

# OZDIVER

AUSTRALIA'S PREMIER DIVE MAGAZINE

TECHNICAL  
WRECK  
DIVING

BASIC  
INSTINCTS

SURFACE  
OXYGEN

BIKINI  
ATOLL

GLOBAL  
WARNINGS

# FIJI

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







# Editor's Deco stop

A year has passed since I publish the first edition of OZDiver magazine and developed the apps. I still cannot believe how big the magazine has grown in the last year. Thousands of readers from all over the world are downloading the magazine and smart apps. Being a tech diver I decided that I would go for a run one morning. This was a big thing for me because it was to be the first time I had run in 40 years. So, as with any new cave dive, I decided I would have to do a proper run plan and a complete risk assessment. I chose to plan this run as I would any technical dive. To do so I thought about my first cave dive and my first 100-meter dive many moons ago. So, here we go with my risk assessment:

- 1 - Make sure that your medical aid is up to date.
- 2 - Make sure your life insurance is up to date.
- 3 - Get to the first corner or at least a bus stop.
- 4- Take some money to buy a bus ticket to take you home if you can't make it.
- 5 - Take extra money if you don't make the bus stop and need to call a taxi.
- 6 - Take a mobile phone to phone an

- ambulance if you don't make it to the bus stop.
- 7 - Take water so that people can throw it over you if you pass out.
- 8 - Write your name, home address and emergency number on your arm in case people find you passed out next to the road.
- 9 - Tell some people what you are doing and tell them that if you are not back in a hour they must start phoning hospitals and ask where you are.
- 10 - Where a hat and sunglasses so that people don't know it is you.
- 11- Take oxygen because you never know when you need to do some stops on the way back.
- 12- Take some music and some headphones so you can't hear yourself suffering.
- 13- Take some painkillers before you go.
- 14- Always keep your medical aid card with you.
- 15 - Run next to the beach or bush so you don't have to vomit on the road. Now I understand why people run with towels. It is not for the sweat, but to wipe the vomit of the shoes. I think that if anyone sticks with this run plan you will be ok. I hope that you enjoy this edition, and belief it or not, there are many more to come.

The Editor & Publisher

**Johan Boshoff** 

*-it is all about the journey and not the destination*

### Genesis 1

*1 In the beginning God created the heaven and the earth. 2 And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.*

# OZDIVER

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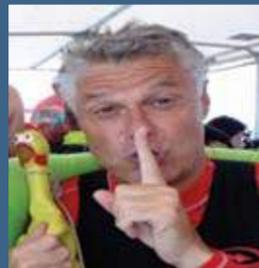
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Peter Pinnock

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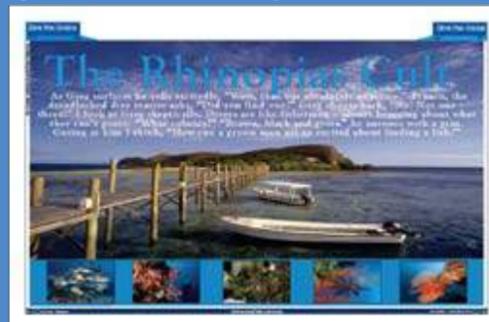
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FEATURE



**10 Things that Change when you start Scuba Diving**

Not everyone who starts scuba diving falls in love with the sport. However, if you are one of the lucky people who finds release, peace, and excitement in scuba diving, you will probably pick up a few of the habits and behaviors listed below. Perhaps you don't exhibit all of these traits, but if you are addicted to scuba diving, I am willing to bet that more than a few of them apply to you!

**6 . You Comfortably Discuss Bodily Functions With Strangers**

It is not uncommon to find a boatful of divers discussing the best way to eliminate pee from a wetsuit underwater, or even discussing how one diver can't manage to urinate underwater and finds



it uncomfortable. This is not normal dinner-table conversation, but somehow it is okay to discuss with your dive buddies.

Divers learn about each other's ear health, congestion, indigestion, hydration levels, muscle cramps, and nearly every other physical condition that can affect a diver's comfort and safety underwater. When was the last time you discussed a chronically dry mouth or massive mucus production with your non-diving friends? These are topics that come up in dive boats, often with people you just met.

**7 . You Become Part of a Diverse Club of (Usually) Like-Minded Individuals**

Scuba diving provides a commonality between people from different walks of life, backgrounds, and careers – people that might otherwise never meet. It is not uncommon to find a businessman from New York City and a yoga instructor from Portland diving together, sharing life experiences, and finding that they have more in common than they might have guessed. Unusual pairings can and do lead to life-long friendships.

Diving has a way of bonding people despite their differences because most divers are weird – in exactly the same way. Why on Earth would a person want to pay money to strap on heavy gear, descend into a uninhabitable environment, and wander around for a while? If you understand the desire, and the random person you just met feels the same way, you already have a similarity in your

personalities that makes you likely to get along. You might be a bartender, a doctor, or a pilot, but you are also a diver. Sometimes, the diver part is all that matters.

**8 . Your Retirement Plans Change**

That quiet cottage in the mountains, luxurious home in the suburbs, or cozy apartment in your favorite city all sounded like wonderful retirement plans until you started scuba diving. Now, the most important requirement for retirement is proximity to your favorite dive sites, or financial solvency that allows you to visit them on a reoccurring basis.

It is not uncommon to learn that divers are quietly plotting their retirement escapes. This ranges from condos in tropical locations, to a home in your favorite cave diving region of the world, to braving an apartment in cold regions to be within half an hour of your favorite shipwrecks. The goal? To become a local diver, be on a first name basis with the dive guides, or even to become a dive guide yourself!



**9 . You Become Annoyed by the Misrepresentations of Diving in the Media**

You have turned to your friend after a movie featuring scuba diving and, slightly outraged, exclaimed some variation of the following: 1. A trained diver would never do that! 2. He didn't even have an alternate air source/pressure gauge! 3. Where is his dive buddy? 4. Sharks don't attack people underwater!

Not only do you find the misrepresentations of scuba diving and the underwater world slightly offensive, you feel the need to set them right. Unfortunately, these sorts of media errors are pervasive, and most people don't care about factual errors as long as the entertainment is . . . entertaining. This doesn't stop you from trying to rectify the situation, however.

**10 . You Become an Ambassador for the Sport**

Diving is the best thing ever. Well, maybe not the best thing ever, but it is up there in the list with chocolate and sleep. As an avid diver, you feel that your non-diving friends are missing out on seventy percent of the planet, and you are right.

Cue the list of amazing diving experiences you have had, weird underwater creatures you have seen, and unlikely places you have visited due to your obsession with diving. Cue countless vacation photos of fish, turtles, and eels. Cue slideshows, home movies, and Facebook posts.

You know that one of the best things about scuba diving is sharing the experience with your friends, and inspiring them to try diving is the logical next step. While you understand that some people simply aren't cut out for scuba diving, this doesn't stop you from trying to convince likely candidates to give it a shot. If you are lucky, your endless stories and images might just succeed, and you could end up with a new dive buddy who loves scuba diving just as much as you do.

by Natalie Gibb - View the original article on [www. about.com](http://www.about.com)

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

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

# OZ News



## Polynesian Voyaging Society navigates Australian coast in search of ghost gear.

The Polynesian Voyaging Society (PVS), an environmental and cultural group from Hawaii, will be visiting Australian shores in the coming weeks to raise awareness of the threats our oceans and its animals are facing.

PVS will be navigating the east Australian coast from May to July using traditional way finding techniques that employ stars, waves, wind and birds as mapping points for direction.

The PVS Polynesian voyaging canoe, Hōkūle'a (meaning 'Star of Gladness') will make its way from Sydney in May to the Far North Queensland coast and across to the Northern Territory through June and July. In support of World Animal Protection's Sea Change campaign, the PVS team will be monitoring our coast for deadly ghost gear that can cause terrible suffering to marine animals.

Our Sea Change campaign reduces 'ghost gear' – lost and abandoned fishing gear that turns oceans into death traps for sea animals.

Abandoned, lost and discarded nets, lines and traps are one of the biggest threats to our sea life. A staggering 640,000 tonnes of gear is estimated to be left in our oceans each year. That gear traps, injures and kills hundreds of thousands of whales, seals, turtles and birds annually. So, through our Sea Change campaign, we're aiming to save one million animals by 2018.

Founded on a legacy of Pacific Ocean exploration, the Polynesian Voyaging Society seeks to perpetuate the art and science of traditional Polynesian voyaging and the spirit of exploration through experiential educational programs that inspire students and their communities to respect and care for themselves, each other, and their natural and cultural environments.

Find out more about the PVS and their journey to Australia from Hawaii at [www.worldanimalprotection.org.au](http://www.worldanimalprotection.org.au)



## Back the bill to know your flake from the fake

by Nathaniel Pelle

It'll be no surprise to anyone that as a Greenpeace Oceans Campaigner you often find yourself on the opposite side of the fence to the fishing industry. From chasing dodgy longliners at sea, to confronting our biggest tuna brands, to sending the monster boat FV Margiris back to Europe, we've spent a lot of time eye-balling each other, the fishing industry and I, often going toe-to-toe.

But lately, instead of facing off, I've increasingly found myself side-by-side with the people who catch fish for a job in Australia. We've been just about in lock-step when it comes to better country of origin labelling for fish; shoulder-to-shoulder on accurate fish names; arm-in-arm on distinguishing wild-caught from farmed.

### I admit, it's refreshing.

It started with the formation of the Label My Fish alliance last year when we gathered key conservation groups, celebrity chef and TV presenter Matt Evans, and some progressive fishing companies and restaurants from around the country to stand up for better seafood labelling laws.

Recently we broadened the relationship by putting together a joint statement on labelling signed by an even bigger alliance of sixteen different groups from around Australia.

The statement calls for 'country of origin' labelling in the food service sector, so you'll know where your flathead comes from at the pub or fish and chip shop (at the moment they don't have to tell you anything); and it also demands accurate fish names, so you'll be able to tell if what you're eating is really 'flake', or if it's a fake.

Parliament, or at least the Senate, is due to debate a bill that would see the first step towards better labelling made into law by removing the exemption from country of origin rules that currently applies for cooked seafood. The bill was introduced by independent Senator Nick Xenophon along with Peter Whish-Wilson from the Greens, and co-sponsored by Senators Glenn Lazarus, Dio Wang, John Madigan and Jacqui Lambie.

### What you can do

The bill they you need to support is called the Food Standards Amendment (Fish Labelling) Bill 2015 – it's pretty simple, right now country of origin laws apply at the fresh fish counter or when you're buying packaged seafood, but they don't apply in a restaurant, pub or fish and chip shop. That's one of the reasons why many Australians think they're mostly eating local seafood when the truth is over 70% is imported. This bill will change that by removing the exemption for cooked seafood.

It might seem like a no-brainer, but if you've ever watched parliament on TV you'll know we can't take anything for granted. Politicians need a lot of reminders. And you're the best person to do it.

Really. Please take a moment to reach out and tell them you want to know what's beneath the batter – it just might make all the difference.



Peter Pinnock

## Shark nets in Australia – what are they and how do they work?

From our guest writer Alice Forrest, Aquarist with Manly SEA LIFE Sanctuary and part-time mermaid.

The past month has seen a baby dolphin and 3 young whales caught on shark control equipment in QLD. The dolphin was critically injured with a drumline hook through its side, while 2 whales were released and one drowned. This cruel by-catch, along with some recent encounters with politicians, have left me feeling like there is a huge amount of misunderstanding about the government's shark control policies here on the east coast. There's been a lot of media attention lately on the drumlines in Western Australia, but often the situation here in the east is neglected – despite the fact that there are more drumlines in Surfer's Paradise alone than in the whole of Western Australia. We've been culling sharks in my home state of NSW since the 1930s, and still kill thousands of animals every year in our beach nets. So here's some information about why this policy is bad, economically and environmentally.

How do the shark nets work?

The nets are NOT a barricade, and don't prevent sharks from getting near the beach. They are simply in place to entangle and kill animals that are passing by. They are 150m wide, and 6m tall and usually set in about 10m of water – allowing sharks to swim over and around. In NSW they are only in the water for 8 months of the year, and only 14 days in each month – so a lot of the time they're not even in place.

Are they protecting people?

No. There is no science showing that the nets make our oceans any safer for beach-goers. In fact a 2009 government report stated that 'the annual rate of attack was the same both before and after meshing commenced'. While the number of shark fatalities has decreased since the nets were put in the water, this is due to improved medical assistance and not to the nets.

Are they harming wildlife and ecosystems?

Yes. Over 15,000 animals have been killed by these nets in NSW – this includes about 100 species such as endangered turtles, dolphins, dugongs, rays, seabirds, harmless sharks and rays. The nets have even killed orcas, little penguins and people – that's right, shark nets have killed 2 people. Last year a baby humpback drowned in the nets a few beaches from where I live, while its mum watched on. Just to clarify, these deaths are not a trade-off for the protection of people, but are unnecessary deaths in an out-dated system that doesn't protect anyone.

How much does it cost?

The NSW Shark Meshing Programme is estimated to cost about \$1.4 million per year, for an 8 month contract that operates on 14 days of the month on beaches between Wollongong and Newcastle only!

Is there an alternative? Yes. Recent technological improvements that are based on our increasing understanding of how sharks work have provided us with a range of superior alternatives. There's the eco shark barrier – which provides an actual barrier, without the threat of entanglement. Or the clever buoy, which detects the size and movement patterns of sharks and alerts lifeguards in real-time. We have come a long way since the 1930s!

But am I going to get eaten by a shark?

No. Well statistically it's incredibly unlikely – less likely than being killed by a vending machine, or by lightning, or a coconut to the head. However we all take a calculated risk whenever we enter the ocean – something could go wrong, as it could anywhere in life. If a shark does bite you, you'll probably just end up with a rad scar (they don't eat us, despite what you may have seen in Jaws). At the end of the day, I think we should just accept that the ocean is where sharks live, and we're entering their territory when we're in the water – and the territory of all the other ocean creatures. After all, that's one of the things that makes the ocean so great!

Can I do anything to help get rid of the nets & drumlines? Join local groups on social media – #noNSWsharkcull, #noQLDsharkcull & #noWAsarkcull or nation-wide groups like Sea Shepherd who have just announced a new National anti-shark culling campaign Operation Apex Harmony to replace the nets and drumlines with alternatives that actually protect people, as well as not harming other animals.

<http://www.sealifetrust.org.au>

## PRODIVE International joins RAID.

RAID International and RAID Australia / South Pacific is extremely pleased to announce Australia's largest dive retail and diver training chain; ProDive International, has chosen to offer RAID training as an option for their large customer base.

Russell De Groot, CEO of ProDive International, was an early adopter of online training and on reviewing the RAID system commented: "we are really pleased to see the vast range of online options the RAID diver education system provides, including everything from recreational scuba, technical to rebreather training. We at ProDive International like to meet all the diver education needs of our customers and online training for dive theory is the future of scuba training in my opinion".

RAID International CEO, Jim Holiday said: "we at RAID International and RAID Australia / South Pacific are very excited to partner with ProDive and are confident the RAID programs will be warmly welcomed by their large customer base throughout their various stores. ProDive is one of the most highly respected and enduring chain of dive stores in the world and by them joining the RAID family of stores for us it is just one more testimony to the quality and cost effectiveness of the programs we offer. It is also an acknowledgement of the experience of our staff who are available to support such a renowned chain of stores".

RAID International Recreational Training Director, Mark Mc Crum said: "RAID is on a rapid growth curve in the Pacific with the two biggest dive retail chains, Scuba Safaris and now ProDive, offering RAID courses to their large collective customer bases. We are confident that the choices these two dive retail giants have made will influence others to see the virtues of the fully online dive theory we offer for all courses and look at breaking their current mould".

RAID Australia Training Manager Steve Bates said: "conducting the series of crossovers for ProDive International's instructor staff was a pleasure since all the participants were extremely experienced instructors and very open to the innovative ideas RAID has in relation to both online theory and in-water skills. I am sure our relationship will continue to provide great opportunities for both our organisations".

RAID was relaunched in early 2014 after sailing under the dive industry's radar for the previous 7 years. Now RAID is one of the largest diver training agencies in Australia and with international full service offices located in over 15 countries from Australia to the UK, it is definitely a space to watch.

To learn more contact your local RAID Regional Office or find all the information you need on all RAID programs at [www.diveraid.com](http://www.diveraid.com) and on freediving at [www.freedivingraid.com](http://www.freedivingraid.com). Also visit us on Facebook at <https://www.facebook.com/diveraid>

### Dive Schools / Operators / Organisers / Instructors



Do you have any interesting, newsworthy info to share with the 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](mailto:info@ozdiver.com.au)

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# OZ DIVER



# WWW.OZDIVER.COM.AU

By Amilda Boshoff

# Australia International Dive Expo (AIDE)

The Second Australia International Dive Expo was held on the sunny spring weekend of 12-13 September in Sydney's Royal Hall of Industries, Moore Park.

