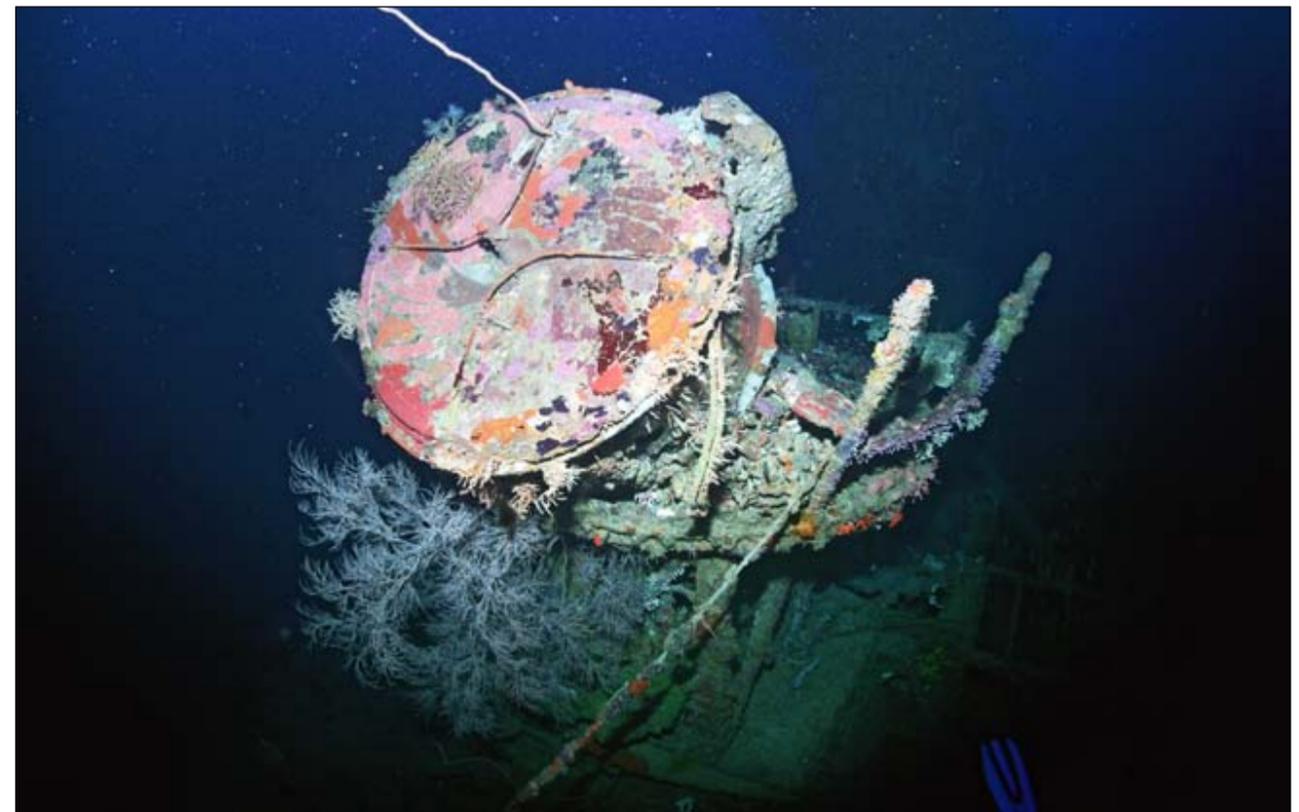
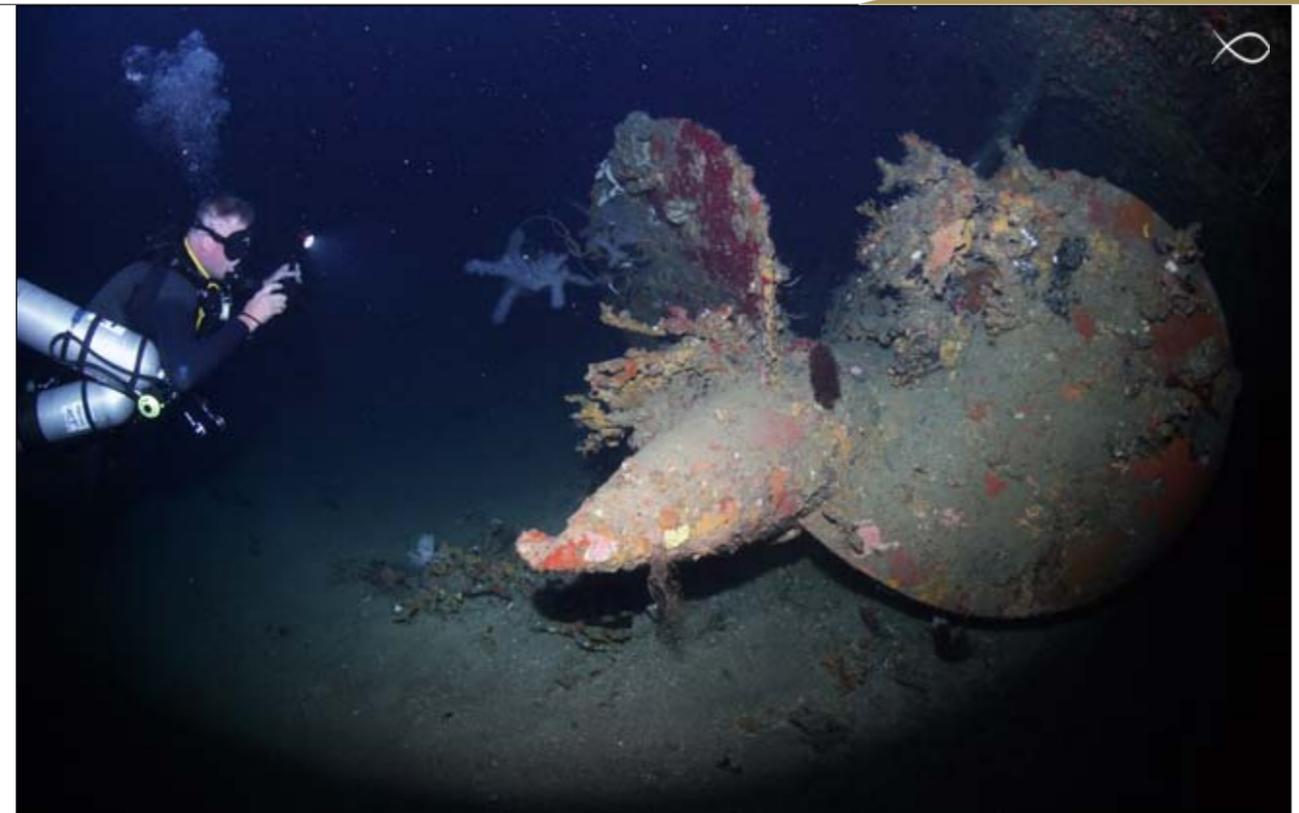
During maneuvers to avoid a dogfight over Savo Island, the USS Arron Ward was surprised by three enemy aircraft attacking from under cover of the sun. In attempt to defend herself she opened

fire with her 20mm, 40mm & 5" battery, but unfortunately the crew failed to shoot down the Japanese who released a series of bombs that would eventually prove fatal to the ship.

Three of these bombs managed to strike or near miss the ship. The first proved to be devastating, tearing a hole in her side, allowing the forward fire room to flood.

The second bomb made a direct hit into the engine room causing loss of power to the main guns; however, shifting to manual control the valiant gunners kept firing until the end. The third bomb blew a hole in her port side causing loss of rudder control.

Now helpless, the USS Arron Ward could only turn in a circle unable to avoid any approaching planes. The bombers attacked again, releasing bombs which all exploded near her port side killing 20 men, wounding 59 others & leaving



By Neil Bennett

a further 7 missing. Crippled & helpless there was nothing she could do to defend herself.

The ships Ortolan & Vireo immediately came to the aid in an attempt to beach her on a nearby shoal, however, she began to sink stern first just 550m from safety, coming to rest in 70m of water.

The Diving

In 1995 the USS Arron Ward was located by Ewan Stephenson, a marine archeologist. Today the wreck lies upright in warm, clear water with her deck approximately at 60m and the bottom at 70m. The USS Arron Ward is too big to complete in one dive so decide which area to dive first, taking into account the possibility of currents, especially heading towards the bow.

The mooring line has been set at amidships on her port side. Those intending to penetrate the wreck need to plan very carefully, remembering her structure has been badly damaged and collapsed in the centre.

The designs of destroyers are such that the corridors are very narrow making life difficult to negotiate with twin sets & stage cylinders.

On investigation we have only found a few places you can enter the wreck. Remember also that the engine room took a direct hit and therefore presents more challenges.

All of her guns point towards the skies, a testament to the last minutes of her battle. The bridge has been completely destroyed, leaving a pile of debris in its place with the last remaining searchlight sitting upright on the deck as if it had been there all along.

Don't be misled to think there is little to explore – this is a huge ship and there is still plenty to see. All of her 5" guns remain intact, as are many of the other guns. It is incredible to think

that these huge objects actually stayed attached during her sinking. In front of the bridge are the torpedo tubes, still full and carrying live explosives, one of which has slid partially out of the tube. It is important to realize that these torpedoes self-arm when released from their tubes - so don't tap the torpedo!

None of the USS Arron Ward has been recovered, having managed to escape the attention of salvagers during the 1970's, which is great news for divers. The deck is covered with shells of every description; the telegraph system used to contact the engine room can also be found lying on the deck. If you like to simply ferret around, then, you will have found heaven.