**AUSTRALIA INTERNATIONAL DIVE EXPO**

**AIDE 2015**  
DIVE & DISCOVER





Upon entry into the exhibition hall the public was greeted and registered by the friendly exhibition staff and many was drawn by the try-out pool. Wetsuits and all the necessary equipment for the non-diving, inquisitive members of the public was available to have a dive try-out in a stable environment.

With this introduction to scuba diving, participants learned about the basic dive equipment required before getting geared up to experience the shallow introductory dive themselves. Instructors and dive masters

at hand to help and answer all the scuba related questions.

In the foyer of the was a stunning photographic exhibition of the underwater and marine world, by Matthew James Smith, Gaetano Dario Garguilo, Greet Meulepas and George Borovskis. Framed and unframed photos were available to view and on sale.

It is amazing how colourful and versatile the underwater realm can be when seen through the eye of a talented underwater photographer.

For the kids there was an entertainment area with crafts, face painting and carers to keep the young ones busy while the adults visit all the interesting exhibitor stands to plan the next dive excursion or family holiday. Visitors was offered exclusive dive holiday deals, a range of dive courses to suit their requirements, special offers on the latest scuba diving and camera gear, expert tips on underwater photography, information on ongoing marine conservation practices and a host of other engaging activities.



amazing  
**THAILAND**

*Breathtaking underwater world,  
magnificent marine creatures and coral formations,  
dive in Thailand.*



There was also a series of competitions and prizes won over the weekend.

AIDE welcomed more international and local exhibitors this year to share their passion for the sport and lifestyle for the growing Australian dive community. Exhibitors included tourism boards, dive resorts, operators, Scuba dive certifiers and equipment representatives. There were also a big presence concerning marine conservation and the favourite among many a diver, the underwater photography equipment, new scuba related apps and media partners.

There were a host of speakers and workshops over the two days at AIDE and talks ranged from Photography, Dive Travel, Conservation, Free diving and other dive and marine adventure topics held daily from 10.00 am to 5.00pm on both days.

Some of the topics and speakers at this year's AIDE were:

● **"Photography in Antarctica" by Scott Portelli**

Scott Portelli is an award-winning professional wildlife and underwater photographer. With a passion for the ocean and an affinity with cetaceans including whales, Scott has spent the last decade working with humpbacks, photographing and filming their behaviour both above and below the waves. Based in Sydney, Scott had travelled the world extensively photographing in some of the most remote destinations, including The Arctic, Antarctica, Galapagos, Azores, Africa and the South Pacific. He is very passionate about all wildlife from the smallest to the largest and he is always in pursuit of those unique one on one experiences.

● **"Above and Below Photography Techniques" and "Facing Jaws at Cuba" by Matthew James Smith**

I have always had an attraction to the

water and the tricks it plays on light for as long as I can remember. Some of my earliest memories are of my brother and I snorkeling on family holidays to France and the Mediterranean Sea. I can clearly remember my first experience of watching shafts of sunlight weave down into the deep blue, carved by the rippling ocean surface. I bought my first film SLR camera in my teens to try and capture what I loved to see and I used it to shoot the coastlines of my home country of the United Kingdom. I took night classes to learn how to use it properly and to process and develop my own pictures. It wasn't long before my curiosity and appetite for shooting the ocean meant I would have to get in and shoot underwater, so I saved and bought a waterproof housing for my camera so I could explore further. As my photography skills grew I needed to travel more to get the images I imagined, so trips abroad to far off countries followed. I now live in Stanwell Park Australia, after emigrating from the UK in 2007 and I have the worlds biggest playground at my feet, the Pacific Ocean..... And I have truly fallen in love with it!!

● **"Beginner's 5+ stages of Underwater Photography & associated images" by Heather Sutton Upcoming underwater photographer.**

Heather Sutton was qualified as an open water diver in 2011 and now a dive master. Heather lives couple of hours drive from the coast and knew that she needed another reason to dive other than just getting wet. She jumped into underwater photography early with a Sealife compact camera in 2012 and after an trip to Timor Leste in October of that year, upgraded to a Olympus Micro 4/3rds rig. She is still shooting with a 4/3rds rig but with a few extra toys and working on learning snoot shooting at the moment. Heather has done about 400 dives and some of these would have been done without a camera for Training dives for Wreck, DM, Rescue and others. She loves diving in Sydney and her images are from Sydney, East Timor (Timor Leste), Fiji and



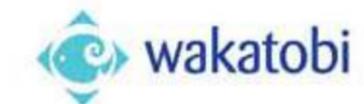


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*"Simply put, it doesn't get any better than this! Everything is about service and maximizing your diving experience. The dives were amazing, and the dive and hotel staff are first class. They will accommodate any request, but you hardly need to make any since they have thought of essentially everything."*

Dr. Jim & Laurie Benjamin, May 2015



[www.wakatobi.com](http://www.wakatobi.com)

By Amilda Boshoff

the Philippines. Heather works as full time Firefighter for Fire & Rescue NSW and diving is definitely her mental decompression space and time.

● **“Why Free Diving Is For Everyone and How to Do It Safely” by Adam Thomas Stern.**

Adam Stern is an Australian free diver, national record holder and free-diving instructor. When traveling Thailand years ago he discovered - diving and since that moment he hasn't looked back. Now, when he is not training for international competitions he runs free-diving courses all over Australia.

Personal Bests-

Constant Weight With Fins: -93 m

Constant Weight No Fins: -64 m

Free Immersion: -85 m (Current Australian Record)

● **“Scuba For Change – A unique social enterprise in the diving industry” by**

**Albert Li, Phil Enright & Lucas Handley Founder Scuba for Change.**

Albert has over 15 years of private and corporate experience. Albert is Head of Overseas Portfolio for Medibank Private, Australia's largest Health Insurance Company. Apart from SGC, in 2007, Albert co-founded Project New Dawn with The Salvation Army, a homeless-employment and housing initiative, the first project of its kind in Australia. Since 2007, the Project New Dawn has evolved to a national initiative enrolling major Australian companies and brands as partners and sponsors.

Phil Enright is a Health & Safety professional with over 25 years' experience in 'high hazard' operational and leadership roles. Demonstrated skills mastered in the military and the oil and gas sector as a Health, Safety, Security & Environmental (HSSE) Leader, Crisis Manager and Senior Incident Investigator. He works nationally and internationally undertaking post incident

investigations and training organizations how to identify, prepare for and manage incidents. Phil is also an experience Scuba Diver with over 1000 dives and a PADI Dive Master qualification.

● **“Community Development Projects & Marine Conservation Efforts” by Tunc Yavuzdogan**

Tunc Yavuzdogan started diving at the age of 17 and he started his own dive school in 1996 when he was still a student. He founded his travel agency in 1997 and started taking his students all around the world for diving. He relocated to Indonesia in 2008 and decided to settle in Raja Ampat where he had his best dives. He built Papua Explorers Dive Resort in 2012 and he has been actively working on conservation and community development projects since then. He has taught underwater photography in various universities in Istanbul and has many photos published in international publications.

● **“BioRock Reef Conservation” by I Gusti Agung Bagus Mantra Founder & Organizer of Pregina Art & Showbiz Bali**

● **“Christmas Island is one of nature's most impressive feats, full of natural wonder, including spectacular diving, and the Cocos Keeling Islands are Australia's last unspoilt paradise” by Linda Cash**

Linda has lived on Christmas Island for 10 years with responsibility for the destination marketing of Christmas Island as a nature based and dive tourism destination through her role as Marketing Manager with the Christmas Island Tourism Association. She also works closely with the Cocos (Keeling) Islands Tourism Association through the joint marketing brand of “Australia's Indian Ocean Islands”. Linda is a Professional PADI Dive Instructor, avid recreational diver and underwater photographer, with



a strong understanding of dive tourism marketing in small island destinations. Her personal diving pursuits have included visits to many small island dive destinations including Palau and Sipidan, providing her with the perspective of a dive visitor, as well as a dive tourism professional. However, despite extensive dive travel, her heart belongs to the extraordinary diving opportunities on Christmas Island.

● **“Endemic Species of Raja Ampat” by Selen Yavuzdogan**

Selen Yavuzdogan started diving in 1998. She has travelled and dived around the world with Tunc. She is educated as a textile engineer and has been in the corporate life for 20 years. She quit her job in 2015 to join living the dream with Tunc at Papua Explorers.

● **“Divers-Grey Nurse Sharks - East Coast Australia” by Dr. Kay Dimmock**

Kay teaches and researches within the School of Business and Tourism at Southern Cross University. She has published in numerous peer reviewed journals, individually and collaboratively written book chapters and contributed to technical reports - including management competencies in tourism education, tourism business challenges, international tourism trends and risk management in outdoor adventure. Her PhD developed a conceptual model applicable to adventure leisure and marine tourism experiences. She has guest edited a special edition of the journal *Tourism in Marine Environments* and supervised student research programs on interpretive signage in National Parks, and tourism managers adaptation approaches to climate change. She has written the School's first marine based tourism unit for undergraduate studies and works with several post graduate students on their doctoral programs.

● **“Wakatobi: 20 Years Making a**

**Difference” by Juliette Myers**

Through our 20 years in operation we have refined and enhanced the Wakatobi experience for you. Learn about our world-class diving, five-star service, resort and Pelagian liveaboard, and how your participation as a guest at Wakatobi continues to further endow the preservation of our marine sanctuary.

● **“The unknown Indonesian province North Sulawesi”/The “Land of Smiling People” for those who love nature; both on land as underwater” by Simone Gerritsen**

During the past 37 years, Simone Gerritsen, born in Amsterdam, has earned her reputation both in Holland as in Indonesia. After being a key player in the Dutch Dive Industry, teaching, retailing and being a part of the professional dive association for 18 years, she decided to move to North Sulawesi in Indonesia.

There she has been very active in the local dive community, organising and conducting environmental programs and setting up and building a school for dive tourism to educate the local youth. In this school she has been teaching for the past 8 years and still does so, “supplying” young, enthusiast and capable dive guides all over Indonesia. Presently she is the managing owner of a dive resort north of Manado, the capitol of North Sulawesi.

She loves Indonesia and especially this province, the “Land of Smiling People” and loves to share her experiences of the place both under water as on the surface.

- “Finding a living Dinosaur” by Johan Boshoff  
The dictionary defines ‘adventurer’ as ‘one that seeks adventure’ or ‘a soldier of fortune’. Johan has been a slave of adrenalin since he can remember. However, his main passion has always been scuba diving and photography. As he always say ‘You can’t get

a better job than getting paid for something you really love.” He started writing freelance as a journalist and after 12 years he still works as a dive specialist and love everything about it”. Being the adventurer that he is, Johan was always pushing the limits and sharks and dives passed the three digits meters were his favourite specialties. Johan also published a number of books, marine slates, educational programmes and smart phone aps for the diving industry. To relay the whole story of this underwater adventurer will be impossible. As we finish one chapter, Johan experiences something else new. Today he continues to seek opportunities and keep searching for those dive spots that are yet to be discovered. If it is wet, you will find Johan diving there and these days it is around Perth where he is the editor and publisher of OZDiver Magazine

● **“Swimming with Whale sharks: Diving and Snorkelling on the Ningaloo Reef” by Debbie Ferguson**

Exmouth Dive Centre offers a gateway to the unique combination of outback Australia & the turquoise waters of Ningaloo Reef. Fulfil the dream of swimming with the world’s largest Fish, the Whale shark with the best 100% guarantee. EDC is you one stop shop for all Scuba & Snorkelling tours & courses, also offering Free-diving & Mini golf. With 2 whale shark licences & 4 boats servicing the Ningaloo Reef, we have plenty of scope for individuals & groups for the best holiday experience.

● **“The Wild Frontier of South Western Australia” Film Shot Off Bremer Canyon A Place With Orca, Sperm Whales, Great Whites ,etc. by Jon Shaw**

Jon Shaw, founder of ginclearfilm, became a certified diver at 13, commercially trained at 19 and gained his instructor rating at 21. Jon holds a BSc (Hons) Degree in Marine Biology from the University of Plymouth and gained extensive technical knowledge and experience working in broadcasting whilst

working for ONdigital in the UK. Jon has shot for all the major networks both here in Australia and also internationally including National Geographic and has won multiple awards including a Silver ACS Award for Wildlife and Nature. He also has developed and lectures underwater cinematography at the Australia Film Television and Radio School (AFTRS) at Fox Studios. Jon has shot on multiple formats including, HDCAM, VariCam, XDCAM Ex, HDV and currently us shooting underwater with a Gates Deep Epic and Red Epic / Dragon. Jon has lead diving expeditions right throughout Australia, The Cocos Islands in Costa Rica, Papua New Guinea, Fiji, Hawaii, Indonesia and South Africa.

● **“An Introduction to Spearfishing & Blue Water Hunting” by Andrew Harvey**

I have been Spearfishing for 30 years both competition and socially. I have dived the Coral Sea in search of large pelagic fish 14 times with the last 5 working as a Spearfishing guide. I am currently a principal instructor for ASA (Australian Spearfishing Academy) teaching Spearfishing, breath hold and safety techniques. I am passionate about conservation through sustainable use of our environment.

Admission to AIDE was so affordable with special discounts for PADI students, free entry for children under 17, DDI divers and senior divers above the age of 60. All visitors received goody bags and was entered for a chance to win major holiday prizes. Be sure to visit AIDE in 2016 on 10-11 September at the Royal Hall of Industries, Moore Park, Sydney Australia for an unforgettable show experience. Information on Speakers, Activities and all details for the show will be updated from time to time. Kindly visit AIDE’s website at [www.australiadiveexpo.com](http://www.australiadiveexpo.com) and join their Facebook page to get the latest news. Interested exhibitors kindly contact them at [info@australiadiveexpo.com](mailto:info@australiadiveexpo.com) 

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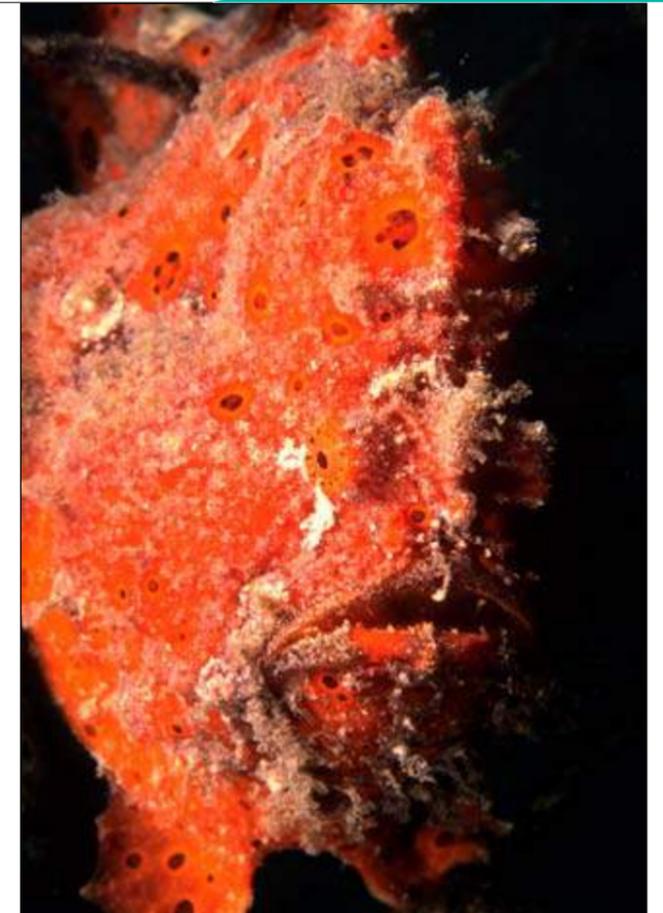
DEEP DOWN YOU WANT THE BEST

# Giant Anglerfish

**Big Angler, Frogfish, Anglerfish  
(*Antennarius commersoni*)**

**Order: Lophiiformes  
Family: Antennariidae  
Attains: 33cm**

Sedentary masters of disguise, anglerfish can assume various morphs to resemble unoccupied background or various inanimate structures (sponges, tunicates or algae-covered rock) in their habitat. This clever camouflage deceives large fish-eating predators (which are not interested in 'sponges') as well as potential prey, which see 'sponges' or 'algae-covered rock' as something to eat or hide under. As implied by the name, anglerfish often lure their prey within striking distance by means of their modified first-dorsal-fin spine, which is used like a fishing pole and bait. With its large distensible mouth and enormous stomach, the anglerfish is able to swallow fish larger than itself. When the prey enters the angler's strike zone, it suddenly disappears and a bulge appears in the belly of the angler. Striking, in which the mouth is thrown open, upper jaw protruded and cavity expanded 12 times in volume in lighting speed, sucks in a large volume of water along with the prey. The entire strike phase, ending with jaw closure and prey capture, takes six or seven thousandths of a second! Colour varies between beige, black, yellow, green and orange. Anglerfish feed on fish and crustaceans. 🐟



# Coral reefs

diversity and beauty

By Christo van Jaarsveld Photos: Peter Pimnock



There's no more special place on earth to those who dive or snorkel than a coral reef. Temperate areas offer thrilling sights and great places to dive, but most divers also look forward to visiting spectacular tropical coral gardens to watch their colourful inhabitants. This makes coral reef health of particular concern to underwater explorers.