The bow is simply stunning! Fully intact, she waits to be photographed. Gorgonian corals now grow from her sides. Plenty of ambient light reaches

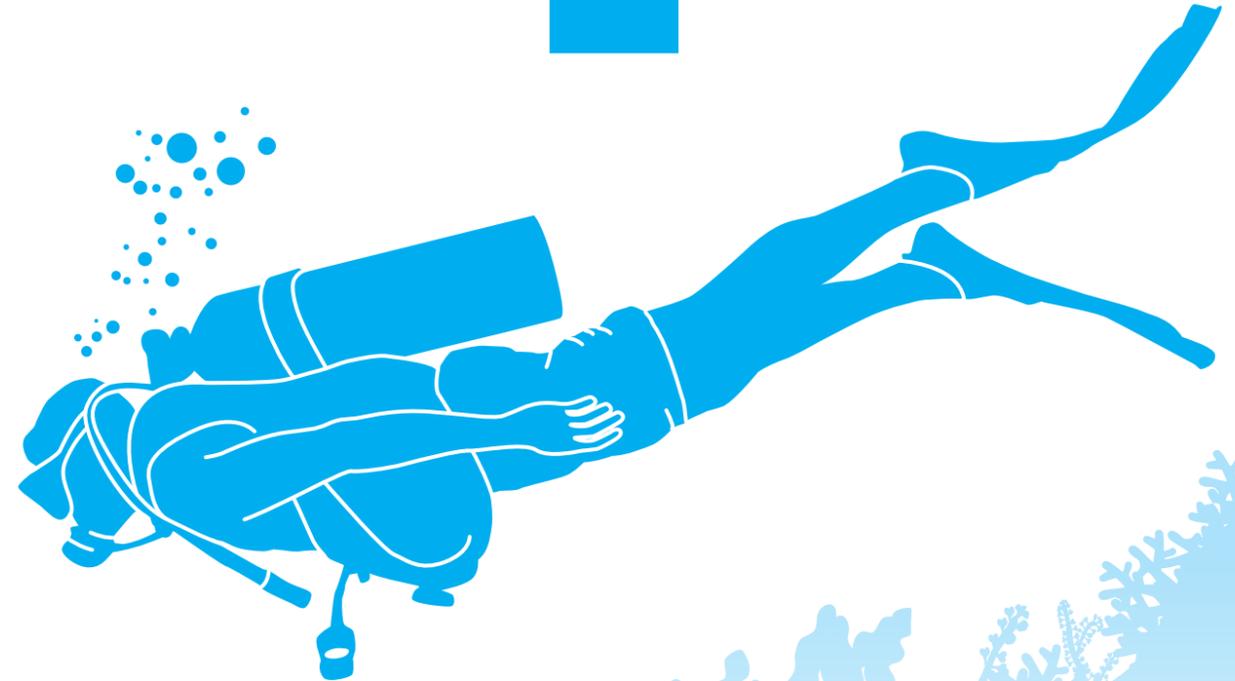


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her deck & lights up the bow like a Christmas parade.

The clarity & warmth of the water can be misleading, giving you a false sense of security. Dropping to the bottom of the bow to get the panoramic shot can take you as deep as 70m with time rapidly disappearing as you get excited about what you can see through the lens.

Moving towards the stern the funnel remains undamaged, whilst the conning tower has now dropped off to the sea floor on the starboard side. Again the guns are still there & the stern is in good condition although the hull is now distorted from the impact with the seabed. The stern itself make for a good photo opportunity with both the props still in-place down at 70m.

Gas in the Solomon Islands is very expensive; Helium will cost around \$300NZ per tank fill. Although not the ideal method, our choice was to run this as an extended range dive on air & decompressing on nitrox.

With a bottom time of 25-30min we were managing to run a deco time of approximately 45min, depending of course where on the wreck you decided to spend your dive time. Tulagi Dive provides a trapeze with their operation and this is essential for this kind of dive. Without this & if the current is running strongly, you may find yourself half way to PNG before you surface!

This is not a dive I would recommend without the right training or gear and certainly any penetration should be for the experienced divers, simply due to its depth and the complexity of the dive the wreck itself presents.

Having said this it is without a doubt one of the most stunning and enjoyable wreck dives I have undertaken. I simply love travelling to the Solomon's to explore this wreck.

Travelling here to dive is very easy, don't be mistake to believe that you have to use expensive liveboards. Due to the close proximity of the wrecks, it is far better to undertake this as a shore destination trip run from two locations, Honiara & Tulagi Island.

Honiara provides the base to explore the wrecks along her coastline whilst being hosted by Tulagi Dive, then simply move across the channel to Tulagi Island and dive the wrecks in this area whilst being hosted by the Raiders Hotel.

Out on the island due to the topography of the area, nearly all of the sites are located within 15min boat journey from the hotel.

In Honiara some of the sites on the mainland take a little longer to reach but that doesn't present an issue. The service and quality of these operations are exceptional given the challenges remote destinations can provide.

The Solomon Islands provide a beautiful contrast of island time and stunning diving that need to be experienced by any diver.

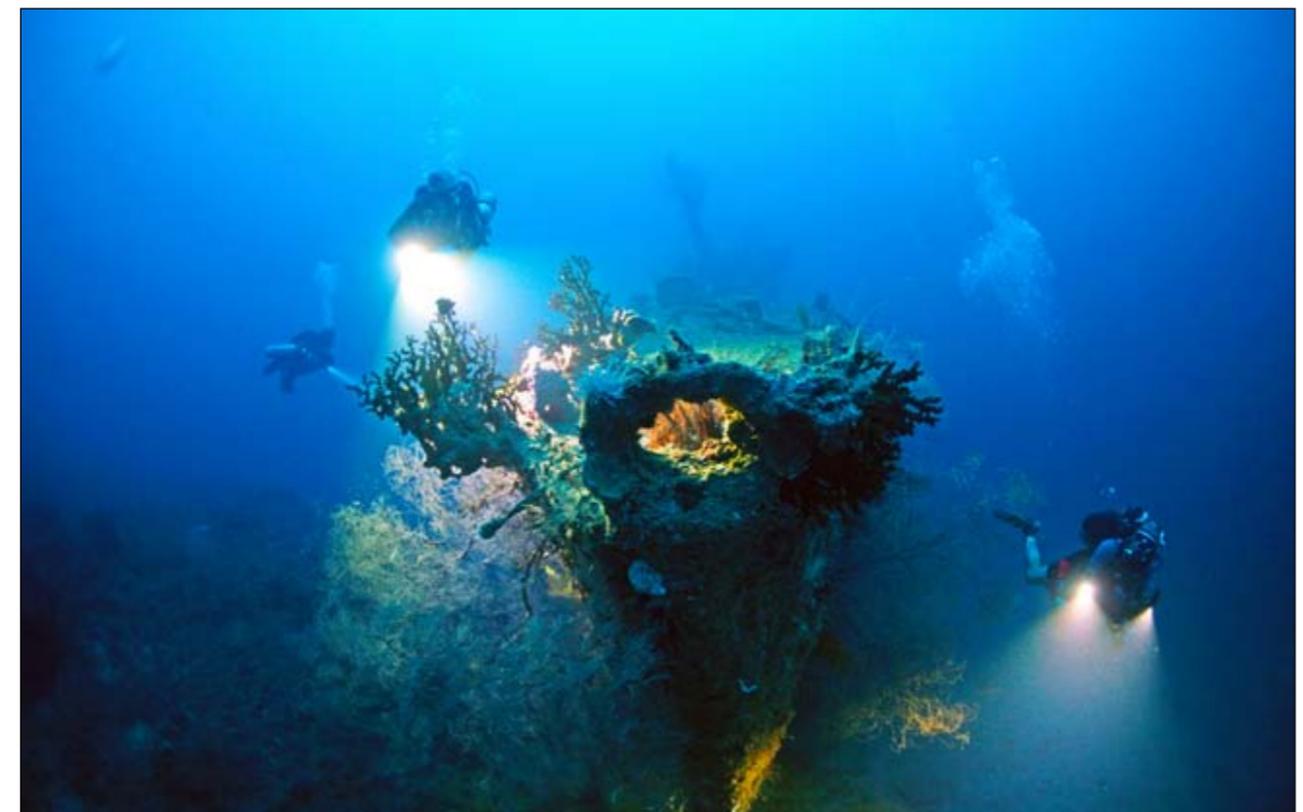
It's not expensive and nor is it difficult to get to with Brisbane providing the hub for flights.

To find out more contact the following:
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Go Dive Pacific: Tel: +64 2743 44874
E: info@godivepacific.nz Web: www.godivepacific.nz

Raiders Hotel: Tel: +677 7494 185, E: raidershovel@solomon.com.sb Web: www.raidershovel.com

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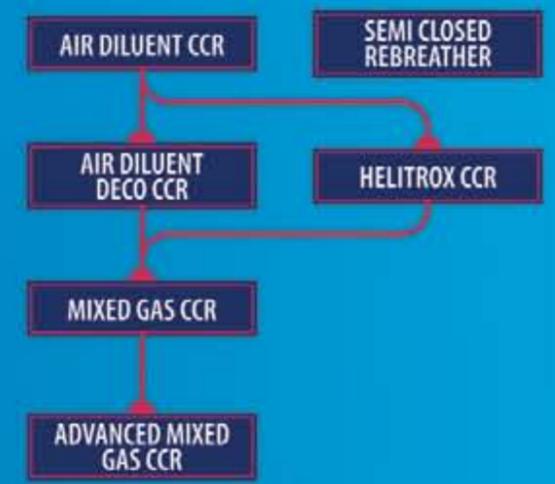
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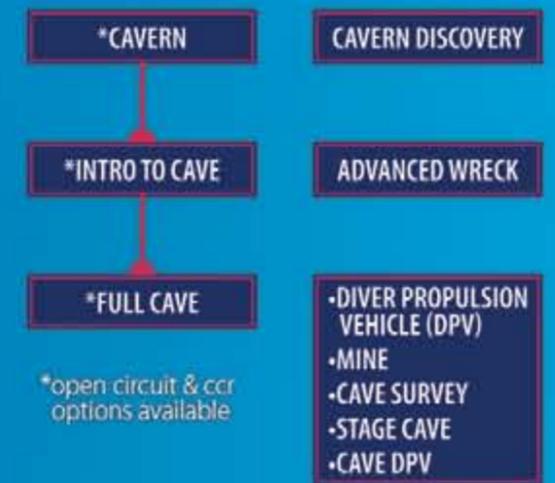
OPEN CIRCUIT



REBREATHER

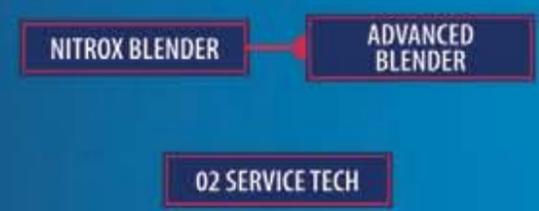


OVERHEAD



*open circuit & ccr options available

SERVICE



PROFESSIONAL



Photographic Competition



Alina Botha took this photograph of an octopus with a Sea&Sea 8000 and YS27 strobe.



Christo Smit took this photograph of a Moray Eel with a Sony Cybershot DSC.



This photograph of a nudibranch was taken by Dave Martin with a Canon Powershot G9.



Jacques Vieira took this photograph with a Sea & Sea 8000.



Jaque Vieira took this photograph of a Featherstar with a Sea & Sea 8000.



This photograph of a sea fan was taken by Michael Chang with a FinePix F31FD.



Nicholas Marchand took this photograph of an anemone with a Panasonic DMC-TZ2.



Ray Shaer took this photograph of a Frog fish with a FUJI Finepix F30 and a strobe.



Winning Photograph

Jan Botha used a Nikon D70 to take this photo of a Nudibranch laying her eggs.

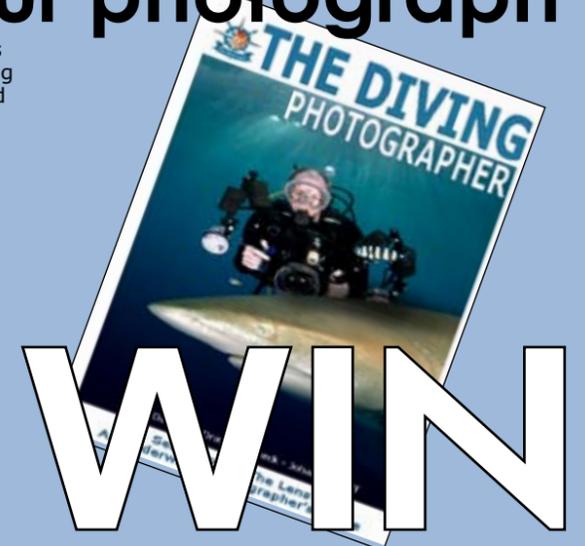
How to enter your photograph

Whether you're an amateur or professional photographer, this is a photo competition for all levels of photographers. We're looking for pictures that capture the true experience of scuba diving and the wonders of the underwater world.

Submit your photo!

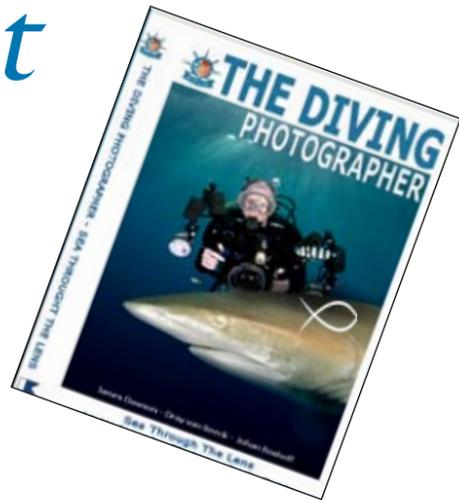
- Photographs may be taken above or below the water, as long as diving remains the theme.
- The Name of the photograph must be the photographer's name.
- Photographs must not be bigger than 5 MB per photo.
- Submit your snaps in high-resolution (at least 150 dpi) in jpeg format.

E-Mail your photos to info@ozdiver.com.au
"photographic competition"



Expose it right Underwater

Shutter Speed



In this part of the series we are going to look at shutter speed. I previously mentioned that the aperture controls the amount of light that reaches the 'film', now the shutter controls the length of time the 'film' is exposed to light. Moving the shutter speed dial from 1/60th to 1/100th of a second means that the exposure time has been halved.

If we change from 1/60th to 1/30th of a second, then we have doubled the exposure time. A change in shutter speed is the same as changing the exposure either up or down by one f-stop.

Shutter speeds are numbers that represent fractions of a second – 1/500 is a fast shutter speed and 1/8 is a slow shutter speed. When you set a slow shutter speed, the shutter will stay open for a longer period of time – this is useful for low light conditions.

The problem with slow shutter speeds is that you will probably need additional support for the camera to steady it. If you consider the diving conditions we experience or the marine life we often want to photograph, a slow shutter speed will cause a lot of blurring. Remember, this is as a result of the shutter being open for a long period of time.

To solve this problem, we set a fast shutter speed and by doing so, we can freeze the image and eliminate the blurring. It is generally accepted that 1/60th of a second with an aperture of f8 is a good start in underwater photography – this is accepting that 18% grey is the perfect exposure.

We also need to remember that when we change the shutter speed, we will need to change the aperture as well. Confused? No problem – read on...



So what settings will get the correct exposure? To control exposure we need to have an idea of the relationship between shutter speed and aperture.

The camera light meter system that measures the reflected light always tries to set the camera to get the perfect exposure. This is actually pre-programmed into the camera and is how the camera is able to determine various settings in 'auto', otherwise it makes use of an exposure scale usually found in the viewfinder or on the display.

We are now left with the option of how we would like to control the exposure – how we set up the camera is determined by a couple of factors, such as natural light or artificial light, depth-of-field, camera or subject movement.

Let's look at some examples of settings you could try with your camera. If you were trying to take a photograph of a fish that is constantly moving, you would be more concerned about freezing the movement.

In this case, you would consider a fast shutter speed and a large aperture. On the other hand, if you were trying to photograph a nudibranch, you could consider a slightly slower shutter speed and smaller aperture. Then there is the use of artificial light – check to see what the manufacturer's synchronisation speed is of the strobe you are using.

Set the shutter speed accordingly and just use the aperture to control the exposure. One thing you must always remember when making use of artificial light is the distance you are from the subject.

If it is at all possible, try and set your camera either to shutter priority or aperture priority and then play around with various settings while photographing the subject. Note the results and you will get a better understanding of how your camera operates.

Remember that making use of the camera light meter is the key to getting good exposure. ■

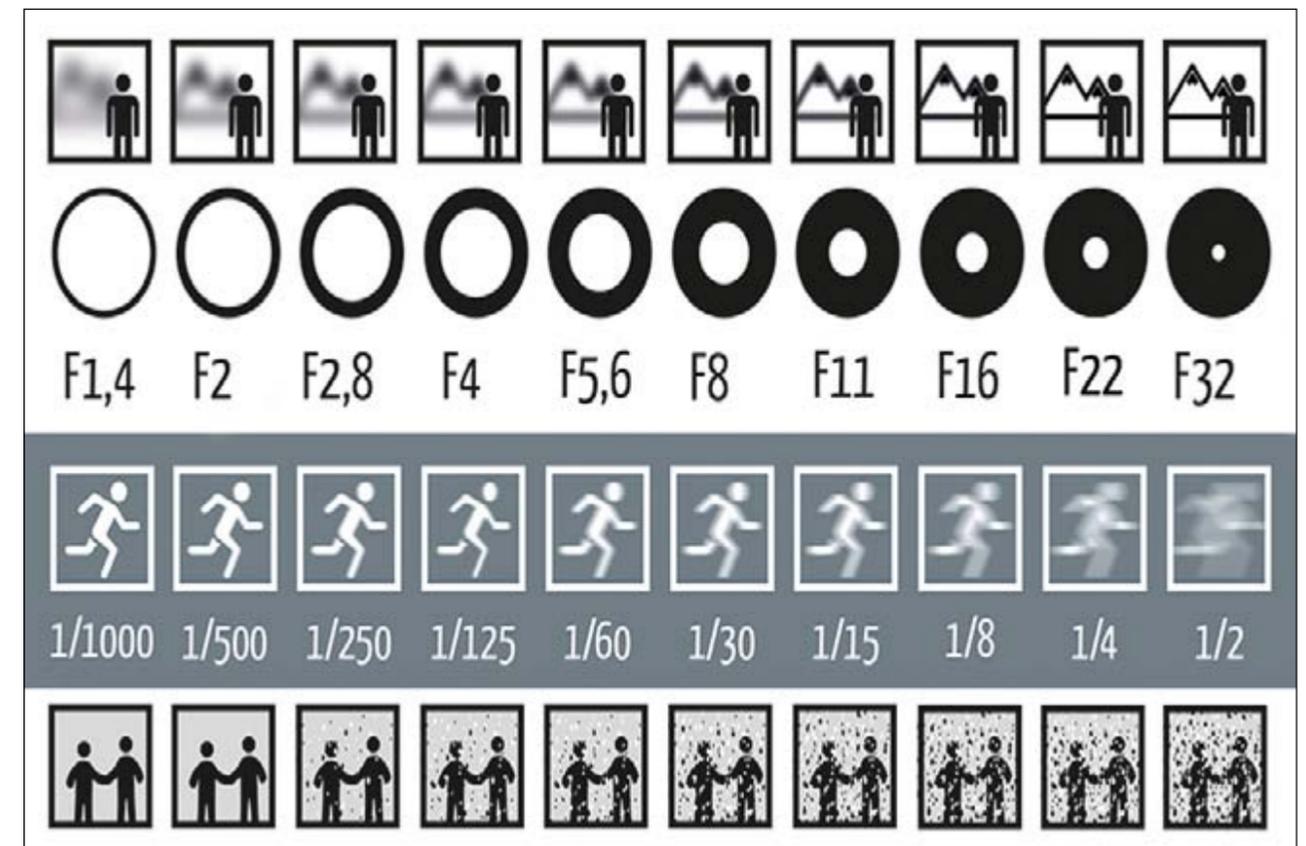


Photo Editing

Finishing touches Part I



When you have edited your photographs and are happy with them, you need to make sure they are ready for showing others on the computer or in print. When finishing off your best photographs, even if you are an amateur, you have exclusive rights to your images and you should always make sure that your photographs are marked as yours to stop other people stealing them and using them for their own use.

You may not think that this is a big issue, but one day you may find your favourite photograph on a brochure without your consent, and even worse, someone making money from it.

In this article we will show you how to enlarge your photographs for printing and also how to make a copyright watermark for your photographs that you can save and then easily add with one click to every image.

Printing high quality photos

It is best practice to set your camera to the highest resolution when taking photographs. The higher the pixels of a photograph the larger you will be able to print your images without too much distortion. The standard range for a camera these days is from 8-10 megapixels and up which allows you to print quality photographs without distortion for large prints. The table below shows a list of the size of photographs per megapixel.