Beyond their innate beauty and popularity as dive and snorkel sites, coral reefs are habitat and nursery grounds for 25% of all known marine species – many of which humans rely on for food. This is an impressive statistic considering how little of the sea bottom coral reef is. While the total range is difficult to determine, the most accepted figure is that coral reefs cover only about 600 000 square kilometres. That's about one-tenth



of one percent of the total sea bottom, or an area about the size of the province of British Columbia or the nation of Venezuela.

Coral reefs are important because they are storehouses of biodiversity. The term 'coral reef' does not do justice to the complexity of these ecosystems. They could more accurately be called 'biotic reefs'. Some biologists refer to reefs as 'rainforests of the oceans' because they support an incredible array of organisms. Pharmacologists have found an abundance of biomedical compounds on reefs, from antibiotics to anti-cancer agents, and suspect there are thousands more yet to be discovered.

From a purely physical perspective, coral reefs



are vital structures. They protect islands and coastal communities from storms, wave damage and erosion. The Coral Reef Alliance (CORAL) estimates that each square metre of coral reef protects about \$47 000 in property values.

Many tropical nations base their tourism industries on the appeal of the surrounding coral reefs. In some areas, reef diving or snorkelling tours are significant income sources and are foundational to the countries' economics.

## The coral

Corals grow best in the shallow, clear water of tropical and subtropical oceans where the annual temperature range is between 18-30°C. Reefs are actually massive coral colonies. Corals are tiny marine invertebrates (from the phylum Cnidaria) that secrete skeletons of calcium carbonate (limestone) to form small cups called corallites. The reef grows as individual coral animals, called polyps, anchor within these limestone cups to collectively form large structures.

Most corals are impressive builders. The largest structure on earth manufactured by living organisms is Australia's Great Barrier Reef, which is visible even from outer space.

Corals that build massive reefs (hermatypic or mound building corals), have a special symbiotic relationship with the algae that reside deep within the polyp's tissues. This algae (zooxanthellae) enables a coral colony to function as both plant and animal. The algae produce food via photosynthesis, while the polyp catches plankton from the water column. The algae release oxygen and sugars that are consumed by the polyp and the coral releases carbon dioxide and nitrogenous waste that sustains the algae. Because algae depend on light, reef-building corals do not grow well deeper than 25m.

When a coral colony dies, either through natural or human-induced factors, it forms a substrate

on which new corals grow. Coralline algae (algae that itself secretes limestone), cements the sand and coral fragments together to fill in the spaces between the larger fragments of dead coral skeletons. This cementing process and growth provides stability and makes reefs less susceptible to damage from waves and storms.

## The reef

Corals may form a reef's foundation, but reef ecosystems flourish due to an amazing menagerie of other organisms. For example, bacteria and algae coat the sandy bottom and portions of the reef not covered by living coral. This provides food for mollusks, crustaceans, sea cucumbers, sea urchins and herbivorous fish. These organisms, in turn, provide vital housekeeping functions that keep the ecosystem healthy and also serve as food sources for organisms higher up on the food chain.

Other organisms, such as sponges, worms and mollusks, play an important role by eroding a reef's massive limestone fortress. This type of erosion is a positive force because it creates additional living space within the reef. Scientists estimate that as much as 40% of a coral reef is actually open space. Broken segments of coral provide new habitats and are eventually cemented back into the reef by coralline algae. This action of grazers such as Parrotfish and sea urchins produce large quantities of sediment, which also results in new living spaces for smaller fish and invertebrates.

## Growth rate

Contrary to popular belief, all corals do not grow at the same rate. In fact, there are considerable differences among species. For example, branching corals such as stag horn coral can grow horizontally about 10cm per year, while massive forms like boulder coral grow at one-tenth this rate. Vertical growth differs as well and can be as slow as a few millimetres per year. 



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# Global Warning

Will our planet still be called the blue planet in 20 years time?

Earth is a beautiful planet. Seen from the moon it nearly takes your breath away. Green splashes of continent framed by the blue oceans, circled with a bright, transparent white atmosphere. But we humans are slowly choking our planet to death.

We are managing to do this by pumping carbon dioxide (CO<sub>2</sub>) into the atmosphere at astronomic levels. The 2008 levels of CO<sub>2</sub> were 385 parts-per-million (ppm), an increase of about 55 ppm in 20 years – the natural levels are between 175 and 300 ppm. There is an exponential increase closely associated with the population growth curve. The question now is what is the relationship between the CO<sub>2</sub> levels, greenhouse gasses and, of course, global warming.

I'll start with the simple explanation of how the earth is warmed. The sun's rays penetrate the atmosphere, which reflects most of them back into space. The rays that ultimately penetrate the atmosphere layer (infra-red range), hit the earth's surface, warm it and bounce back to the atmosphere. The remaining energy is then used for plants to grow, it heats the ocean's surface, which enables us to dive in tropical waters, and also penetrates the surface which allows coral reefs to flourish (the scuba industry's bread and butter).

By increasing the greenhouse gasses in the

atmosphere, we thicken the atmosphere. The effect is that more rays are reflected off it and more heat (generated from earth) bounces back to earth – heating the area between the earth's crust and the atmosphere, causing the 'greenhouse effect'. It also causes rays to reflect back and thus acts like a giant mirror. The long term effect after we have built this giant greenhouse will be 'global cooling' (another topic altogether).

Anybody who has been in a greenhouse will know what I am trying to convey here. The humidity and heat is overwhelming. Although we use this technology to produce plants for human consumption, just think what it would do to these plants if we steadily increase the temperature.

But let us backtrack a little to see how we caused this 'greenhouse'. We know that CO<sub>2</sub> is the major contributor, but there are a few more human generated gasses that are just as worrisome. The natural greenhouse gasses are water vapour (not clouds), CO<sub>2</sub>, methane and ozone. The problem is that humans are increasing the concentration and ratio of these gasses, thus increasing the insulating properties of the atmospheric layer. Burning of fossil fuels and land changes are the biggest contributors of CO<sub>2</sub> and methane.

Fossil fuels are fuels from fossilised materials

found in the earth's crust. They range from low carbon materials such as methane to high carbon materials like anthracite coal (which is used in most countries for the generation of electricity). Fossil fuels are a non-renewable resource which takes millions of years to form and we are depleting them much faster than they can re-generate – 86% of energy generated by humans is from fossil fuels. Industrial processes pump approximately 21,3 billion tons of CO<sub>2</sub> into the atmosphere per year, yet natural processes can only eliminate half of this. These natural processes include plants using CO<sub>2</sub> for respiration and absorption into surface water. The depletion of fossil fuels is forcing us to look into renewable resources such as wind, sunlight and water.

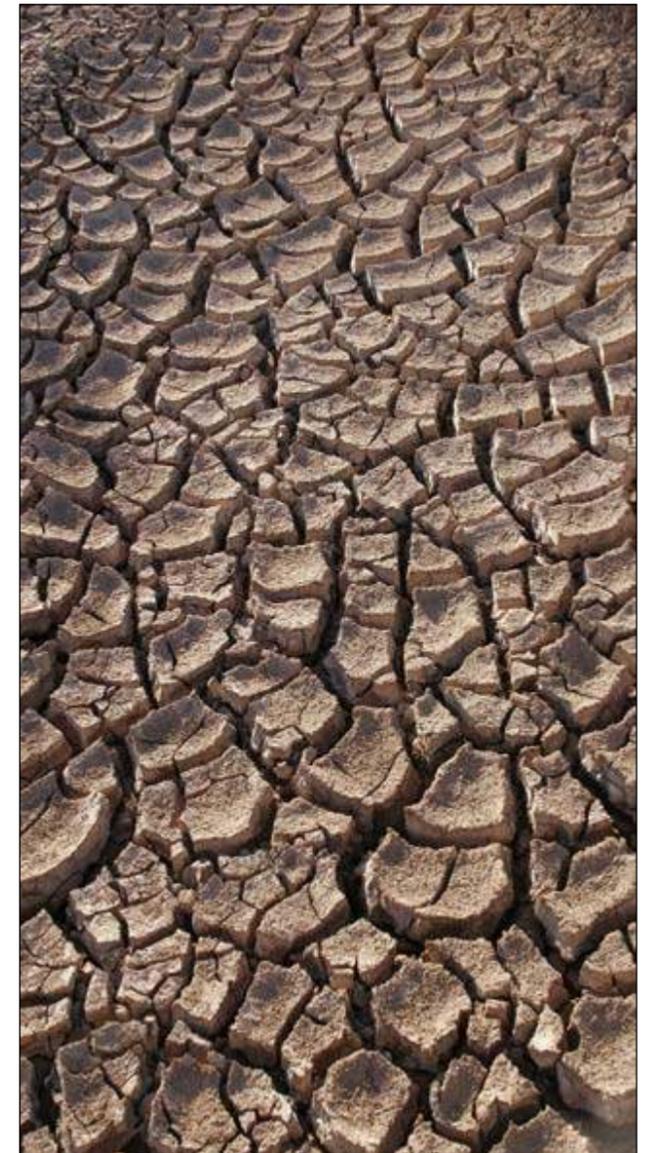
## The effects of our actions

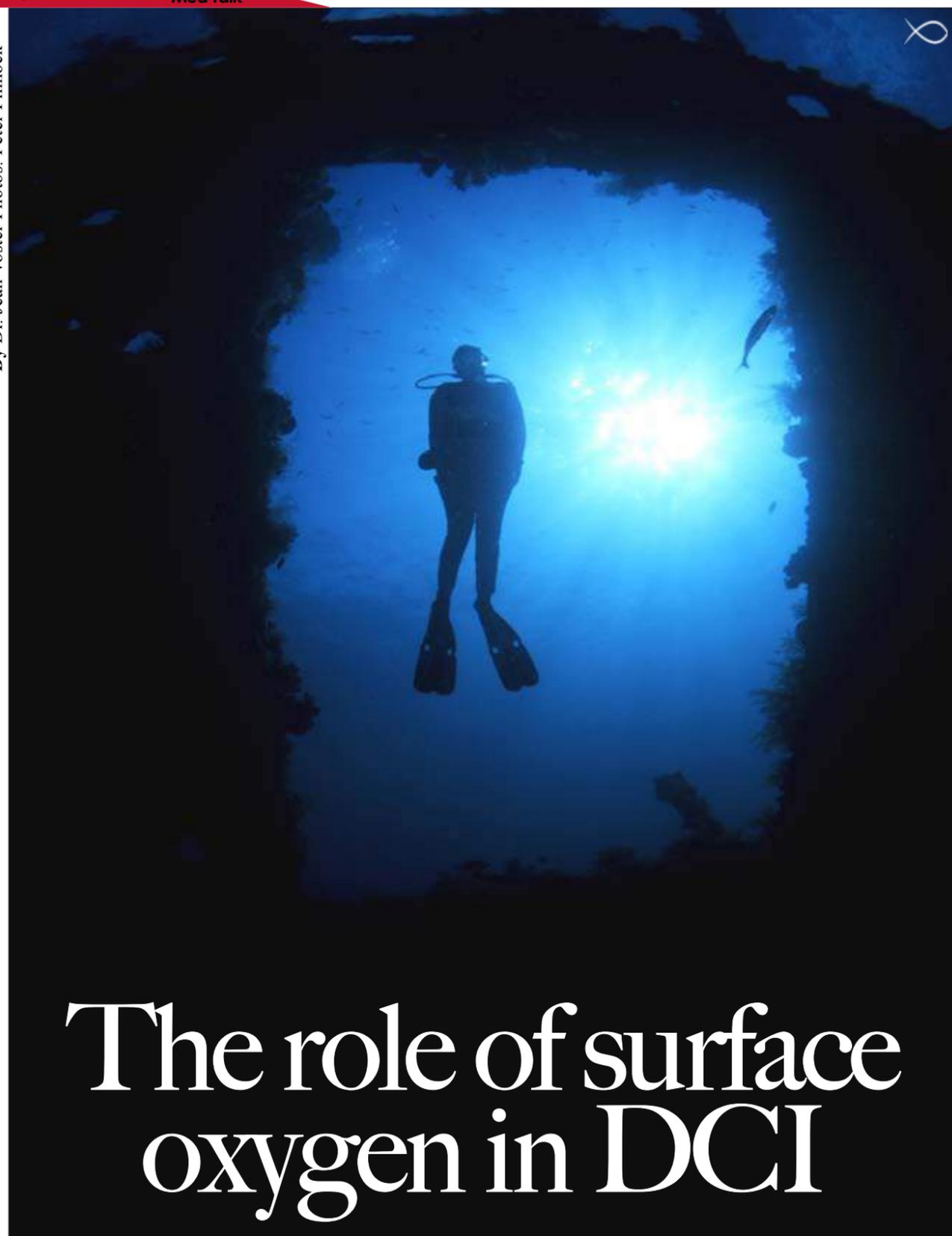
We have had a look at the cause, so let's look at the effects. The five major effects are: spread of diseases, warmer oceans causing more hurricanes, an increase in droughts and heat waves, economic impact and last, but not most severe, the melting of the polar caps. In southern Africa we can already see some of the effects in Sodwana and Margate where severe storms have ravaged large parts of the beach and beach front properties. Furthermore, coral bleaching due to increased ocean temperatures has already caused extensive damage to large areas in the tropics. The warmer water kills the algae that live symbiotically with the corals and causes the corals to die. There are also 30 'new' diseases worldwide and some old ones, which were under control, are back, like pocks, to name but one.

Over the past 20 years we have had 10 all-time records broken for highest temperatures, with the latest in 2008. Good news for the sun bathers, bad news for the polar caps. They are steadily melting and this influx of fresh, cold water not only raises the sea level (it will be an estimated 2m higher in 2050), but also causes major changes to the ocean currents. Warm water from the tropics is driven north in the Gulf Stream as far as Greenland. Here it loses heat due to evaporation, which also increases the density and causes the water to sink. This pulls down the warm water at a rate of 18 billion litres per second and keeps the conveyor belt going. This system brings warm, moisture rich air to Europe, keeping their climate temperate. When the cold, fresh water from Greenland and the ice caps reaches this system, it reduces the density and also cools it down to such an extent that the water does not sink anymore, causing

the conveyor to stop. Although research is still ongoing, preliminary results show that this will cause extremely cold weather over Europe and possibly the next ice age.

I have only touched on one of the effects – the other four major effects are articles on their own. If we don't start acting soon, we might not be able to hold our heads above the water any more. It might be fine for scuba divers, but bad news for those waiting for us on the beach. For a start, replace your light bulbs with the longer lasting, energy-saving type, try to only use recycled paper and switch off electrical equipment that you are not going to use. Let us heed the warning signs and stop taking the earth for granted. 





# The role of surface oxygen in DCI

In the event of any diving emergency, the single most important treatment is oxygen –as much as possible, as soon as possible. As part of all emergency plans and briefings, you will always hear the mention of oxygen and how important it is. But what exactly does it do, and how effective is it?

When a diver has problems after a dive, we call it DCI – Decompression Illness. That doesn't only mean that the diver has 'the bends' as there are various things that could go wrong. For instance, a diver goes down a little too deep for too long and uses too much air. This could create numerous scenarios, ranging from getting away with it unharmed to the worst case scenario and everything in between. There will be obvious signs and symptoms, ones that are hidden, or ones that would only present over time. Extra oxygen can, at this stage, only help the distressed diver to cope better with the known and unknown symptoms which might be present. So let's have a look at the scenario and some of the possible issues that the diver could have, and how extra oxygen can assist.

## Uncontrolled ascent

Uncontrolled ascent could cause a lung overpressure injury. Bubbles could pass into the arterial blood stream and block off some areas of the circulation system (AGI – Arterial gas embolism), causing ischemia (lack of oxygen) in some areas. Extra oxygen could help these areas to receive a sustainable amount of oxygen by enabling the arteries running next to the blocked one to carry more oxygen and help to make up for the shortfall downstream and minimise the damage due to the blockage.

Oxygen is normally bound to haemoglobin (red blood cells), but some is dissolved into the blood plasma. This oxygen not bound to haemoglobin does also, in some way, help with oxygenation of the body. By increasing the partial pressure of oxygen, the amount of 'free' oxygen will also increase and greatly help the ischemic areas, minimising tissue damage in the affected areas.

## The bends

DCS (Decompression sickness) is also known as 'the bends'. Bubbles are formed and could appear in certain tissues – these bubbles causes swelling and in some cases tissue damage. Oxygen will help minimise this. You will also increase the partial pressure of oxygen and help to 'flush out' some of the excess nitrogen that could cause

more bubbles or help the existing ones to grow bigger. In some cases the diver could appear to be completely symptom free, but is certainly not yet cured. The diver must still be seen and treated by a diving doctor.