As you will see, unless you want to blow up an image to a huge size then you do not actually need a camera with very high megapixels. For the standard size prints you could even use a 3 megapixel camera for perfect prints at high resolution.

Cameras these days are reaching extremely

high pixel counts, but for most of us we do not actually need to go so high for normal use.

Camera companies are using the number of megapixels as a marketing tool to sell cameras and fooling people into believing that the higher the megapixel the better the quality of the camera, but this is false. You can actually take a better photograph with a 3 megapixel camera than a 16 megapixel camera as the megapixel count does not improve the sharpness, colour and contrast of the image – it just allows the camera to create the same photograph in a much bigger format.

So the average photographer who will never want to print huge photographs should not be too concerned with getting a camera with the largest pixel count, but rather focus on the quality of the brand of the camera and the type of camera that they are using.

Choosing the correct resolution for your images for print

Automatically most people think that the more PPI (pixels per inch) a photograph has the better the quality of the print. The most common setting for a photograph for printing is 300PPI, but this may not be the best option for printing

for some applications. A high PPI, for example 300PPI, is mostly used for printing in glossy magazines, flyers or photographs and you may be shocked to hear that when printing very large images, then around 100PPI is actually the best resolution.

So if you ever have to enlarge a photograph to print on a large banner then you do not have to use all of your computer memory and hard drive to create a huge file with a high PPI.

When thinking about this it is obvious as the larger the image or print is, the further away you will have to stand to see the whole image, so the larger the pixels per inch can be.

When looking close up the image will not look too great, but from far away it will all pull together and will look clear and sharp. Anyone who has ever stood too close to a large TV screen will know this as the closer you go, the more pixelated and distorted it will look, but the further you stand away, the clearer it will appear.

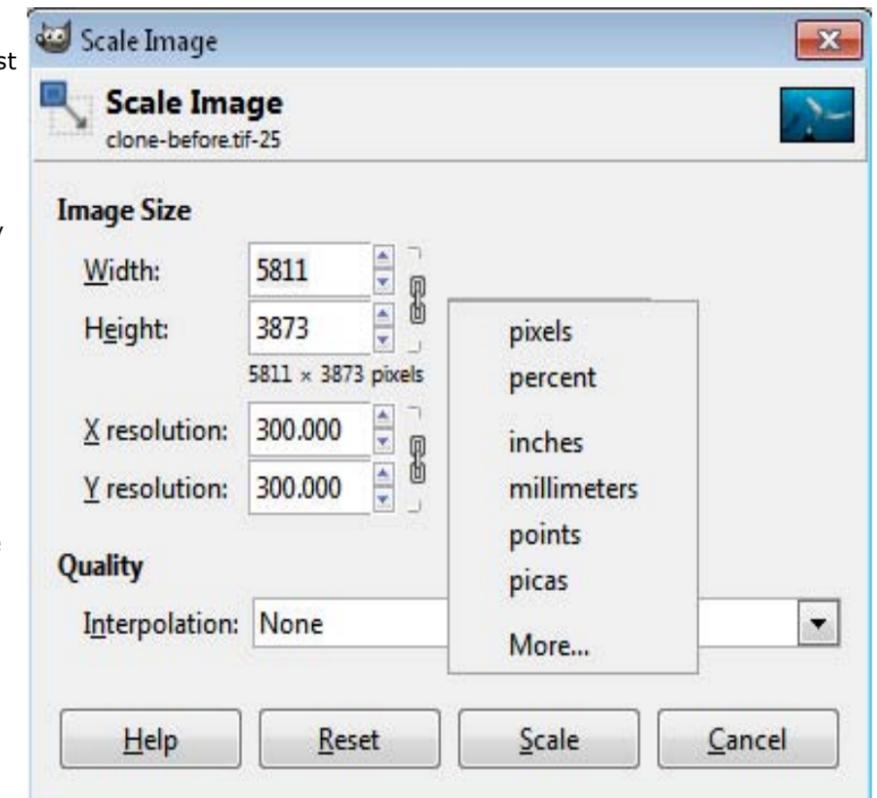
You will most commonly though only have to enlarge your photographs for a printing no larger than A4-A1 size, so you should be able to enlarge most of your photographs without causing too much distortion when setting the resolution at 300PPI.

Enlarging images in Gimp

Should you wish to enlarge a photograph more than the default size, then you are able to do this in Gimp by using the 'Scale Image' tool. The Scale tool allows you to change the number of pixels in the photograph and then resizes the image accordingly.

If you enlarge an image beyond its original size, Gimp calculates the missing pixels by interpolation, but it does not add any new detail. Be careful though as the more you enlarge an image, the more blurred it will become, but always remember that the larger the image is, normally the further away you will be from the image when viewing it. So do not be too

concerned by the quality of the image at 100% scale when viewing on the computer if it is for large banners.



Selecting the Tool:

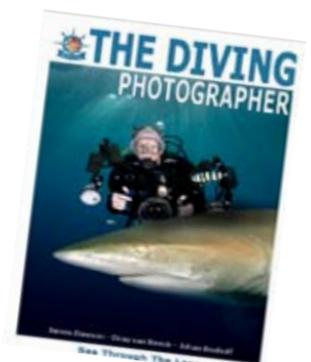
The 'Scale Image' box will pop up. In this box you can change the resolution of the image (PPI) to your desired amount for the print you want to do and then also change the size of the image.

The default option is pixels for the image size and if you click on this box then you can choose different sizing options from inches, mm or more.

When changing the size of the photograph it is important to also select the quality of the change by clicking on the interpolation.



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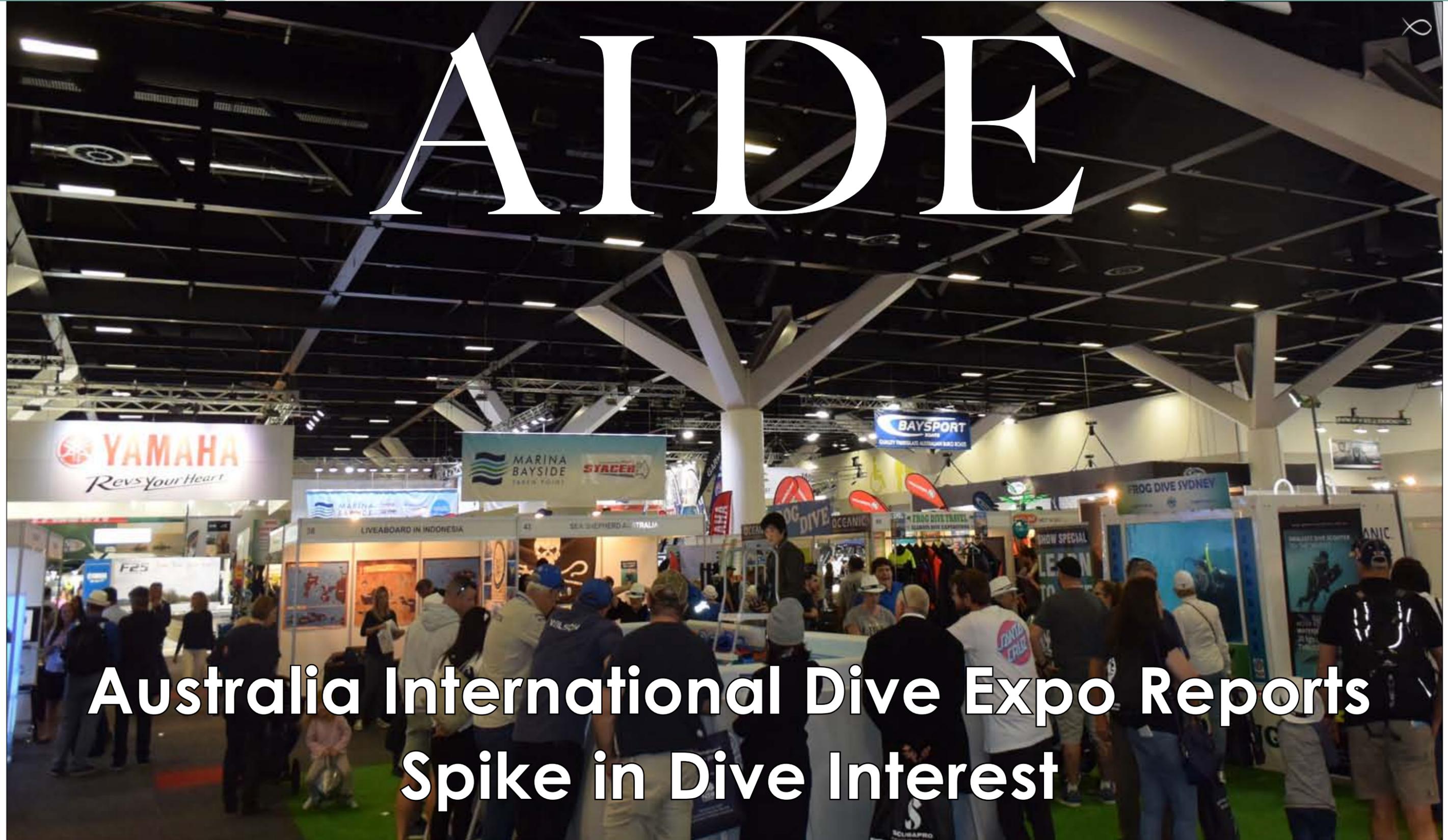
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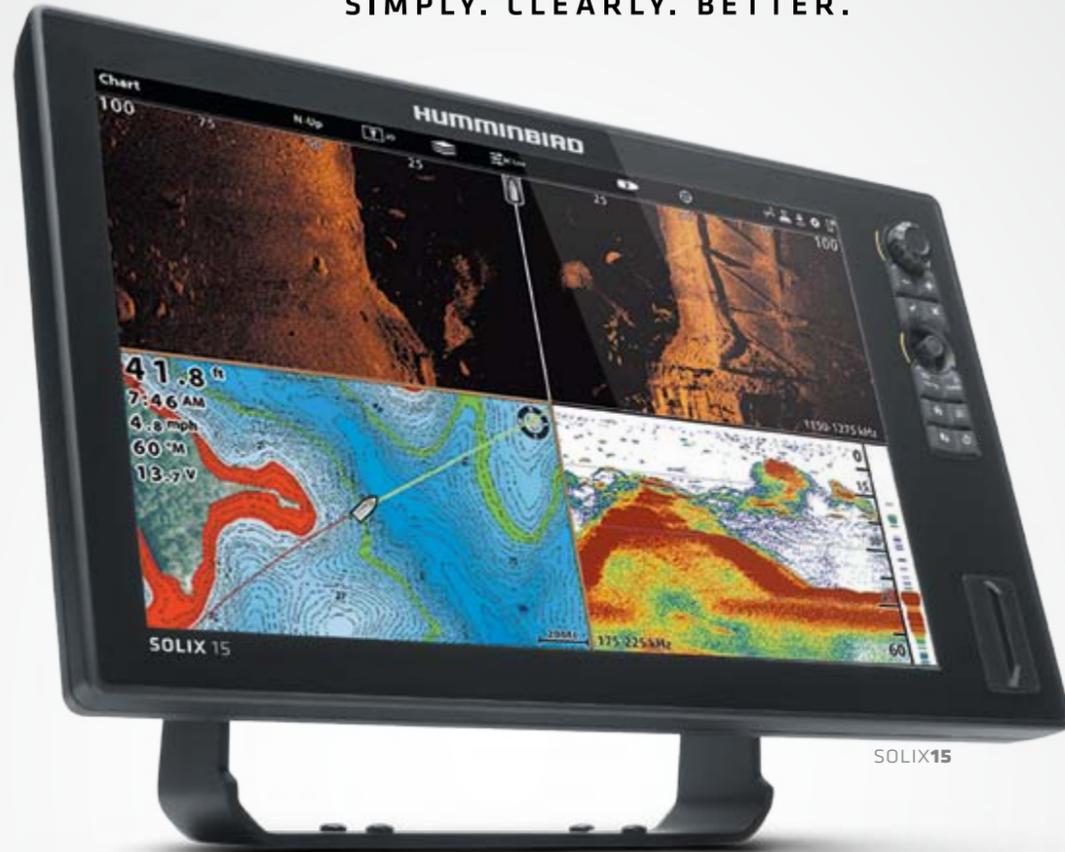
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TURN LEFT.