## Carbon dioxide retention and saltwater aspiration syndrome

A distressed and panicked diver could suffer from carbon dioxide retention causing breathing to become fast and shallow. This could cause the diver to inhale salt water causing saltwater aspiration syndrome which causes fluids to move into the lungs to try and normalise the salt levels. This extra fluid in the lungs can cause secondary drowning or fever, nausea, headaches and shivering. Oxygen is part of the treatment for this and will greatly improve the outcome. A splashing and panicking diver also burns up more energy causing the body's need for oxygen to increase.

In the publication, "UHM 2007, Vol. 34, No. 1 – First aid surface oxygen", it showed statistics gathered by DAN that more divers receiving emergency oxygen and hyperbaric oxygen therapy recovered completely. It also showed that divers who received emergency oxygen needed fewer hyperbaric treatments for a full recovery.

Emergency oxygen at the dive site is starting the job that the chamber will do, but to a lesser degree. Yet it is better to have an early start, as it will dramatically help to minimise the damage caused by the array of things that can go wrong when a dive goes bad. DCI does not get better over time when left untreated – when the excess gas load that caused the bubbles in the first place is out of the diver's system, the bubbles stay behind and keep on doing their job. The only defence we have in the time between the dive and the chamber is oxygen and hydration fluids. 



# Global News

## Georgia: Amateur Divers Find Long-Lost Nuclear Warhead

by Barbara Johnson

A couple of tourists from Canada made a surprising discovery while scuba diving in Wassaw Sound, a small bay located on the shores of Georgia. Jason Sutter and Christina Murray were admiring the marine life of the area when they stumbled upon a Mark 15 thermonuclear bomb that had been lost by the United States Air Force more than 50 years ago.

The couple from London in Ontario were on a two week vacation in Georgia and Florida to practise their favorite hobby, scuba diving, when they decided to dive near the shores of Tybee Island. While admiring the plants and fishes near the sea floor, they noticed a large cylindrical item partially covered by sand. They investigated the object and found out that it was actually a sort of bomb or missile, so they decided to contact the authorities.

"I noticed an object that looked like a metal cylinder, which I thought was an oil barrel" says Jason Sutter. "When I dug it up a bit, I noticed that it was actually a lot bigger and that there was some writing on the side. When I saw the inscription saying that it was a Mk-15 nuclear bomb, I totally freaked out. I caught Christina by the arm and made signs to tell her we had to leave. We made an emergency ascent, went back to shore and then we called 911."

The couple is still shocked after their frightening discovery and say they will avoid diving for the rest of their trip.

Rapidly understanding the gravity of the situation, the 911 operator contacted every possible emergency service, including the coast guard and the military, leading to the deployment of more than 20 ships and 1500 men in the area. Using the GPS coordinates given by the couple, they rapidly located the powerful 3.8 megaton bomb.

An unmanned submarine was sent to determine the condition of the bomb, before explosive experts were sent to disarm it. Fortunately, the thermonuclear weapon produced in 1955 seemed in sufficiently good shape for a team of Navy seals to try to defuse it. They successfully deactivated the warhead after hours of strenuous work, allowing the rest of the bomb to be moved.

The delicate recovery operation took more than 48 hours, but the bomb was finally recovered and transported to Mayport Naval Station in Florida. A full set of tests and analysis will now be performed on the warhead to evaluate its actual state and the possible ecological and health hazard that its presence in the bay for 50 years could represent.

Navy explosive ordnance Disposal technicians spent nearly five hours



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working on the warhead before they were able to extract the detonator and the uranium core of the weapon, allowing the fuselage to be moved.

The federal and state authorities were well-aware that a nuclear warhead had been lost in the area in the 1950's and had never been recovered, but no efforts had been done for years to recover

it. It was lost on the night of February 5, 1958, when a B-47 Stratojet bomber carrying the 7,600-pound hydrogen bomb on a simulated combat mission off the coast of Georgia collided with an F-86 Saberjet fighter at 36,000 feet of altitude. The collision destroyed the fighter and severely damaged a wing of the bomber, leaving one of its engines partially dislodged.

The bomber's pilot, Maj. Howard Richardson, was instructed by the Homestead Air Force Base in Florida to jettison the H-bomb before attempting a landing. Richardson dropped the bomb into the shallow waters of Wassaw Sound,



near the mouth of the Savannah River, where he believed the bomb would be swiftly recovered. The crew did not see an explosion when the bomb struck the sea and they managed to land the B-47 safely at the nearest base.

For the following six weeks, the Air Force looked for the bomb without success. Underwater divers scoured the depths, troops tromped through nearby salt marshes, and a blimp hovered over the area attempting to spot a hole or crater in the beach or swamp. Searches were finally abandoned and the bomb remained hidden for more than 50 years until the unlucky couple stumbled upon it. 

## Meet the man who lived underwater for 31 days

Building submarines that look like sharks? Sleeping 20m underwater for a month? This guy's done it.

When your grandfather is Jacques-Yves Cousteau and you spent your childhood on the fabled research vessel Calypso, perhaps it's not surprising that you started scuba diving at age four. Or that you piloted a 14-foot shark-shaped submarine of your own dreamt-up design, swimming among great whites for "Mind of the Demon," a CBS television special. Or most recently, that you spent a month on the seafloor in the NOAA Aquarius Reef Base off Key Largo, Florida. This is the life of filmmaker and ocean explorer Fabien Cousteau. Even your sister called you crazy for building Troy, the shark-sub pictured above.

The comic book Tintin was my inspiration. I wanted to make a sub as stealthy and realistic as possible so I could see great whites' natural behaviour.

You dove in it for four hours. Why?

Diving in it at night was one of the riskiest things I ever did, but you have to push the envelope if you want to know more. Every time I got into that shark-sub, something could have gone wrong. But I wasn't worried about the sharks – only human error with the machine.

You just logged 31 consecutive days underwater at 60 feet. What was the wildest encounter?

We were actually in the habitat sleeping when one of our cameras captured a 600-pound goliath grouper making a booming sound, and then it bit a four-foot barracuda. Scales

went flying. I've never seen aggressive behaviour like that from a grouper before. And while we were diving, we saw massive, swirling clouds of plankton blooming at night. They looked like tornadoes and snowstorms.

Most people will never get the chance to live underwater. Sounds like the stuff of science fiction.

It was. So many of the small, everyday things differed vastly. For example, you can't whistle down there. Your hair grows so much faster. And the air was syrupy – it's very hard to breathe at three atmospheres.

But thanks to that underwater research station, the only one in the world like it, we could scuba dive between six and 12 hours every day. The scientists on our team collected three years' worth of data in those 31 days.

Were you ever scared?

Only of the long-term effects. My sense of taste went dull – so much so that I had to put hot sauce on everything and I'm not a hot sauce person. I was afraid I'd lost my taste buds forever. Luckily, they came back.

You're known for shaking things up in the underwater community.

Everyone is so afraid of new technology and trying new things. With a few exceptions, we are still using the technologies my grandfather invented 70 years ago.

Where do you think diving is still lagging?

We're at a point where tanks should weigh half as much as they do. I'd like to see a smaller tank made of carbon fibre, weighing almost nothing. NASA does stuff like this all the time – coming up with new gear. It seems like modern scuba gear only piles on more bells and whistles, which constricts us. Wouldn't we all rather be free to fly in the water?

Cousteau expects to release a documentary about Mission 31 this November at the BLUE Ocean Film Fest in St. Petersburg, Florida. 



## Send us your news.

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

Here's what we need:

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

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FIJI

FIJI

By Jeanne Liebetrau and Peter Pinnock

# FIJI Rainbows on the Reef

Fiji is justifiably referred to as the 'soft coral capital of the world.' With this accolade, warm water, excellent visibility and ultra friendly people, Fiji is a destination not to be missed.



Red orange yellow green blue indigo and violet are the colours of the rainbow. They are also the colours of Fiji's underwater realm. In Fiji you will discover red fans, whips and ferns. Orange crabs, crinoids and sea cucumbers. Yellow sponges and sergeant majors. Green hard corals and algae. Blue waters. Indigo anthias and anemone tentacles and violets of the dottybacks and parrotfish combine in a magnificent explosion of colours. But it's the impressive kaleidoscope of soft corals that will blow your mind away.

Fiji is situated in the South Pacific Ocean. It consists of over 322 islands of inhabitable size. A former British colony, Fiji gained independence in 1970. Contrary to the friendliness of Fijians, the country was once notorious as being cannibalistic. Fiji has 2 main islands - Viti Levu (Great Fiji) and Vanua Levu (Great Land). Although Savu is the capital city, Nadi on the western side of Viti Levu is the gateway city

for international flights. Taveuni, also known as the Garden Island, is the 3rd largest island. It boasts rich tropical vegetation and scenic waterfalls as well as the famous Rainbow Reef. The reef is located in the Somosomo straits between Taveuni and Vanua Levu. Somosomo means 'good water' in Fijian. Every 12 hours huge tidal movements born in the Tonga Trench pour through these straits. The current drops while the oceanic giant flexes it's muscle and changes direction to bring forth rich nutrients that sustain phenomenal reef life.

Currents in Fiji range from absolutely nothing to exhilarating. Timing is essential to see the reef at its best. Currents are the lifeblood of a reef pumping essential elements into the heart of the reef system. When the current is running, soft corals pump up with water becoming extravagant bouquets of colours. The fish activity is prolific. Goldies pulsate in clouds of choreographed movement feeding on passing

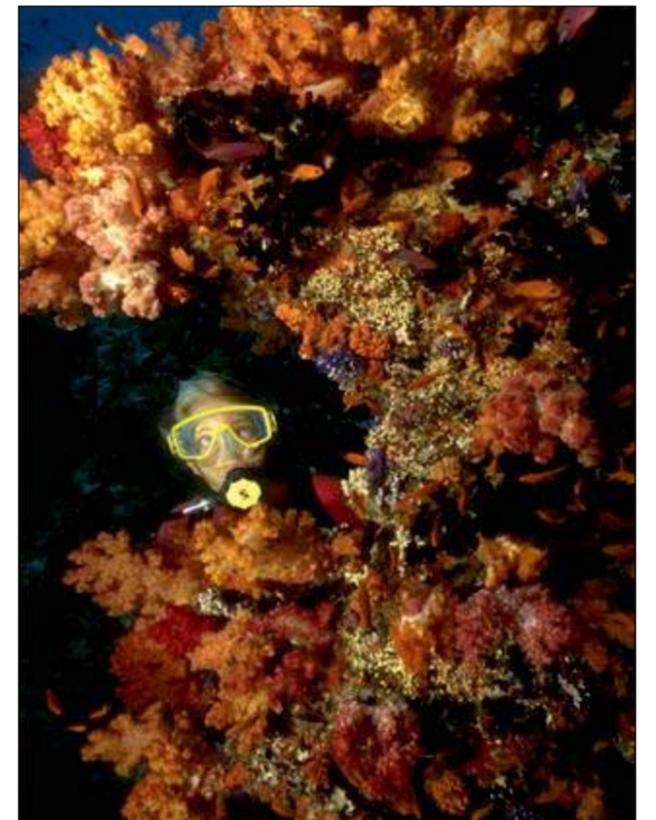


plankton. Predatory jacks and kingfish swoop from above onto the inhabitants of the reef bringing instant havoc to the choreography as the goldies swarm back to the safety of the soft coral network. In the deeper water the shadowy shapes of sharks are seen as they lurk for their meals. As the current turns the soft corals become limp and flaccid resembling overcooked broccoli. The reef is barely recognizable from what it resembled minutes earlier. The fish feeding frenzy slows down but now the cleaning stations become alive. Wrasse, shrimps and butterfly fish frenetically nibble dead cells and parasites off their patient customers. Fish hover near the station indicating their need for the free service. The reef life is never still.

Even the reef names reflect the many colours of Fiji. Take Purple Gardens, Golden Nuggets, Yellow Hole, and the Great White Wall- all are named after the predominant colours of the soft corals. At the famous Great White Wall on Rainbow Reef, a swim-through tunnel leads out onto a wall at 24m. Looking down the wall white soft corals carpet the reef as far as the eye can see. A lavender iridescence radiates leaving the surreal impression of an undersea ski slope. The only interruptions to the whiteness are the bold colours of the many tropical fish.

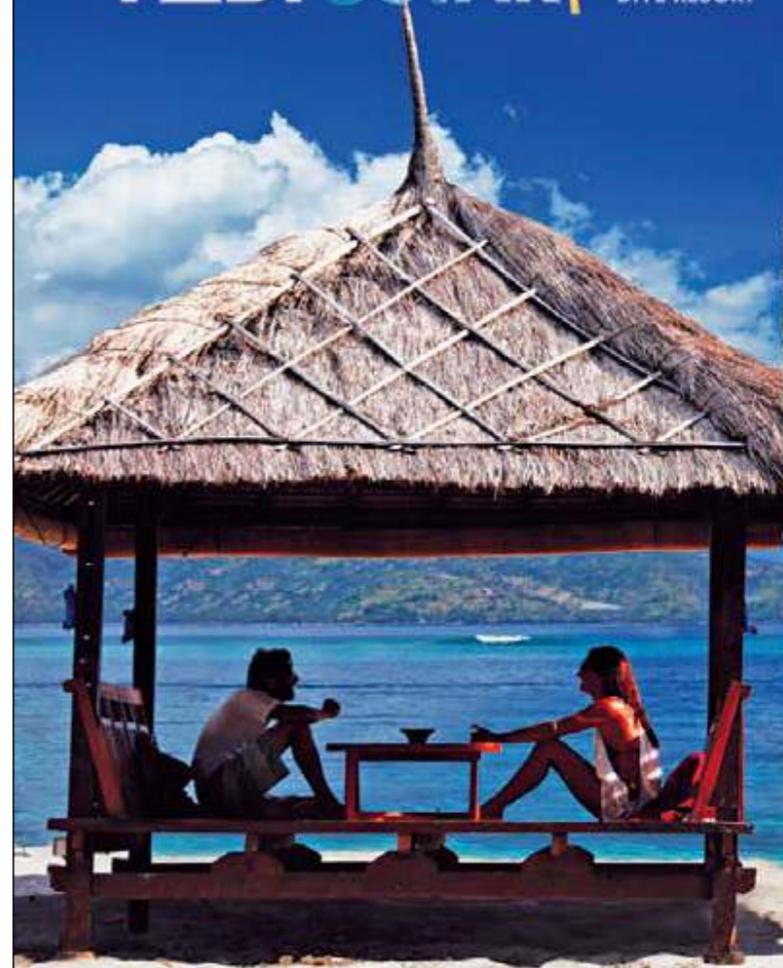
Blue ribbon eels are fairly common in Fiji. With their striking cobalt blue head and yellow fan-shaped nasal extensions, they are the most elegant of eels. Blue ribbon eels behave as if they are blind, their mouths forever grasping for fictitious fish. Perhaps this fools the few that are inadvertently caught as they venture too close to the hole. Blue ribbon eels remain in the same neighborhood for long periods of time. There is more than 1 Blue Ribbon reef in Fiji and it is possible to see as many as 6 blue ribbon eels on one particular dive. If you are really lucky 2 eels may be found sharing the same hole. They are seldom seen out of their holes. Much speculation and debate revolves around the colouration of these eels. Generally it is accepted that as juveniles the eels are black with a yellow stripe. The adult males are cobalt blue and later in life the males may change into a yellow-green female.

Diving at night is the best time to explore the reef in detail. Attention is focused on the reef





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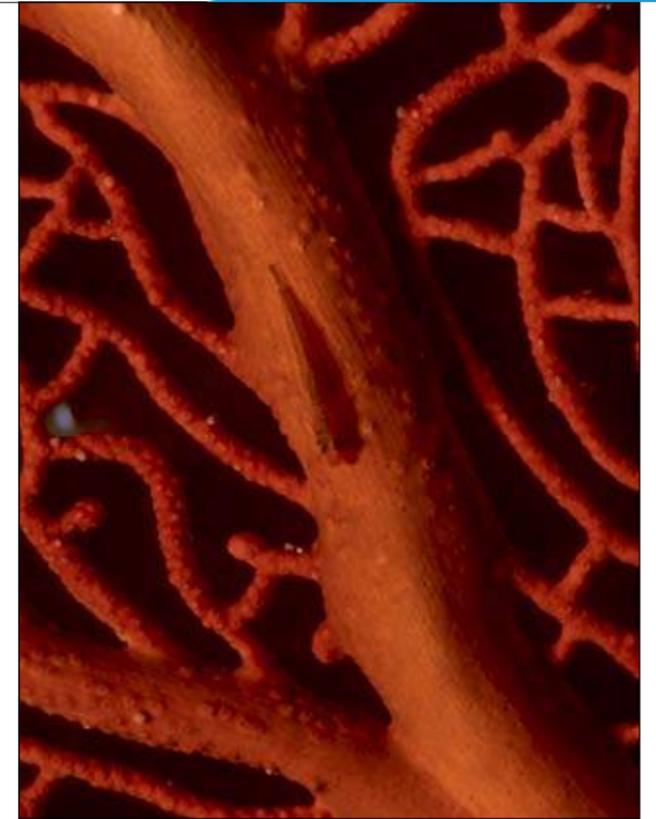


**DIVE THE GILIS**  
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inhabitants and vivid colours. Living inside the many clumps of soft coral is an assortment of marine life. Yellow damsels seeking refuge for the night in yellow soft corals are well camouflaged against the delicate polyp clusters. Decorator crabs emerge from hiding under the cover of darkness to feed on passing plankton. These crabs have stolen pieces of reef to use as their master disguise. Brightly coloured brittle stars entwine their arms around soft corals as they feed on small organisms. Parrotfish are found in every crevice of the reef seeking dormitory space for the night.

Crinoids resemble colourful underwater fireworks. They play host to intriguing and cryptically disguised critters. Not every crinoid is a suitable home so the treasure hunt is challenging and rewarding. Periclimenes shrimps can be found in the arms of a crinoid. Not only are these shrimps incredibly small but they also have the exact colouration of the crinoid, making them near impossible to see. At the feet of the crinoid live the elegant squat lobsters. These beautiful crab-like creatures are also difficult to see as the crinoid is constantly



moving and the lobster forever hiding. But the biggest reward has to be the rare harlequin ghost pipefish. The ornate markings and shape of the pipefish mimics that of the crinoid. This enables them to remain undetected. The female pipefish is considerably larger than the male. She has a silvery patch near her head that serves as a sex symbol to males. The bigger the patch, the better the catch.

Such good findings on a night dive deserve a celebration with a bowl of kava. Kava is the National drink of Fiji. It has no alcoholic properties but is steeped in symbolism and tradition. Made from the roots of a pepper plant that have been dried and ground, kava is then infused through a cloth to make this popular drink. The ritual of kava drinking has not changed over the years. Seated cross-legged around a tanoa bowl of kava, care must be taken not to point the soles of your feet towards the bowl in disrespect. Those sitting to the right of the tanoa are served first. A bilo (coconut shell) filled with silt-like liquid is presented. To accept the bilo, clap once then drink it without slurping, grimacing or hesitating. Hand the



bilo back and clap 3 times slowly saying bula (life) or vinaka (thank you). After a couple of bilos the tongue may become a little numb. My faithful guidebook mentions kava has relaxing properties. I felt no different but certainly slept like a hamster in hibernation.

As is often the case with diving, the further you go, the better the diving. To get there a liveaboard boat is the answer. The Nai'a, owned and managed by Rob Barrel, is a world-class yacht designed for the discerning diver. A few years ago Rob chartered a plane to look for whales. Flying over what looked like a good reef Rob took GPS markings. He later returned to check it out as a potential dive site. The reef he discovered became so popular he named it E6 after the processing of numerous rolls of slide film. Hi-8 was similarly named for the videographers but has since been renamed Mount Mutiny after one charter refused to leave the site. Both these reefs are stunning silo shaped bommies reaching from great depths to 5 m. The walls are covered with a profusion of

soft corals. In the deeper sections the unusual and vibrantly colourful chironophthya soft corals hang prolifically framing caves and overhangs with their delicate latticework. In the shallows the common dendronephthya soft corals fight for space with fans, whips, sponges and sea squirts. Colourful crinoids perch precariously looking like cheerleader's pompoms. Beyond the reef in the deep blue water is the endless traffic of game fish as they patrol the reef in their never-ending search for food. It's an effervescent explosion of commotion and colours.

Huge red gorgonian fans reminiscent of giant oriental fans face directly into the current as they scoop nutrients from the ocean. In amongst the branches juvenile fish seek protection from predators. A quick dart through the coral grill and the fish can easily escape danger. One of the smallest fish in the world is the many-host goby. Gobies traverse along the main stems of gorgonians. Their size and clever colour pigmentation on a semi-translucent body aid their disguise. Being so small is not always



an advantage. The goby needs assistance to prevent from being washed away. A modified pelvic fin enables them to hold onto the gorgonian when a strong current sweeps over the reef.

Artists will confirm that mixing of colours produces greys. In the ocean the greys represent sharks. Sleek, silvery, smooth and silent, they move with stealth and speed. Grey reef, white tip and black tip sharks are common in Fijian waters. Although Fijians were known for their shark calling abilities, these days the only way to get up close and personal is to feed the sharks. At Nigali Passage, a channel between 2 reefs, the Nai'a crew sets up a small feeding station. Grey reef sharks detect the scent of the bait within minutes. Their movements are sudden as they circle in the vicinity of the bait slick. Turning frequently with agitation and anticipation, they circle the source getting closer as they hone in on the smell. Size demands some respect in the sharks' hierarchy and the largest shark feeds

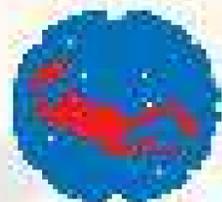
first. With precision, a chunk of fish is bitten off but the shark must move fast as the other sharks try ripping the meal away. Suddenly there is a squabble over the food. All the sharks converge, swimming at break neck speed over the reef. The reef fish add to the commotion as they chase after the scraps. The shark twists and turns in an attempt to escape the scavengers who persist in forcing her to release her grip on the food. I visualize shark fin soup all over the ocean but there are no casualties this time. She escapes, devours her meal and returns to eye another mouthful.

As the sharks lose interest and swim off I turn towards the reef. A green paper fish balances perfectly on a soft coral, dazzling parrotfish nonchalantly crunch coral outcrops and the soft corals are bloated with water, looking their finest. I am loath to leave Fiji. The friendly people have shared both their culture and their country with me but I will never forget the rainbow colours of Fiji. 'Sota tale', see you again, I vow, as I wave goodbye. 



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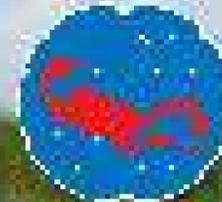
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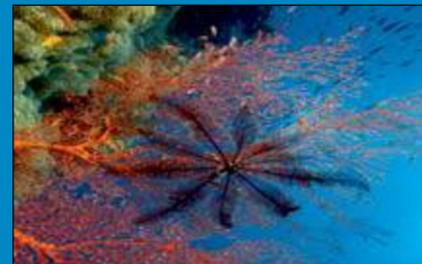
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By Jeanne Liebetrau and Peter Pinnock

# The Rhinopias Cult

As Greg surfaces he yells excitedly, “Wow, that was absolutely awesome!” Franco, the dreadlocked dive master asks, “Did you find one?” Greg shouts back, “No! Not one – three!” I look at Greg skeptically. Divers are like fishermen – always bragging about what they can’t prove. “What colours?” “Brown, black and green” he answers with a grin. Gazing at him I think, “How can a grown man get so excited about finding a fish?”



Loloata Island, Papua New Guinea, is home to many unusual underwater creatures that are rare elsewhere in the world. Dik Knight has been managing a successful resort and dive operation on the island for more than 25 years. Just as game parks have information boards showing the location and nature of great sightings, so too does Loloata. Only these sightings are not of the big five, but of diminutive sized creatures. Rhinopias species, pygmy sea horses, harlequin ghost pipefish and long-nose hawkfish are but a few of the extraordinary fish frequently sighted. This has created a cult following of diving enthusiasts - Greg being one of them.



rather lazy – choosing not to swim but rather lurch themselves along the reef.

Even when armed with the known facts, finding the Rhinopias has been likened to finding the Holy Grail. Rhinopias can be found between depths of 5 and 30m and anywhere from north-east Australia to Japan – and that is a lot of ocean!

Rhinopias species, otherwise known as the leafy scorpionfish, are covered with lacy appendages, extra skin flaps and bedraggled tassels. They exhibit mottled colour variations, from a dark green (almost black) through a range of browns and oranges to soft pinks. Rhinopias are extreme masters of camouflage, resembling a patch of seaweed or a clump of debris. By exploiting their disguise they are able to get within a gobble distance of their prey. One big suck and in goes the unsuspecting fish. They are



Loloata Island lies in the heart of Bootless Bay, 20 minutes from Port Moresby, the capital of Papua New Guinea. Early explorers referred to the bay as bootless (or useless) as it was too shallow for their boats to anchor in. Little did they know of the major ecosystems a few metres below their hulls. The bay abounds with spectacular reef systems.

Loloata offers a variety of dives, like diving in sea grass meadows looking for critters such as seahorses and ghost pipefish, to diving on sandbanks where upside-down-jellyfish, squid, shrimp and goby combos and sand anemones reside. Gentle sloping reefs, rocky reefs and coral reefs are pristine and filled with soft and hard corals. Wrecks have been purposefully sunk in sheltered areas so as to create new dive opportunities and there is no visible diver or anchor damage as all sites have underwater moorings.

These divers are well equipped for their quest to find the unusual or undiscovered locations and their dive boat is full of state-of-the-art cameras as well as pointers, torches and magnifying

glasses. The secret lies in knowing where to look and to have endless patience. Even though Franco knows these sites intimately, some creatures remain near impossible to find. Franco indicates that it's time for the cult followers to gear up for the next hunt.

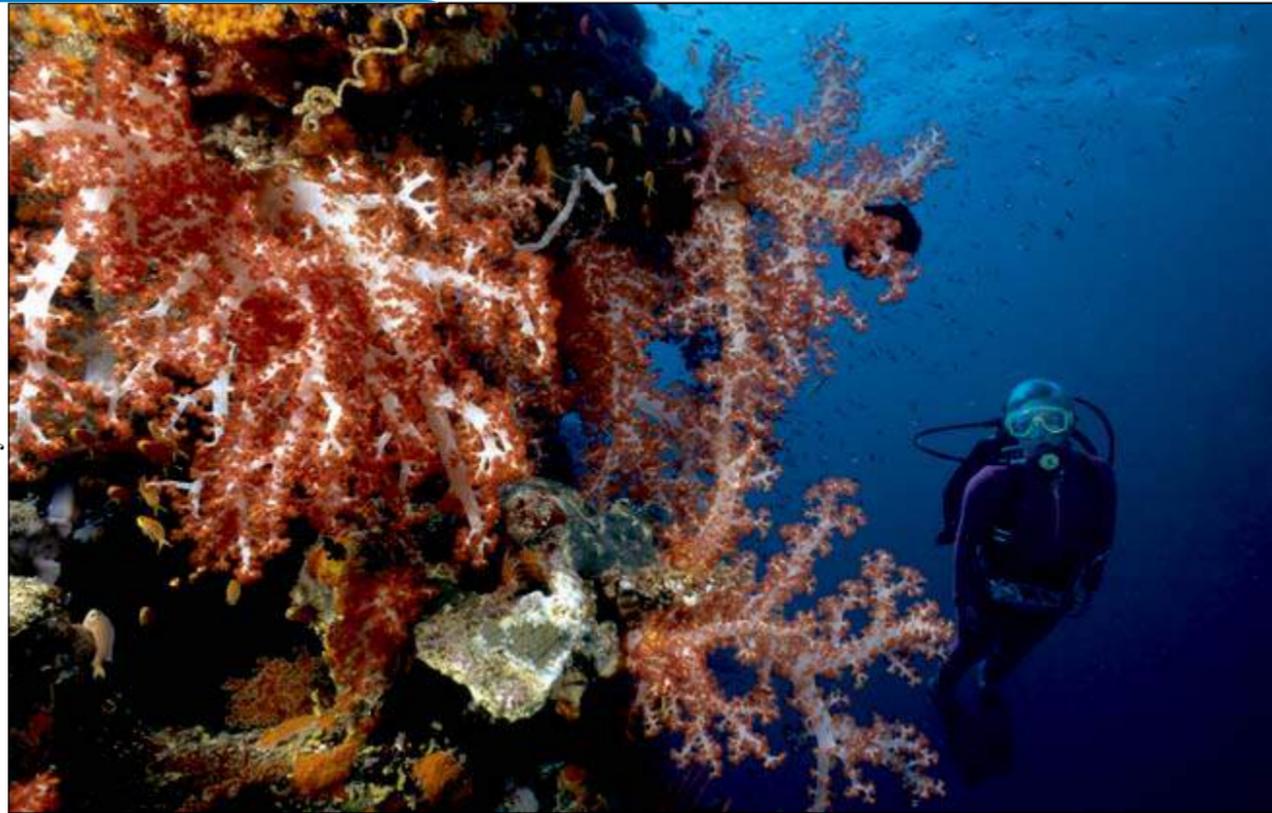
Pygmy seahorses are next on the list. Theoretically, they should be slightly easier to find as the playing fields have been narrowed down to the Muricella species of Gorgonian fan, but unfortunately not every Muricella fan has a resident pygmy. Armed with magnifying glasses, pointers and torches, it is possible to find pygmies. The only problem is that the maximum size of adult is only 2cm (imagine the size of the young).

Franco's dreadlocks bob in the water as he pans over a fan with his torch before pointing to something. I have to squint hard but can only see the bumpy fronds of the fan. Suddenly one frond changes position! It's a pygmy seahorse and I gesticulate wildly to my dive buddy who is armed with a camera. As he swims over, I



PNG

By Jeanne Liebetrau and Peter Pinnock



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point to the frond. He looks. Then I look and I get a hand signal that is vaguely interpreted as "you must be marked". A few frustrating minutes pass before I manage to find the pygmy again, a little further along the fan. I proudly point him out to my friend and seconds later the tiny creature jolts as my buddy's finger squeezes the camera shutter and blasts the fan with artificial light from his strobes.

Loloata serves Melanesian lunches at the resort after the 2 morning dives as we are seated around a communal table where conversations automatically steer towards the sightings of the day. Oblivious to the discussions taking place, a Maganis (species of tree kangaroo) and blue pigeons (the world's largest pigeon species) scratch around for crumbs. On Friday nights, a celebratory festival called a "sing-sing" is performed by the children of the local fishing village. Traditional costumes of grass skirts, elaborate headdresses and painted bodies form part of the enchanting attire and kina shells that were once used as currency, are proudly worn as jewellery. The flamboyant headdresses are adorned with brilliantly coloured feathers and are shown off during the simple dance

routines. After the performance, I headed off to my stilt cabin above the mangroves. The rhythm of the ocean lapping below lulls me to sleep where I dream of Rhinopias and pygmy seahorses.

The next morning Franco gives the dive briefing. Pacific Gas is a wreck scuttled in 1986, in the lee of Horseshoe Reef. The depth stretches from 9 metres down to 45 metres. Franco adds that it is home to the quest for the day – the harlequin ghost pipefish. As I descend, I find the kaleidoscope of colours and fish activity around me so distracting that it's difficult to focus on finding something only 5cm in size. Bouquets of soft corals cascade from the intact mast and purple and orange anthias swarm around the corals. Giant ignoblis (kingfish) patrol the decks for easy prey, while schools of fusiliers and jack fish congregate in mass around the wheelhouse. I notice a cameraman flashing madly at a small crinoid and wonder what could be so interesting? In amongst the fronds of the crinoid, a harlequin ghost pipefish moves gently, mimicking the crinoid's every movement. The dive ends with a decompression stop accompanied by a school of playful batfish.



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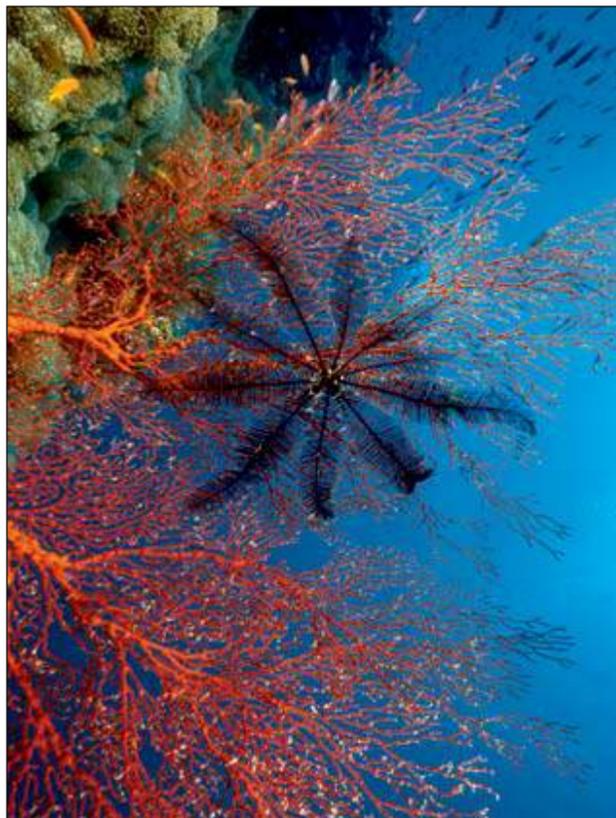
By Jeanne Liebetrau and Peter Pinnock

Quales Reef is home to Rhinopias and harlequin ghost pipefish, but I am so overwhelmed by the astounding beauty of this reef that I leave the painstaking macro searching for Greg and his mates. Suzie's is named after a German who took too long in descending for a dive and drifted onto a different reef. The reef is a plethora of corals and schools of brilliant yellow oriental sweetlips and bright red snappers hover above it. Large lionfish congregate near schools of glassies while enormous Gorgonian sea-fans brace the gentle current filtering for plankton. A feather star perches on the end of a brilliant red sea whip in order to gain the best vantage for trapping passing food.