The Australia International Dive Expo (AIDE) has reported yet another year of success at this year's show recording a 23.5% increase in interest in scuba diving and other underwater related sports and activities.

The interest came mostly from existing water-lovers and boaties as well as those searching for new experiences. With close to 60,000 visitors at the event over the five days from 2-6 August 2018, organiser and director of AIDE, Ness Puvanes, said the show continues to draw the attention of key dive industry players from around the world and the diving community.

Being a part of the Sydney International Boat Show for the second year running, AIDE's aim is to keep opening up new opportunities and interests to boaties, while working with SIBS to create a more complete platform for water lovers and divers.

As with previous years, visitors met with a host of tourism bodies from around the world, dive tour operators

and various suppliers of dive gear and equipment who featured their latest in dive technology and trends.

Highlights in the two on-site dive tanks included pool dive try-outs for newbies where they experienced breathing underwater for the first time; underwater drones and scooter demonstrations; and dreamy mermaid shows.

Visitors also heard from a fantastic line-up of international and local speakers passionate about the ocean, marine life and the preservation of the environment, including Lisa Mondy, Sarah-Jo Lobwein, Nicola Beynon, Joni Pini-Fitzsimmons, Monica Chin, Dr Fabrice Jaine, Mike Scotland, Dr Martin Puchert and many more.

This year more than 400 high school children from around NSW were also introduced to diving where they heard from exhibitors on getting into the sport, the equipment needed, career options, hobbies and learning options.

AIDE2018 also saw the launch of



Giant Stride

AIDE

the very first The AIDE Australasia Underwater Photographer of the Year Competition where the legendary Valerie Taylor joined Michael Aw (moderator), Peter Lightowler, Jayne Jenkins, Chris Dalton, Matthew Smith and Brett Lobwein on the panel of judges for a live judging on the Sunday.

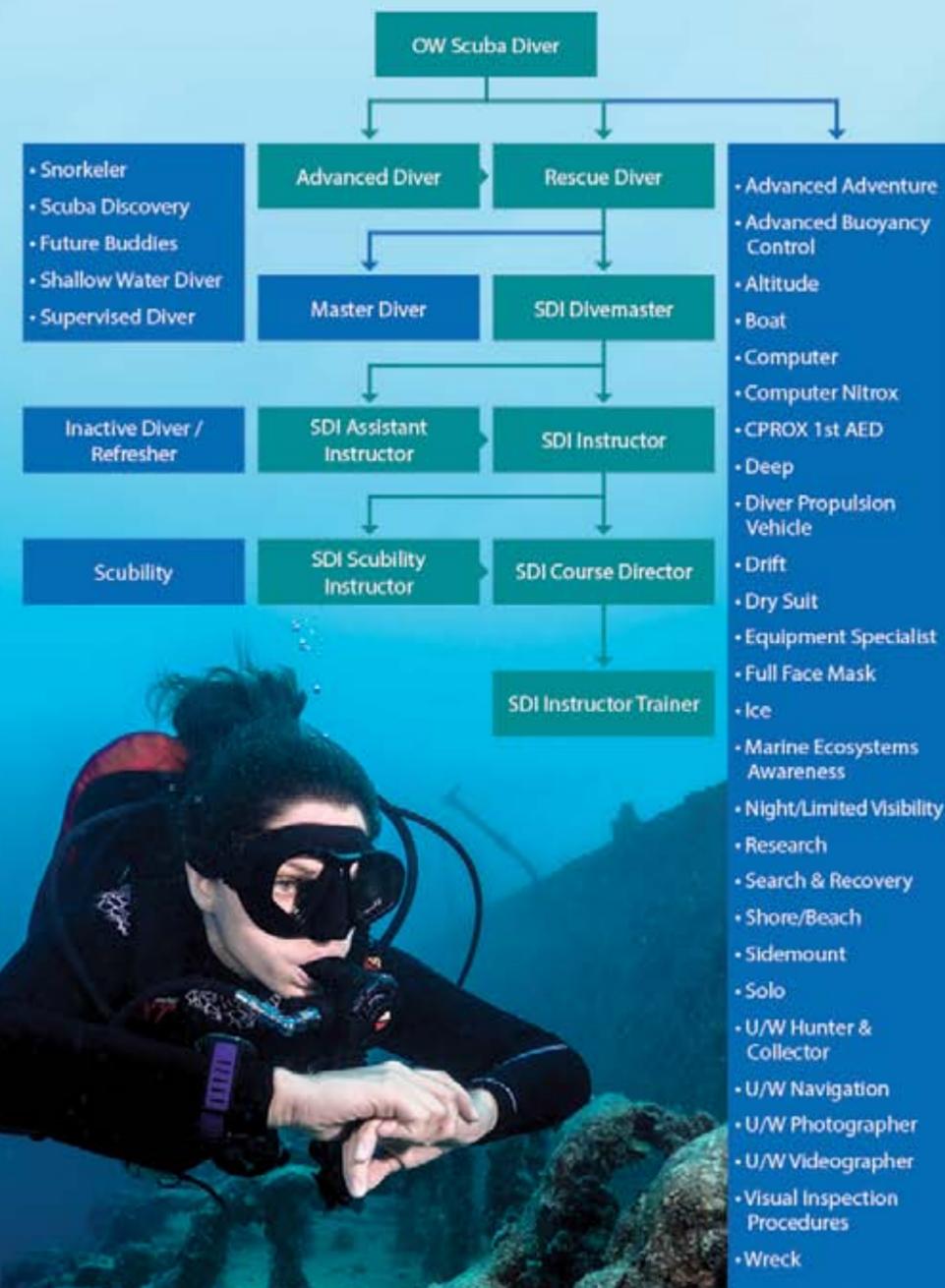
2019 promises to be an even bigger and better year for AIDE with many visitors already looking forward to it and exhibitors signing up to returning with more exclusive deals and more products to offer, and speakers expressing interest to share even more of their love for the ocean and expertise in marine species and sustainable practices.

AIDE will once again be part of the SIBS show next year at the International Convention Centre in Darling Harbour from 1 – 5 August 2019. Bookings for AIDE2019 can be made from 1 November 2018 to 31 May 2019.

Please direct all booking inquiries to info@australiadiveexpo.com



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Underwater Drone

Dives into Australian Water



It is a very easy-controlled drone which can be used both in commercial and consumer fields. It is specially designed for underwater exploration, photography, inspection, underwater survey and terrain detection in shallow water.

To walk the halls at the Consumer Electronics Show in Las Vegas is to be bombarded by the most cloying vision of the future. Robots that dance in sequence! Segway inspired suitcases that walk behind harried travelers! Virtual reality goggles that show tiny imaginary battles over geodes!

Amidst the audio-visual assault of the show floor, there was a trend in consumer robotics that I think is worth following: underwater robots are here, and plentiful, and will likely only get better and cheaper in the years to come.

Some of the advancement in underwater robotics will be custom-built for military clients, like the Boeing Echo Seeker.

Undoubtedly, the cutting edge of underwater robotics will remain in the hands of nations with the money to pour into such projects. But what about the good-enough robots, the machines that may not be built to military specifications, but can do the job in a pinch?

Consider, for a moment, the PowerDolphin and the PowerRay. Made by China's PowerVision; the PowerDolphin is one of a series of marine and aerial drones (all helpfully with "Power-" in the name).

The PowerDolphin has a top speed of around 17 km/h and a wide-angle camera that can record both above and below the surface of the water, and can tow small objects behind it, like a box of bait or a life preserver. It can also travel by waypoint navigation and plot what it sees beneath the water, creating a map for the user. The PowerDolphin has up to two hours of battery life, and can operate at up to a kilometer from its controller.

With that reach, towing power and video capability is not a lot compared to professional military machines, but it's a lot of extra awareness to put in the hands of a few guys in a small boat.

Like the commercial aerial drone evolution before it, the world of sea drones means cheap, capable vehicles that are likely good-enough for most purposes, from recreational photography to more surreptitious casual surveillance and scouting.