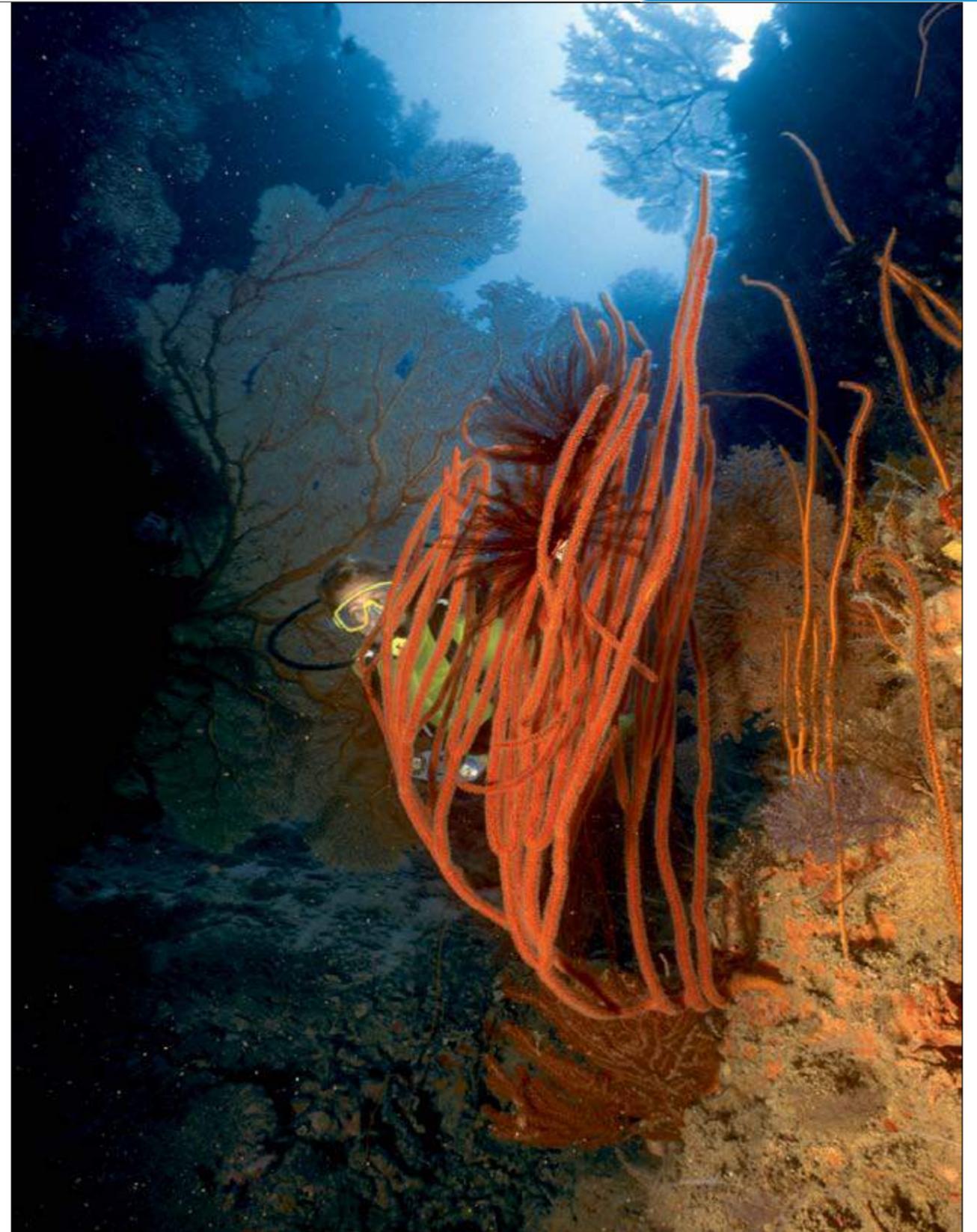
The nearby Lion Island is the preferred site for night dives because it is a well-protected sandy slope ranging from 3 to 25 meters in depth. Visibility is seldom good, but that is immaterial on night dives. I follow Franco across a sea-grass meadow and stop to play with some clownfish living in a sand anemone. From underneath the anemone folds, porcelain crabs scoop passing plankton with their fine net traps. Further on, two robust pipefish waft about in unison with the sea-grass. Franco continues towards the wreck of an old fishing barge where hundreds of hinge-beaked shrimp and glass shrimp flit around. A few arrow crabs emerge from the sanctity of the soft corals while a juvenile harlequin ghost pipefish takes refuge on the rusting bow. The decrepit barge is charged with activity and while returning to the mooring, I hesitantly swim over a stonefish. I remind myself that good visibility is not necessarily a prerequisite for a good dive.

We return to End Bommie, which is noted as the best site for seeing Rhinopias. A white paperfish which is also a member of the scorpionfish family, rocks gently on a fans edge while I search under a rocky outcrop for Rhinopias. Instead, I find a juvenile white tip reef shark resting. Suddenly, I notice a clump of weed tumbling down the reef. It's a Rhinopias!

As I surface, I yell to Franco: "I found one, a big orange one!" He replies: "You are lucky, the orange ones are rare". I look at the jealous faces on the boat and realize I have unwittingly joined the Rhinopias cult. 🐟



PNG





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*I was diving in the Maldives and had pain and tingling in one arm, an itching sensation on my back plus pins and needles in both feet. I called a DAN Hotline for help and was sent to the local chamber where I underwent two treatments that cost more than US\$6,000. Fortunately, these expenses were fully covered by DAN.*

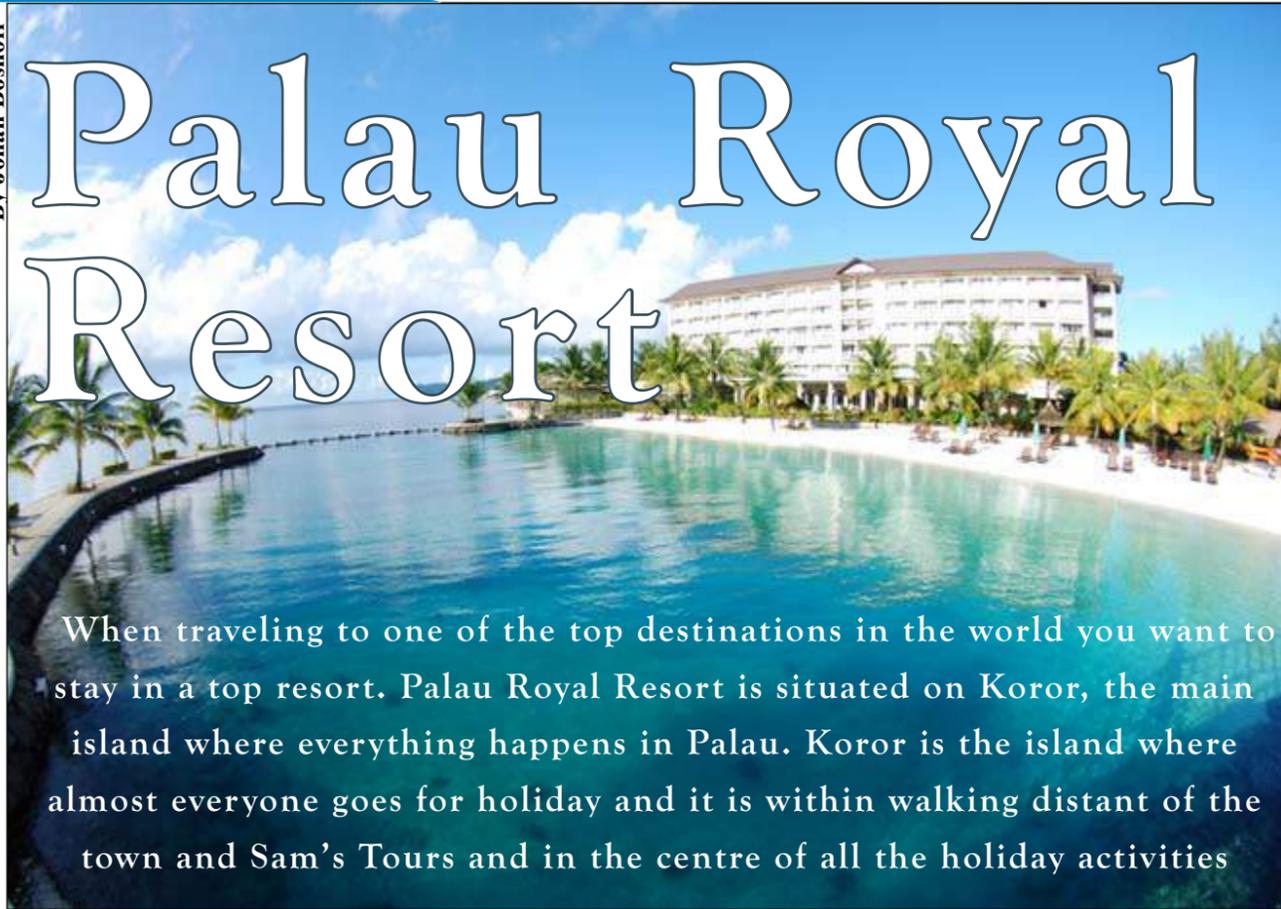
*- S. Lee, Taiwan*

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# Palau Royal Resort



When traveling to one of the top destinations in the world you want to stay in a top resort. Palau Royal Resort is situated on Koror, the main island where everything happens in Palau. Koror is the island where almost everyone goes for holiday and it is within walking distance of the town and Sam's Tours and in the centre of all the holiday activities

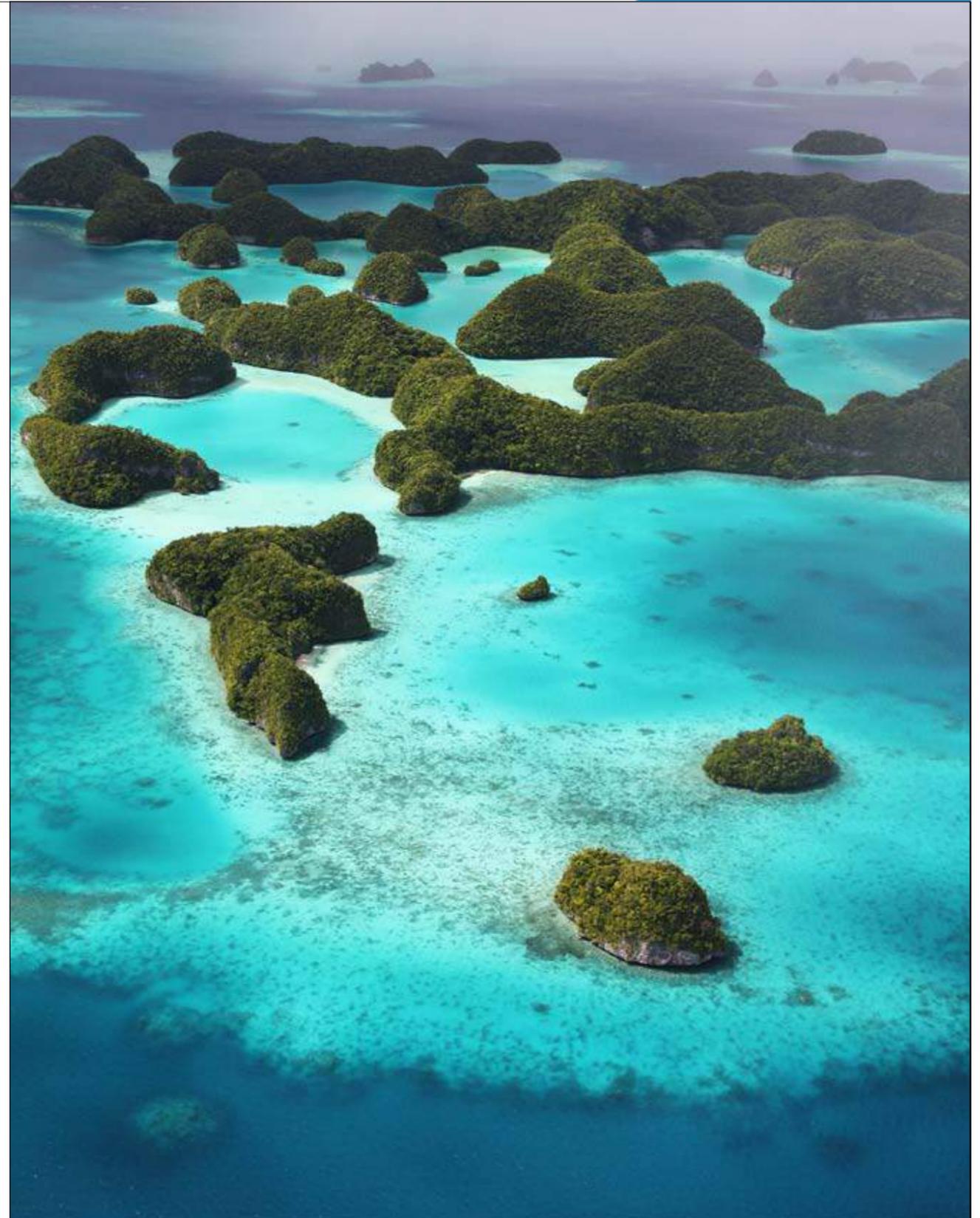
The Palau Royal Resort is the newest resort in Palau, having opened its doors in 2005. It is a world class resort in the Malakal harbour right on the beach. It has its own private harbour and private sandy white beach overlooking the beautiful rock islands which the ocean shapes out of limestone formations every day.

At the resort you have your own private beach where you can easily just lay in a deck chair and relax, or go swimming or snorkeling, but the best way to view the islands is to take a kayak and just paddle around. In addition to its beach, you also have the option of two swimming pools; a shallow pool for families with young children and one that overlooks the resort and beach.

You also have the option of two bars; an open-air bar on the deck outside or a stylish indoor bar to unwind in after a hard day in paradise. At these bars you can get anything you want from international beer to the most colourful cocktails.



If dining is your passion then you have a variety of restaurants to choose from where you can eat a selection of meals from all over the world. The main attraction here is the Japanese food that is prepared by their own Japanese head chef. The resort caters for all ages so you will not have to worry about differing tastes.



## Dive the Globe

PRR

By Johan Boshoff

But what is a luxury resort without a spa? Mandara Spa is a famous spa with branches throughout the Pacific. The spa is situated in Palau's stunningly beautiful environment, where you will experience Mandara Spa's world-class treatment and service amidst tropical splendour. The spa uses only essential oils and treatment creams of the highest purity and quality and here you can experience the healing and beauty of Asia's tradition coupled with the technology of the West.

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# Bikini Atoll Revisited

The distinctive shape of a flight deck materializes as I descend to 30m. I imagine a fighter plane returning - mission complete.

The pilot negotiates the approach, the deck crew ready for the landing, the fire fighting crews on standby and gunners scanning the skies for stray enemy aircraft. I fin over the vast deck from which hundreds of planes taken off and landed on. A

fine layer of silt stirs to reveal the rivets that once held the teak planks together.



By Jeanne Liebetrau and Peter Pinnock

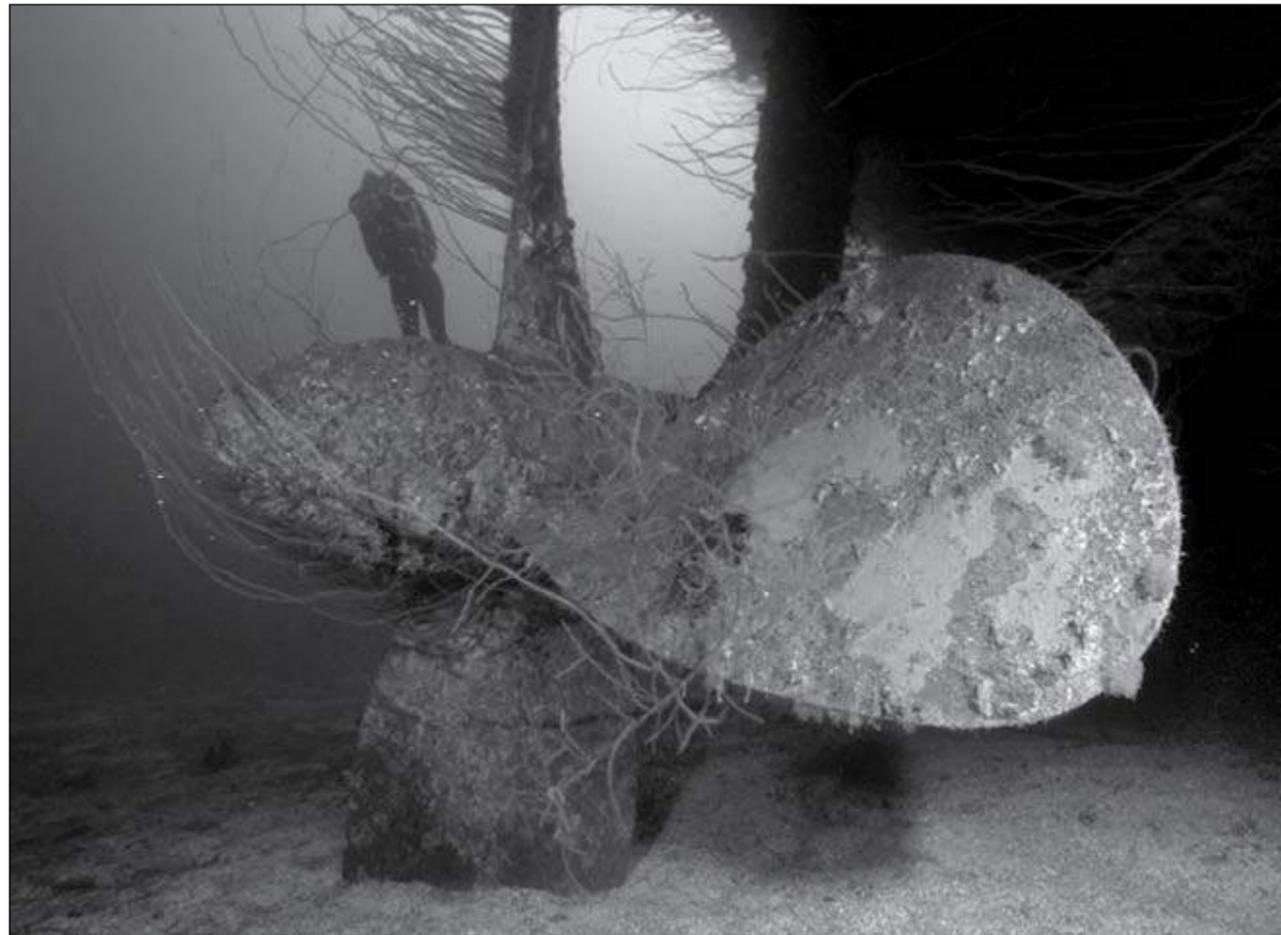
In the sponsons on either side of the deck, rows of live ammunition is stacked ready to be loaded into the tactically positioned 5" 38 calibre guns and MK2 Quad 40mm guns. The rubber focusing eye-cup on one of the 38 calibre guns is still in good nick. A colony of whip corals growing on these weapons softens the harshness of the scene and schools of coral groupers lazily swim over the piles of ammunition. In front of the bridge, the No 1 twin 5" 38 calibre guns stand, resolutely pointing to the skies. How many planes did these big guns shoot down during combat?

On the bridge, the flight deck control room and aerological platforms are invitingly open. Further up, inside the communications room, the identification labels marking the speaking tubes to the decks below are clearly legible – Aviation Ready Room, Main Communication Station and Captain's Emergency Cabin. A table in the navigation room is a treasure trove

of historical artefacts. This is the scene on a check-out dive of the USS Saratoga CV3 at Bikini Atoll – the largest diveable aircraft carrier in the world. To put her size into perspective, she is 3m longer than the Titanic.

The Saratoga was one of 73 target vessels for the atomic tests performed on Bikini Atoll. In 1946, fully laden battleships, battle cruisers, destroyers, transport ships, landing craft and submarines were strategically placed inside the atoll for Operation Crossroads. Today, these wrecks are the property of the Bikini people. Since 1996, Bikini Atoll divers have been taking adventurous souls underwater for truly incredible exploration dives. The history of Bikini, its people, the tests and the diving is an amazing story to hear.

After WW2, the USA was the new superpower and wanted to do tests on the atomic weapons that had just destroyed



By Jeanne Liebetrau and Peter Pinnock

Hiroshima and Nagasaki. Bikini Atoll was identified as the ideal location. It was sheltered with predictable weather, was under Allied control and only 167 people would need to be relocated. The Bikinians were approached one Sunday after their church service and were told they needed to give up their island paradise for "the good of mankind".

Perhaps they were intimidated by the monstrous battleships that were parked in their lagoon, or perhaps the Sunday spirit had something to do with it, but soon the Bikinians and their fishing craft were shipped off to Rongerap Atoll, 201km away. Bikini Atoll was transformed into a camp for the 42 000-odd people involved in the tests, including observers and the press. The first test was an aerial drop called the "Able Blast". The press labelled it a spectacular flop. While it missed the target ship, it managed to sink five others: the HIMJS Sakawa, the USS Anderson, USS Lamson, USS Gilliam and USS Carlisle. A day after the test, US personnel boarded the remaining ships to retrieve monitoring equipment. Radiation levels were extremely

high but minimal protective clothing was worn. The world was still blissfully unaware of the invisible danger of nuclear fallout.

The second test took place three weeks later. "Baker Blast" was an underwater nuclear explosion. It was a spectacular sight as tons of displaced ocean and pulverized coral was sucked upwards into a huge mushroom cloud. This blast sank seven vessels immediately, including the submarines USS Apogon, Pilotfish and Skipjack. The USS Saratoga was badly damaged and sank a few hours later, as did the HIMJS Nagato. Other ships that were badly damaged but hadn't sunk were later scuttled. Although the third test on Bikini was cancelled, the US continued to test further nuclear weapons in the atoll until 1958.

While all this was going on, the Bikinians were starving on their new island home. The lagoon produced little fish and only small coconuts were to be found. Once again they were moved, first to a tent city on Kwajolein and then to Kili Island, where many of them still live today. In 1968, officials declared



# NEW



# ATMOS PACKAGE

By Jeanne Liebetrau and Peter Pinnock

Bikini to be radiologically safe for the people to return. Few did return in 1971, but within a few years medical examinations found unacceptably high levels of cesium-137 being ingested through eating coconut and banyan fruits. The Bikinians were relocated once again. Through the efforts of Jack Niedenthal, legal action was taken against the US government in 1982. The Bikinians won the case and were awarded a resettlement trust fund. Bikini Island though, remains elusive for Bikinians as all food must be imported. This makes traditional living on the island unviable.

Bikini Atoll divers live in simple yet comfortable accommodation. Food is brought in by supply ship or plane, the water is safe to drink and ice-cream is on tap in the dining hall. The only other people living on the island are the Park officials who maintain the island for the visiting scientists who monitor the radiation levels in the coconut plantation. The nearest island is 201km away and there is only one flight each week to the atoll. Dive safety is therefore of paramount importance and detailed briefings include the wrecks history, the dive plan and an emergency plan. The danger of diving Bikini is not the radiation, but rather the depths.

Listening to the Saratoga's history, it was clear that she demands a lot of respect. "Sara" was the first vessel to be launched as an aircraft carrier. At 251m long, she was the largest vessel in the sea and could cruise at a speed of 22knots – the fastest at the time. Her cargo of 82 aircraft took part in many air strikes in the Pacific and were recorded as having sunk at least one aircraft carrier, two cruisers and several destroyers. Damage was caused to one battleship, several destroyers and numerous merchant ships, as well as hundreds of aircraft. She became a legend when, in the battle of Iwo Jima, she was badly damaged by five kamikaze pilots and bombs but still didn't sink. Firemen doused her burning deck which was rebuilt in only five hours.

The second dive on Sara saw us head down her elevator shaft into the hangar deck. Rows of incendiary bombs and Mark 64 aerial bombs greeted us as we entered. She may have been down here for 50 years, but the live ammunition still makes

me nervous. Parked in a corner is a Curtis SB2C Helldiver, largely intact apart from the engine cowling that has fallen off. The dials, gauges and other instrumentation meters are frozen in position. The hangar deck ceiling has collapsed, crushing many of the planes, but amazingly there are still some fluorescent lights that survived both the blast and the sinking. Exiting the hangar deck, we were greeted by complete chaos. Crockery and cutlery is scattered all over the place. With little time to scratch around, we proceeded to the command tower where the compulsory decompression stops allowed us time to explore each of the decks.

The bow dive on the Saratoga is a phenomenal experience. She sits upright on the lagoon floor at a depth of 52m, with the bow curving gracefully towards the flight deck at 32m. Her heavy anchor chains lie tossed on the sands below and a giant hole is reminiscent of the stockless anchor's size. A healthy growth of long whip corals blurs her sharp outline when viewed from afar and I felt dwarfed by her sheer size. Lying on the sand beyond the bow are two planes that were blown off the flight deck in the



By Jeanne Liebetrau and Peter Pinnock

blasts. One is a Helldiver and the other is a TB Avenger Torpedo bomber. The bomb bay of the Avenger is open and reveals her lethal cargo. Both planes resemble dead insects with their wheels protruding helplessly upright in the water.

Over that week, we managed to dive on seven different wrecks. Nothing has been removed from these wrecks - each one remains armed with tons of unexploded ammunition and massive guns. At the stern of the USS Lamson, a 104m long Mahan class destroyer, racks of depth charges are positioned for quick release into the ocean. There are 5" 38 calibre guns, 50 calibre Bofor machine guns and 20mm anti-aircraft guns. Interestingly, the red glass on the engine telegraph survived the blast.

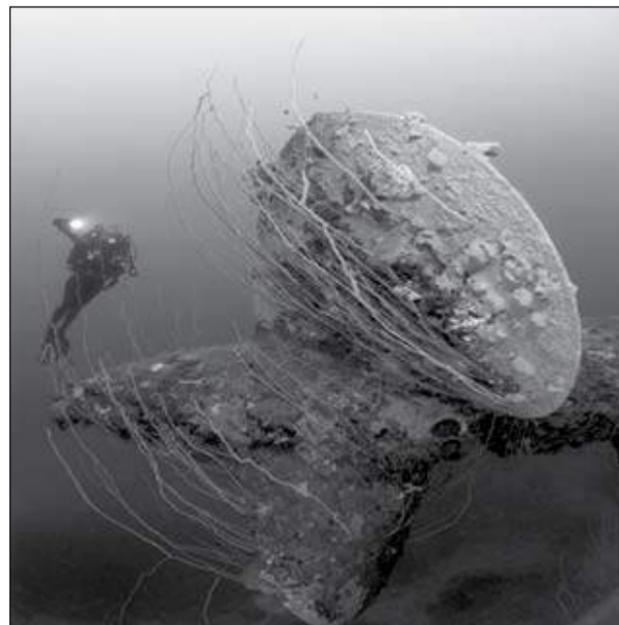
The USS Anderson was a destroyer and she was the only vessel whose ammunition went off during the tests. Despite this, the glass in her portholes survived, as did at least 12 torpedoes being stored on her deck. Being so close to the Baker Blast, the battleship USS Arkansas was unceremoniously dumped upside down. The superstructure didn't have time to fall off, resulting in her now resting on it with the turrets of the No 1 12" 50 calibre guns projecting out from underneath her deck. Wooden crates filled with unexploded, emerald-green proximity-fused ammunition lie alongside her.

The USS Carlisle was a transport ship that was loaded with 5" 38 calibre anti-aircraft guns and Bofor machine guns, along with a consignment of ammunition. In the 1940s, transport ship manufacturing was a hurried process and many were made with inferior steel. Today, her metal parts creak eerily in the currents. The USS Apogon is perhaps the most intact diveable submarine. In fact, the Apogon was pumped out and re-floated after the blast, but it wasn't worthwhile to maintain the pumps so she was left to sink again. On her bow, the open torpedo door reveals a 24MK torpedo ready to be fired. In front of the conning tower stands a 5" 25 calibre gun aimed towards the bow.

The most infamous of the ships is the HIMJS Nagato. This was Admiral Yamamoto's command centre for the attack on Pearl Harbour. The Nagato rests upside down on top of the biggest guns

imaginable. With some tricky bearing and elevation calculations, these guns could fire an unbelievable distance of 33kms. The projectiles for the four twin-mounted 16" guns weighed in at 900kg each. Swimming underneath the deck is unnerving - there are several tons of once hostile steel overhead. The pagoda (bridge) was built exceptionally high to accommodate the gun director's view. This fell off as she turned sideways and is lying alongside the upturned hull. Swimming past, I wondered which deck Yamamoto was on when he received the signal that the attack on Pearl Harbour was a success. I moved away from those horrific thoughts and headed for the four giant propellers. Nature is now in command of the props that once powered this heavyweight battleship to 26.7knots. Lightly encrusted with red and orange growth, it's a reminder that everything has an end. For me, this was the end of an incredible journey into the past and the beginning of hopes for a return in the future. 

For more information and contact details, visit [www.bikiniatoll.com](http://www.bikiniatoll.com)  
For more underwater stories, visit [www.peterpinnock.com](http://www.peterpinnock.com) and to view a gallery of Bikini Atoll photos, visit <http://www.peterpinnock.com/gallery.asp?galleryname=bikini>



# Photographic Competition



This photograph of a painted frogfish was taken by Altus Kotze



Ian Shepherd



Lee de Sousa took this photograph of an anemone shrimp



This photograph of a false plum anemone by Philip Goets



This photograph of a Phyllidiidae nudibranch was taken by Pierre Kampman



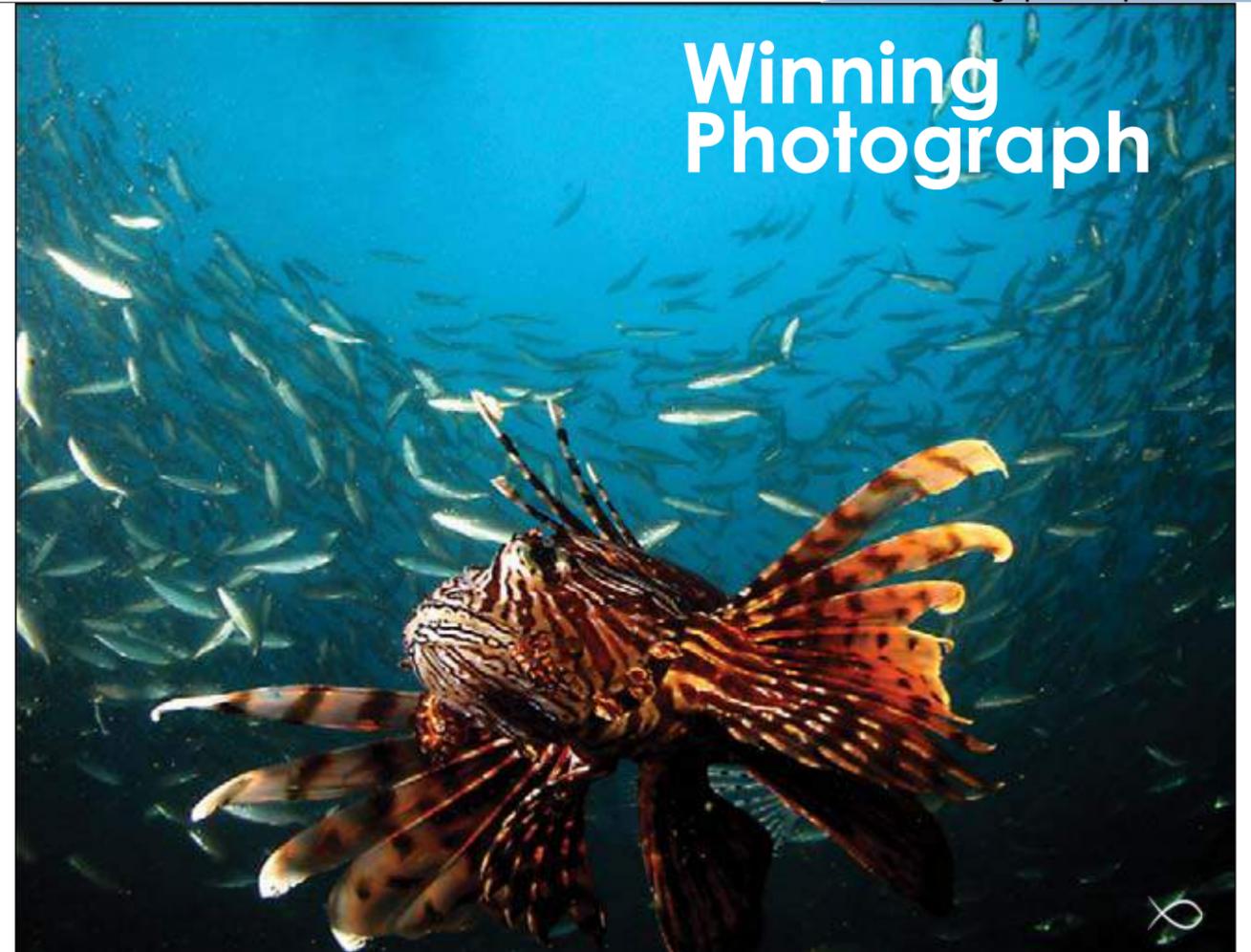
Robert Schouwstra took this photograph of a longnose hawkfish



Willem Kuperus took this photograph of Durban dancing shrimps



Jason Mulherron



Bryan Hart took this photograph of a broadbarred lionfish

## 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.

Visit [www.ozdiver.com.au](http://www.ozdiver.com.au), click on the "photographic competition" link and follow the steps.