So what might this have to do with military tech? Maybe very little. It remains to be seen how non-state actors will incorporate robots like this into their operations. But the low cost means that if there is a nefarious purpose for underwater cameras, it won't be that hard for someone to figure it out.

PowerRay

The creator of the PowerEgg, an ovoid flying robot, has designed a submersible camera drone for home use. Dubbed the PowerRay, the waterproof device can find, attract and record fish. It can operate at a depth of 30 meters, for up to four hours at a time and is suitable for use in fresh-, salt- or chlorinated-water.

The basic package, the PowerRay Explorer, has a 50 meter cable that tethers the device back to a base station above water. Besides keeping the drone from getting lost in a strong current, the cable transmits power to and video from the PowerRay back to the base station.

All PowerRays have a 4K camera on board. ZEISS provides optical components to PowerVision. The PowerRay Wizard edition includes a VR headset that lets users watch what they're recording in a kind of immersive open water exploration that doesn't require a wetsuit. PowerRays aren't cheats for fishermen as Fish-finders are nothing new.

You have sonar systems that help you identify the landscape and where the fish are, already. Instead of putting it on the boat, they are just letting you move it around to go out and find the fish.

PowerVision: Intelligent Fish-finder

The PowerRay wizard comes with a powerful Fish-finder; it can detect the underwater landscape to a maximum depth of 70 meters.

You can see detailed real-time information about the fish distribution, landscape, underwater temperature and depth, and create fish alerts in the Vision+ App.

The Fish-finder can be also used as a stand-alone device.



PowerRay and PowerVision features:

1. 4K UHD Camera: PowerRay equips with 4K underwater 95°wide-angle camera, 1080p real-time streaming function allows users to inspect underwater objects including underwater bridge pillar, offshore oil and gas project, the bottom of the boat.
2. Easy-Operation: different with professional ROV, PowerRay is much more portable, it comes with customized suitcase, can be very easily operated and suitable for daily check and underwater detection in shallow waters.
3. Dive 30 meters depth: with 4K camera and Front LED light, make photos and videos very clear and stable.
4. VR Underwater FPV: Optimized VR ONE Plus in PowerVision Edition takes our first steps in the underwater world of virtual reality. Enhanced premium quality optics and portable design offer us a brand new underwater world experience in immersed first person view.

PowerDolphin: the Intelligent Multi-tasking "Snorling Water Drone"

The world's most intelligent multi-tasking water drone PowerDolphin from PowerVision can be navigated remotely in the range of 1000m, it has a top speed of 18 km/h and a maximum endurance of 2 hours.

It equips with a dual joint rotatory camera for above water and underwater shooting; PowerDolphin equips with sonar fish-finder, the fish-finder is able to help users to generate topographic maps for underwater



research, marine topographic survey, fishing spot search and maritime rescue.

PowerDolphin Highlight Features:

1. 4K Camera & 1080p Real-time streaming: PowerDolphin equips with a unique dual joint rotating 4K UHD camera, offers the opportunity to enjoy both above water view and underwater view in 132 degree ultra-wide angle.
2. Intelligent Fishing Assistant: Work with sonar fish-finder, PowerDolphin is able to identify precise fishing spot and provide user a brand new fishing experience.
3. Search and Rescue: Equipped with anti-overturn system and 3 speed gear shift, high cruising speed allows you to quickly deliver the rescue kits to your target destination.
4. Intelligent Waypoint Mapping: The powerful intelligent PowerSeeker Fish-finder is able to assist on waypoint mapping task, auto scan designated water area and generate topographic map.

PowerDolphin satisfies all your requests on water sports. 4K Camera, fishing, Search & Rescue and Intelligent mapping make everything different. With PowerDolphin's anti-overturn system and 1080P real time streaming, surfing will never be a single player sport. Even fishing becomes smart by the 132 degree ultra-wide angle camera and PowerSeeker sonar Fish-finder.

For more information visit www.powervision.me or contact them on australia@powervision.me



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Oxygen

Processes that keep you Alive

Oxygen comes from the very air around us, but that air is not as pure as you might think – even putting pollution aside. To arrive at the medical grade quality oxygen, ready to be used for your next dive, it has to undergo a number of processes.

The process of separating oxygen from air starts in an Air Separation Unit, a very large plant normally situated close to a steel or petrochemical plant. Firstly dust and other particles must be filtered from the raw air, then we need to remove other impurities such as carbon dioxide and moisture.

Carbon dioxide is the gas we exhale and we don't want this in our cylinder at the end of the process. It will also accumulate and turn into a solid, thus blocking pipes and valves. Moisture must also be removed as it will freeze in the manufacturing of liquid oxygen and destroy turbines and compressors down the line.

Removing these compounds is done with an absorption bed of silica gel and a molecular sieve (in some plants they are frozen onto the wall of a heat

exchanger at low temperature and disposed of). This process will also remove sulphides and other nasty contaminants that will spoil your dive.

The air now has to be turned into a liquid at a very low temperature of -196 C for the distillation process. This is done in stages. At every compression stage there is heat generated and the air must be cooled before it goes to the next stage. After the final compression stage it passes through an expansion turbine and turns into liquid air.

This liquid air is now distilled in a special column to separate the air into its primary elements of oxygen, nitrogen and argon. The liquid oxygen, nitrogen and argon are stored in special vacuum insulated tanks. These tanks will keep liquid oxygen at a very

low temperature of -188C.

There is always a small loss of oxygen due to heat leaking into the system. To transport the liquefied gases to cylinder filling plants a specialised road tanker is used.

Plants are situated around the country and run 24/7 to supply industry and hospitals. It is more cost effective to transport liquefied gases by road tanker than to transport ready filled cylinders as the weight of the cylinders adds to the distribution costs and these are a major overhead in the gas industry.

The liquid oxygen is filled into cylinders using specialised cryogenic pumps, through a vaporiser that turns the liquid back into a gas at high pressure. The cylinders are now analysed against the European Pharmacopoeia specifications for medical use and are then sealed and certified before being sent to customers. This ensures that the oxygen you buy for your next nitrox dive is safe for breathing. The only other oxygen that is safe for breathing is aviation oxygen. This grade of oxygen is used on aircrafts in the advent of a sudden depressurisation of the cabin.

The cylinder

The cylinder is also a very important part of the supply chain process as it contains the oxygen at very high pressure. High-pressure oxygen can be very dangerous if not handled correctly. All systems should be clean of oil and other hydrocarbons as these can spontaneously combust in pure oxygen. Even the wrong type of sealing tape can cause an ignition and only metal-to-metal seals are allowed for high-pressure oxygen.

Cylinders are registered pressure vessels and the owner has to maintain

the cylinders. Periodic-pressure-tests ensure that the cylinder is fit to take the pressure it was designed for. These cylinders are made from high tensile chrome molybdenum steel.

Every time a cylinder is filled a number of checks are done, which is why only the owner of the cylinder is allowed to fill the cylinder and no one else. When the cylinder is connected to any high-pressure system, care must be taken that nothing is fed back into the cylinder. Cylinders are also fitted with positive pressure valves to prevent this from happening.

When filling oxygen at high pressure into a diving cylinder care must be taken not to let the flow rate become too high as this will contribute to the heat of compression and the subsequent pressure error of the gauge used to make your Nitrox mixture.

High speed and high pressure of oxygen in pipelines is also a problem when material such as stainless steel pipelines are used – for that reason copper or Monel is used as the material of choice.

When oxygen is pressurised with a booster pump, special care must be taken on the materials of construction of the booster pump as the wrong materials can cause fire and an explosion. Check this with your supplier of the booster pump before you start.

On your next technical dive the last thing you want to worry about is the oxygen in your mixture – this is why your gas company goes to great lengths to ensure that the oxygen is produced to the highest medical standards.

Oxygen mainly comes from the air around us but getting it to you is not so simple. 

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Would you deploy your buoy during a 100m sea dive?

Q & A

Nuno Gomes



A surface marker buoy (SMB) is compulsory for any sea dive but for deep sea dives two SMB's are in fact mandatory – one SMB for the initial part of the decompression (with a red buoy) and another in case of any emergency (with a yellow buoy).

Following a deep sea dive to 100m or more I would ascend to my first deep safety stop at around 70m and deploy my SMB (with a red buoy) from that depth. This would not increase my bottom time and the time spent deploying the SMB, at that depth, would double as my first deep safety stop.

As a general rule I would not decompress on my SMB for very long, for any deep dive, except in the case of an emergency (with the yellow buoy). I would always decompress on a floating decompression line which would be placed next to my red buoy SMB line by my safety divers, shortly after the red buoy would break the surface.

On that floating decompression line, the buoy would have a minimum buoyancy of 25kg and there would be emergency decompression cylinders, extra oxygen and safety divers.

Diving in the sea without an SMB is irresponsible. Even when diving on a wreck where one uses the anchor line as the descent and ascent line, an SMB is still mandatory. 

Barry Coleman



I cannot think of a reason, while I sit and write this, why I would ever deploy a buoy (SMB) from 100m. The amount of line needed on the reel to do this with our currents is more than any reel capacity I carry.

When considering this, the only real benefit I can see is that should the deployment cause the diver to be pulled up for whatever reason, then there is less risk from a rapid ascent and decrease in pressure compared with much

shallower depths. The best is to balance the risks and compare the benefits.

For example, during shallow water deployment there is a risk of unwanted ascent where the pressure differential is greater. Too deep and there is a risk of excessive drag from currents and potential line snag, entanglements or reel jam.

Deployment below the first decompression stop or not deeper than 60m or 50 m, I have found to be the best option so far.

Excessive practice and mastery in a non decompression environment and in shallower depths is mandatory, but that goes for all other decompression skills too, as the sum of the parts makes up the whole. 

Pieter Smith



I would! And this is practically how it works: Dive plan of 100m and 12 minutes bottom time. At 10 minutes I will start 'ending my bottom time' in that I will start looking for a spot to deploy from as well as starting to get my reel and SMB out.

I will ensure that I arrive at the spot I want to deploy from at 11 minutes bottom time and prepare my reel for the deployment (open the SMB and ensure that the reel line is free). If it is a sandy bottom I will make use of that to stabilise myself (negatively buoyant) on the bottom to start the action. If in mid water I will position myself away from other divers or restrictions.

When starting the deployment process you need to be slightly negatively buoyant and focus on the off-reeling as an entanglement will cause an uncontrolled ascent or loss of the reel. In technical sea dives it is important to keep communication to the surface through the SMB at all times – and that is the reason why I will deploy in technical sea dives.

The SMB is filled with gas from either the

DV or an inflator (coupled to an inflator hose) at a fraction of its volume as it will expand on the way up.

Letting the SMB go you need to control the speed by breaking onto the reel with your hands and simultaneously allow the SMB to take you up a few metres at a time. At the same time you need to control your buoyancy until you feel the SMB hitting the surface (there will be no more strain on the line). Now you need to stabilise your buoyancy – again slightly negative so that you keep the SMB on the surface in an upright position – and start your ascent. It is important to keep focus on your deco schedule, especially your first deep stop. 

Pieter Venter



For a technical sea dive a deployment buoy is critical for controlled decompression and I would advise to always carry a back-up reel and buoy.

Unfortunately, deployment of a buoy carries some risks and I have been on dives where both a bottom deployment and a mid water deployment have gone wrong. I will not deploy mid water, a lesson learned from ther divers.

In mid water, it is very difficult to stay together as group and to control depth in mid water deployments. My preferred method is to deploy from the bottom, with the first deep stop, or 70m, whichever is the deepest, marked with black ink on the deployment line.

While the line feeds out I will rise and if I am not at say 70m when the line reaches the black mark, I will use the buoy slightly to ride up to 70m.

The big advantage of bottom deployment is that you can stabilise yourself on the bottom and if the reel line jams, you have time to get rid of the reel.

It is also easier for the group to stay together. Buoy deployment is not to be taken lightly, and can easily cause an uncontrolled ascent. It is advisable to practice this critical part of deep dives. 



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Boat Rescue



Performing a scuba rescue with the assistance of a boat can be interesting to say the least. The reason for such a statement is the fact that there are so many different types of boats that people dive from ranging from small man propelled crafts, to yachts to the bigger end of the scale.

The positive thing about being in the vicinity of a boat (hopefully, and in all likelihood the boat you are diving from) when you need to be rescued most certainly has some advantages. These include the following:

- Emergency first aid equipment should be available on board (that is if you are diving with a reputable charter company).
- O2 should be available on board.
- The boat can and should carry communications equipment that can notify the emergency services to be on standby to assist as it heads towards shore.
- A boat provides the ability of range to a rescue as divers that are far off shore can be brought back in the event of an emergency.
- The captain and boat crew should be trained in the use of the emergency and O2 provision equipment (again... if you are diving with a reputable charter company).

With some of the advantages listed above it is also important to remember the flip side, namely the disadvantages.

It should be remembered that a boat is a moving vehicle which can have some inherent risk if not handled correctly – the most obvious will be the bow of the boat for divers returning to the surface and not watching their head. The other might be the engines and propeller blades.

If you are a qualified rescue diver, does this mean that you are a ready to perform a boat rescue? Well, a boat rescue could either involve high tailing it out of the water to shore with a scuba diver that has lost consciousness and stopped breathing while performing CPR (cardiopulmonary resuscitation) or just assisting a diver that has swam to close to the coral, resulting in a cut and some bleeding, while the boat slowly returns to shore.

I am sure that most rescue divers do not think of this when they get onto the boat. They are rather thinking of the reef which they are about to dive or the sea life they want to see.

Although it is not possible to train or prepare for every single scenario, there are definitely steps that every rescue diver should take to ensure their readiness should a situation occur.

These steps include the following:

- Familiarise yourself with the rescue procedures of the boat you are boarding.
- Determine who will be in charge during an emergency operation (this is usually the captain when the boat is involved but discuss and decide beforehand).
- Familiarise yourself with the rescue qualifications of the captain and crew.
- Make sure you are completely aware of where the emergency kit is located.
- Establish where the O2 is stored and who is qualified to administer the O2 in an emergency.
- Determine where within the boat will be the easiest way to get an unconscious scuba diver out of the water and onto the boat.

Thinking of the above and being aware of this type of information will form a good framework of reference that will be invaluable in the event that an emergency does occur, as it will lead to a controlled manner in which it can be dealt with.

It is the responsibility of all divers with rescue certification to ensure that they are continuously vigilant in preparing themselves to be able to execute a rescue at any given time.

This is done by firstly obtaining an awareness of the surroundings, identifying possible risks and then planning accordingly to minimise these risks as much as possible. It is also very important to know one's own limitations, to admit this and to step back and let more qualified people, if available, handle an emergency situation.

Although not always practical, it is always a good idea to practise a rescue situation for every possible rescue scenario you can think of, and a boat rescue is no different. It will give you a good and entirely different perspective of the things to consider when preparing for a rescue next time you board a boat. 



Weight Up!

Early in dive training, students learn that there are three elements involved in buoyancy control: the buoyancy compensator (BC), weights and lung volume. Although most divers are familiar with the need to be properly weighted, many do not understand all that it entails. Students and experienced divers alike make two common errors when it comes to weighting: diving while over-weighted and failing to adjust the amount of weight used in response to changes in equipment and environment.

Don't Work Too Hard

Improper weighting makes it harder to achieve neutral buoyancy. Many divers who wear too much weight do not even realise they are over-weighted. The excess weight means that to achieve neutral buoyancy the diver has to put more air into the BC bladders, which can create a more upright profile in the water.

The upright position increases drag when swimming, causing the diver to expend more effort and consume more air. Underweighted divers can also become significantly fatigued while trying to stay down. In addition to increasing breathing-gas consumption, extra exertion can elevate decompression stress.

Get It Right

You may have heard a diver say, "This is how much weight I always use." While field testing and prior experience can be useful, this statement shouldn't be the endpoint of a dialogue about weighting.

Proper weighting requires thought and practice, and the amount of weight worn is not fixed.

Over the course of our lives, we experience change in muscle mass, body fat and physical fitness. Equipment, including wetsuits, wears out and gets replaced. Dive environments differ. All these factors affect buoyancy and require adjustments to the amount of weight used.

To determine how much weight you need, consider your body weight, the exposure protection you will be wearing, the weight of your equipment and the environment in which you will be diving.

Start with weight equivalent to 10 percent of your body weight, which is a good baseline for a 6mm full wetsuit. For a 3mm suit, use 5 percent of your body weight. Remember that these percentages are simply starting points.

Drysuits and thick neoprene necessitate more weight to counter the suits' buoyancy than do thin neoprene or dive skins. Body composition (muscle density, for example) will influence whether more or less weight is needed. Diving with an aluminum tank requires more weight than diving with a steel tank.



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By Marty McCafferty, EMT-P, DMT, and Patty Seery, MHS, DMT

Saltwater is denser than freshwater, thus increasing the buoyancy of immersed objects and requiring more weight to descend.

Dive training typically begins in freshwater environments such as pools, quarries or lakes, so new divers should consider that even if they are wearing the same exposure protection they will need to add weight for ocean diving.

The exact amount of additional weight needed will vary from person to person. Performing a buoyancy check in each situation will help determine the correct amount of weight to add.

Secure It

There are several options available for how and where to secure your weights. A weight belt is the most common method of wearing weights; there are belts that accept slide-on weights as well as pocket belts that can accommodate either solid weights or soft weights (bags filled with lead shot).

Weight belts are easy to ditch in an emergency as long as you keep other gear clear of the belt. A shoulder harness is sometimes used when the buoyancy of thermal protective suit requires more weight than can comfortably be worn around the waist.

Integrated weight pockets and harness systems offer a couple of advantages over belts: They can be considerably more comfortable, and they offer improved ability to adjust trim. But unlike belts, which have a single point of release, harnesses and integrated systems may have more than one release point.

This is crucial information for the diver and dive buddy to discuss prior to diving — and to remember in the event of an emergency. A downside to using weight pockets is that it may be more difficult to add or remove weights if adjustments need to be made.

Stay Trim

In addition to wearing the right amount of weight, make sure it's positioned to optimise underwater trim. Creating a level profile in the water makes you more hydrodynamic.

Distribute the weights as equally as possible

from side to side; you should never feel as though you are listing to one side while diving. You should also consider the weight of your scuba tank and the style of your BC when placing your weights.

The tank can be moved up or down in the tank band to facilitate optimal body positioning in the water. Back-inflation BCs have a tendency to push the diver forward (face down) in the water, so placing weights toward the back can help to counter some of this forward pitch, especially at the surface.

While weight pockets on the back of your BC can help with trim, they also present a hazard in an emergency because buddy assistance is required to remove them if ditching weight becomes necessary.

Fins can be positively, neutrally or negatively buoyant, and each type may require compensation. Ankle weights can help offset a more buoyant lower body half, but they may be a challenge to ditch, because you have to reach to release them.

If your fins are negative and create a downward pull on the lower half of your body, moving weights higher on your body or shifting your tank higher in the band can move up your center of gravity to promote a more level profile.

Reviewing where and how your buddy's dive weights are placed is an essential component of every pre-dive check. Each buddy needs to know how to jettison the other buddy's weights in an emergency.

Learning to determine proper weighting will enhance your enjoyment of dives as well as your safety. Having a good understanding of your baseline weighting needs and the factors influencing your buoyancy will aid you in adjusting to a variety of environments and conditions.

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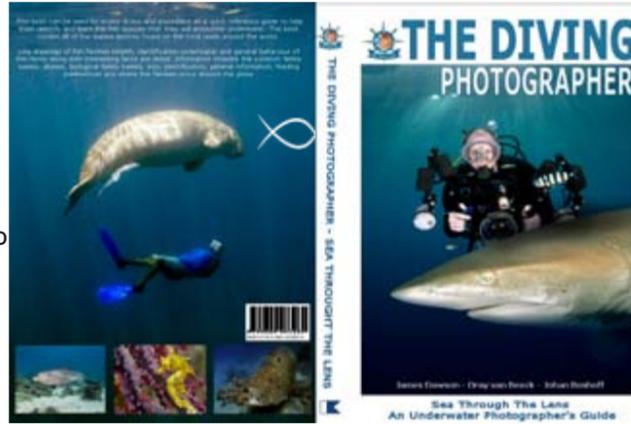


WWW.OZDIVER.COM.AU

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: \$15

Marine Species Guide –

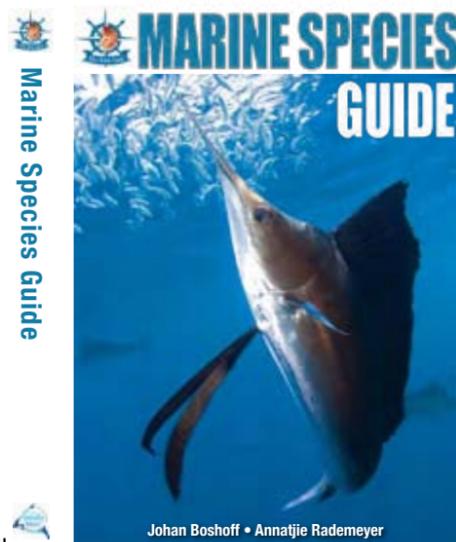
Yes, it happened...I had to buy a larger bookshelf. The latest book from The Dive Spot has landed on our shores – The Marine Species Guide.

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.

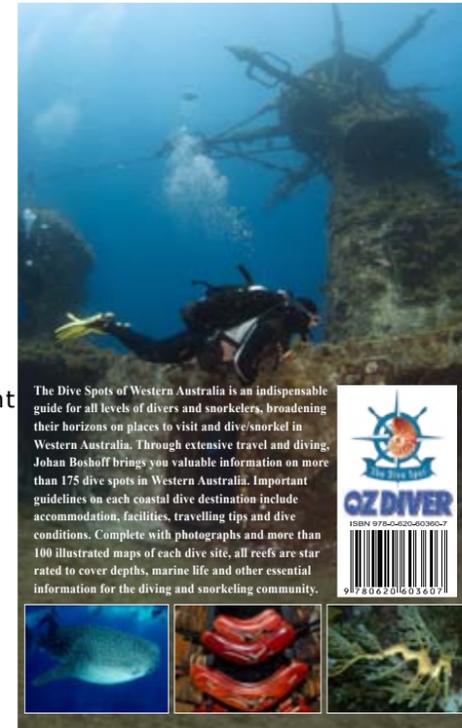
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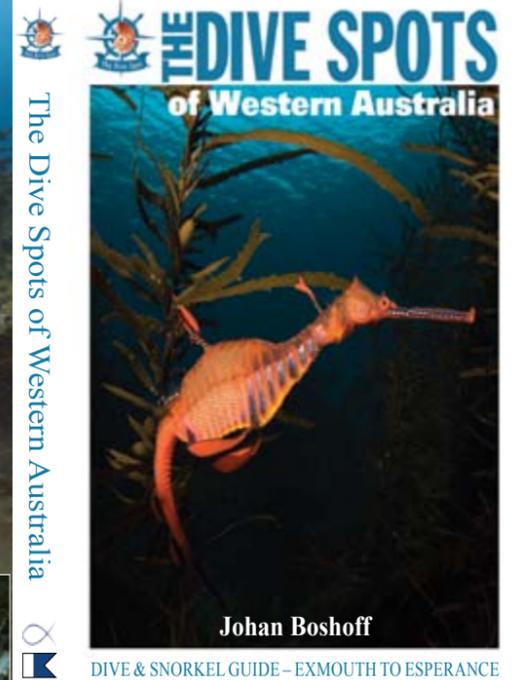
Johan Boshoff • Annatjie Rademeyer
A quick reference guide to the marine species found on coral reefs around the world

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.



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.



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The PowerRay and The PowerVision

Ever wondered what is happening under the water. Now it is possible without scuba gear using the new PowerRay. An underwater drone that allows you to go and explore the ocean secrets and to top it off, you can add the PowerVision so your underwater drone becomes a fish finder with so much more possibilities.

The PowerRay is not just an amazing good looking toy but for fishermen, videographers, photographers and underwater enthusiasts a great device to use to explore the surrounding waters.

This Underwater ROV can dive down to 30 meters in salt, fresh or even chlorinated water for up to 4 hours. With its amazing lights and camera that is situated in front of the unit the camera can capture 4K footage or 12-megapixel still photographs and stores them all on-board on its internal storage device.

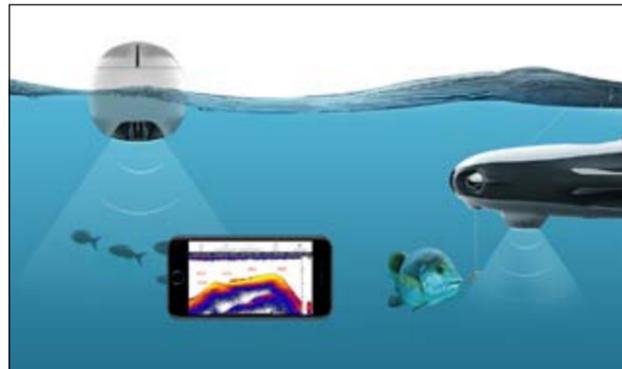
If you are a fisherman, you can add fantastic accessories like the PowerRay Angler package that was specifically designed for fishermen, accessories include Precision Remote Bait Drop which allows you to place the fish bait at a desired position and the PowerSeeker/Fish-finder can dock directly into the PowerRay or be used separately as a standalone device. This PowerSeeker provides you with detailed information on depth, fish distribution, underwater landscape and temperature. If you love fishing, you should certainly consider these added benefits to the PowerRay.

The PowerRay is really easy to operate with its PowerVision App Interface. PowerVision has included a unique live streaming. If you have an Android or iOS device you can connect directly to the PowerRay to live stream 1080P video at 30 frames per second by docking your smartphone into the remote controller that allows full range of motion and speed control.

The PowerRay also has an option to use a VR headset to have a first-person perspective of the drone and also impressive, you can connect to multiple goggles/devices simultaneously and switch between basic viewing mode and control mode. This allows you and multiple friends to all share the same first person viewing experience.

The PowerRay is a great underwater drone with so many features that gives you a spectacular real-time view underwater and allows you to capture just the right shot or fish.

For more information on The PowerRay or The PowerVision's visit: www.powervision.me 



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 came 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. 



EPIC ADJ 82X - CUTTING EDGE TECHNOLOGY COMBINED WITH CONTEMPORARY DESIGN SOLUTIONS.

The new Mares Epic ADJ 82X is the latest top of the line regulator built by one of the most world-renowned scuba brands. Combining traditional advantages with cutting edge technologies, Epic ADJ 82X represents the new benchmark for high-performance regulators.

The 82X first stage includes the revolutionary new anti-flooding system, called AST (Auto-Sealing Technology). This clever innovation is effectively an insurance policy for your regulator – safeguarding it from water penetration and maintaining a dry first stage under all conditions. The AST system is activated by a flow of gas, which means that it works automatically without having to rely on mechanics, thus ensuring maximum reliability.

A balanced diaphragm first stage, Epic offers consistent airflow at any depth and under any conditions. This, paired with other design features in the first stage, delivers a natural DFC (Dynamic Flow Control), elevating air flow through all of the low-pressure ports. Epic also utilises a 360° swiveling turret and a unique design for the HP ports (OPD) allowing you to orient the high pressure hose and/or computer transmitter to your preference, regardless of the first stage position. This offers you total control of your equipment configuration.

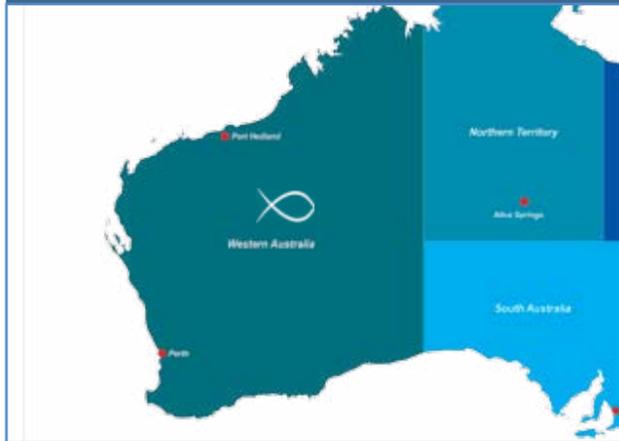
But the benefits don't stop there. The diver can adjust breathing comfort as needed using a knob that's easy to operate even when wearing thick gloves. Epic ADJ 82X also incorporates fully pneumatic balancing in the second stage, as well as a large, pivoting purge button for fast, intuitive use. Combined with the VAD Twin Power system, which allows the diver to control air flow in response to their breathing demands, the Epic ensures the very best performance even in the most extreme conditions.

All this has been achieved whilst maintaining a compact and lightweight product with an element of design that will be the envy of your diving friends. Epic 82X is available now at your closest Mares dealer or visit www.mares.com or sign up for an SSI Sidemount course at your local SSI Dive Centre. 



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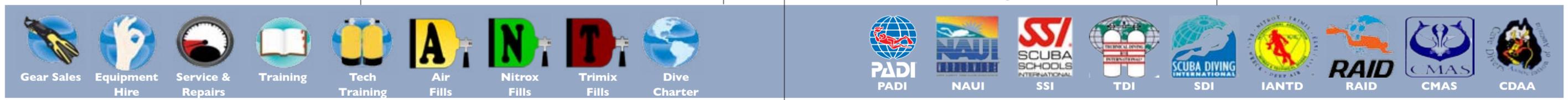


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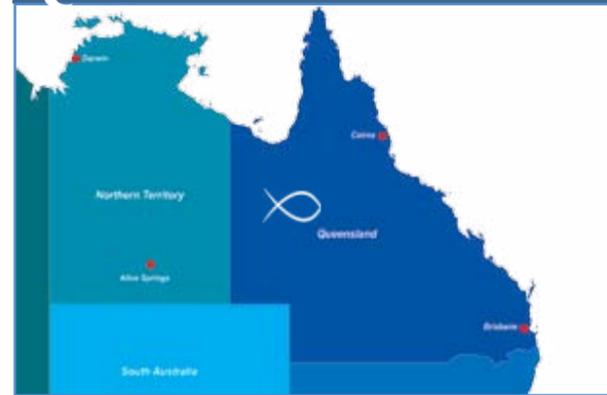
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