# Photo School

## Expose it right underwater



**In part six of "Expose it right underwater" we will be looking at the TTL function and the strobe as a creative tool.**

This issue we are going to look at basic composition. Think about the difference between 'taking' a photograph and 'making' a photograph. Making a photograph is about observing and seeing visual elements in a photograph or by creating personality or mood in a photograph. Photography is about being able to isolate a subject, define its essence and then lift it out of a bewildering

background. This is what pre-visualisation is all about – making a conscious decision on how to obtain the photograph. By Rian Bester

Amazing photographs originate in the brain. You need to evaluate and then isolate your subject and then select the special features that make it unique. Give the photograph a purpose.

You need to learn how to use your imagination and to apply the techniques to compose great photographs. There are some basic techniques you



can learn about composition and these, along with your imagination, can create amazing photographs.

The most basic rule is the 'Rule of Thirds' which is applied in every form of photography. Essentially it divides the photograph into nine equal sectors by drawing three imaginary horizontal and three imaginary vertical lines through the frame.

This enables you to position key elements of the subject within or at the intersections of these areas to create a flow and a central focal point in the composition. By applying the Rule of Thirds you can achieve a sense of balance in the photograph before pressing the shutter release.

Another important point is to fill the frame. By reducing the distance between you and the subject, you increase your chances of capturing rich colour and a lot more detail. Only include what is essential to create the photograph. Always compose through the viewfinder of the camera as this narrows your vision to a much smaller image. Play around with both positive and negative space. Positive space is everything about your subject – its colour, shape and character.

Negative space is everything else that is not your subject. A good rule is that negative space should only form about one third of the photograph. You can use the negative space to create a frame around your subject that conveys a feeling of space and harmony. Give your subject enough room to breathe.

Also look for lead-in lines that allow your eye to travel through the photograph. These lines help the eye focus on the subject. Change your viewpoint and vary the format – if a horizontal doesn't work, try turning your vertically. Try to create a sense of depth in the photograph. Photography in its final format has only two dimensions and therefore photographers need to create the sense of depth in the photographs by using layers. Having a clear foreground, a subject and a background will definitely help.

Try including some deep water and/or sky into the photographs as this also adds depth and substance to the photograph. Remember to shoot for an audience – what are your viewers going to enjoy and how is it going to capture their imagination? You need to take photographs with a purpose so that they capture your audience.

The final point regarding the basic rules of composition is that you also need to experiment with your own ideas and techniques because no two people are the same. So when you have got all the basics right and know all the rules, break them. 





# Photo Editing

One of the most common underwater photography difficulties is trying to capture a photograph without dull, saturated colour and loss of contrast. To avoid taking photographs with a lack of contrast you should shoot try and in clear water, get closer to the subject and use strobes to light the subject.

Obviously conditions vary at each diving destination and dive so you may not be able to dive in clear water. Many excellent dive sites are so good because of currents and nutrients in the water so that is unavoidable. When downloading your photographs to your computer don't worry too much as this is now not the end of the road for your photographs – with an excellent array of tools available you can turn that bland, dull photograph into a sharp, clear image with impact.

## The levels function

Many people go straight to the 'brightness and contrast' tool to adjust the contrast of their photographs, but this tool is very limited and you can do the same and much more using the levels tool. The levels tool allows you to change the intensity range of the image in every channel (red, green, blue). This tool is used to make an image lighter or darker, to change contrast or to correct a predominant colour cast. This great tool allows you to adjust the contrast of your photograph as well as the colour balance to bring out the best of your photographs.

We have chosen to show you how in GIMP, a free photo editing software with similar basic tools to Adobe Photoshop. ([www.gimp.org](http://www.gimp.org))

Before you start playing with your photograph, save it under a new name so that you will not risk messing up your original photograph and will have a back-up of the original.

**Top tip!** When your photograph is opened, the first thing you do before playing with your image is to make a duplicate layer to work on so that you can always go back to the original if you make a mistake when playing around. To create a layer to work on, simply go to the Layer option on the top menu and select Duplicate Layer. You are now working on your photograph on a new layer which you can delete if you are unhappy with the results. You can see your new layer on the right hand side of the screen (if you do not see this then select from the top menu Windows, Dockable Dialogs, Layers and the toolbox will pop up on the right). At any time you can see the difference the changes make simply by clicking the 'eye' next to your layer and this will turn on and off your layer, showing you the original photographs/ ayer.

Access the Levels function by selecting 'Colors' from the top menu and then 'Levels'. Alternatively, when you select the Brightness and Contrast tool you will be given the option to go to

this tool.

The box for levels will then open up and you will see a graph with sliders. You may think that this looks too advanced for you to start messing around with graphs, but it is very easy to use.

There are only a few adjustments to think about and it simply involves sliding them around to see what looks good to the eye.

**Value:** Value makes changes to the value of all RGB channels in the image: the image becomes darker or lighter. To improve the contrast you will not need to adjust the individual colours so leave the channel option on Value and then you can play with the slider to get the desired contrast of the photograph.

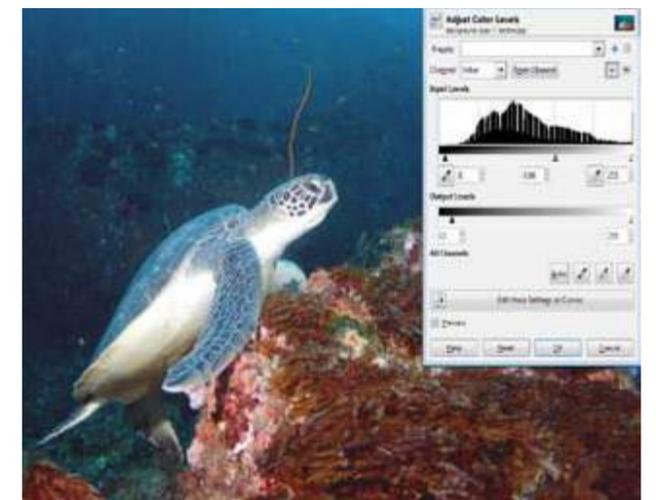
**The Input Level graph:** There are three triangles which you can slide around. The black slider represents the Blacks or shadows in the picture, and moving this to the right will make the blacks or shadows darker. The Gray determines the midpoint of the image's contrast. This is the most important slider for fine tuning.



Moving the slider to the left towards the black makes the image lighter and to the right towards the white triangle makes the image darker. The White triangle represents the highlights and whites in the photograph. By moving this to the left the whites in the image will become much brighter.

**The Output Levels:** The output levels function basically allows you to adjust the difference in the shadows and highlights. When the black slider is pulled to the right the shadows are lightened, and when moving the white slider to the left the highlights (bright whites) are tinted darker the more you move the slider. **Tip!** If you want to play around and turn your image into a negative then simply move the white triangle on the output levels to the far left and the black triangle to the far right.

Go ahead, don't be afraid to play around and see what you manage to come up with. This tool is extremely powerful and easy to use and will transform your photographs from bland, dull underwater photographs into vivid, high contrast and beautiful images. 



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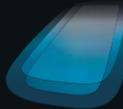
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# Basic Instincts

It's a fish eat fish, man eat fish world out there... Okay so we're not talking Sharon Stone with a sharp ice pick, but when around every corner lurks a deathtrap, nature tends to get pretty inventive in the fight for survival

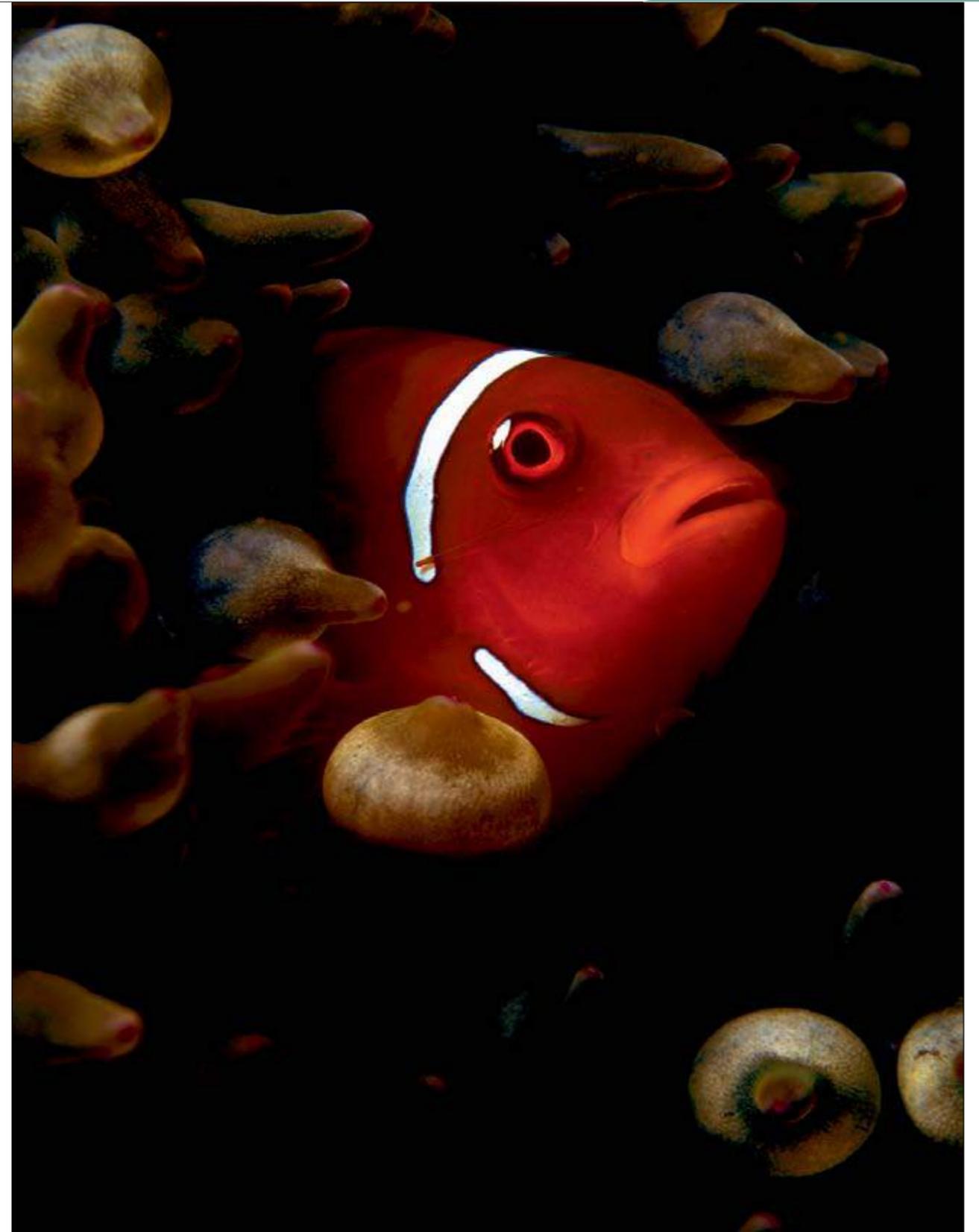


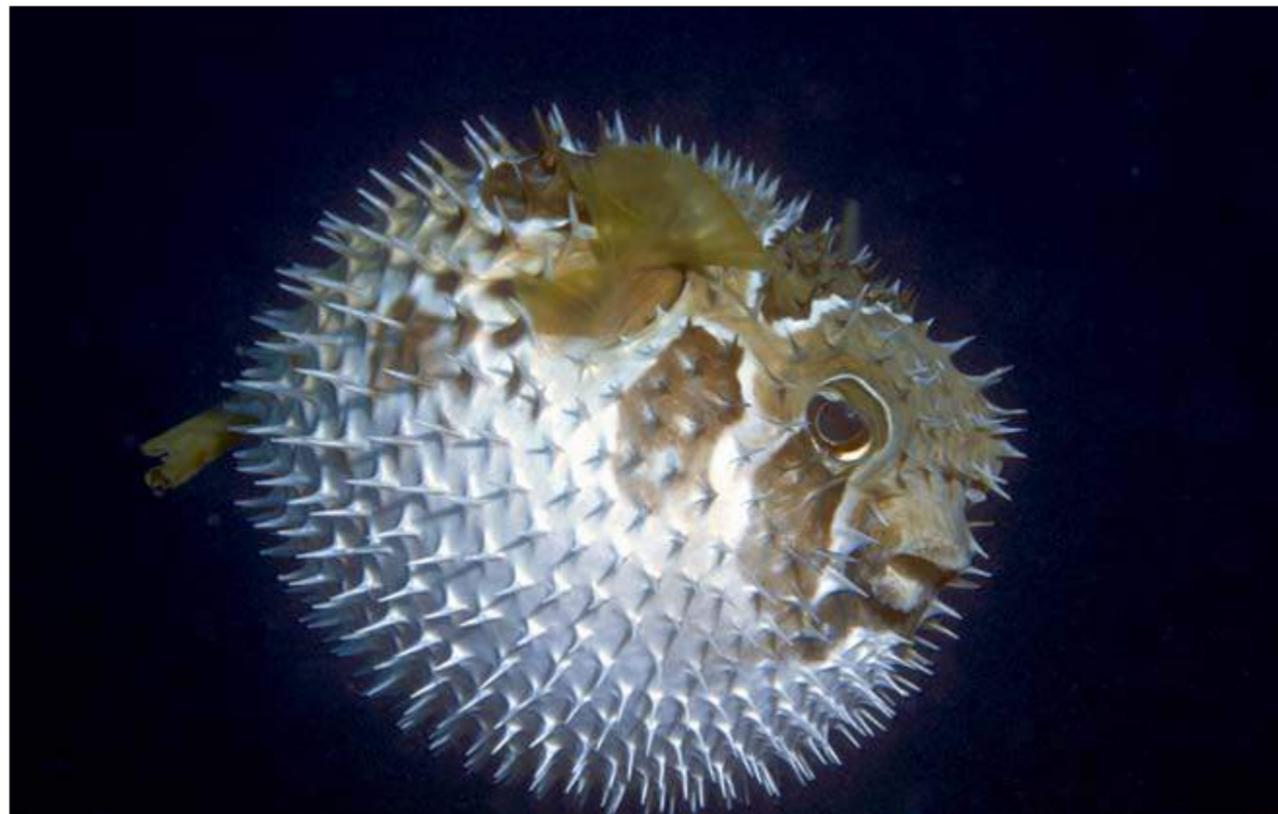
The first rule in nature is 'kill or be killed'. Quite simply interpreted this means you are either eating off the menu, or you are on it. The second rule is 'fight for survival'. This rule can entail using defense mechanisms as counter-offensive manoeuvres or being well equipped for instant battle. The third most important rule is 'avoid detection'. It's well-worth remembering that the enemy also employs this strategy to ambush prey. These three rules apply whether defending life, offspring, hunting territory and feeding grounds or even a soul mate. And tactics vary from species to species. In the ocean realm, fish have acquired ingenious 'fishtactics' and design adaptations to institute these rules, but the basic instinct is that of survival.

It's either survival of the fittest or survival of the smartest. Predators, such as kingfish and jacks, are designed for speed. With their sleek torpedo-shaped bodies and retractable fins to reduce drag, these fish can out swim any victim. But expending so much energy swimming at speed is not very fuel-efficient so they have learnt fishtactics, such as hunting in packs. When attacked by a hunting pack, the vulnerable prey has difficulty figuring out exactly which hunter it needs to avoid. In the ensuing confusion, the prey is more easily slain. The reverse

tactic is often adopted by smaller fish. Safety in numbers is probably one of the most common survival strategies. Anthias, damselfish, sardines, snappers and glassies, to name but a few, shoal in large numbers. The predators themselves have difficulty honing in on a potential meal as these clever fish swarm within their shoal, keeping it moving in multifaceted directions.

Some fish don't have the advantage of crowd protection, but they have their own unique idiosyncrasies. One modus operandi to avoid being killed is to either look very unappetising or taste absolutely disgusting. It is thought that the bright colours of nudibranchs warn of their impending foul taste. A fish only has to sample one nudibranch to learn to stay clear of all others in future. Frequently, juvenile fish are much brighter coloured than their adult version. The cute little day-glo yellow boxfish grows up to be quite dull by comparison. The adult female boxfish is pale yellow, while the male is a navy blue. The juvenile semicircle angelfish is vivaciously painted with bold royal-blue circles, yet the adult has almost boring green monotonous, bearing few markings. Is this the juveniles' way of saying "Hey, I don't taste good, leave me alone"? There is yet another theory that their bright colours say "Hey, I'm



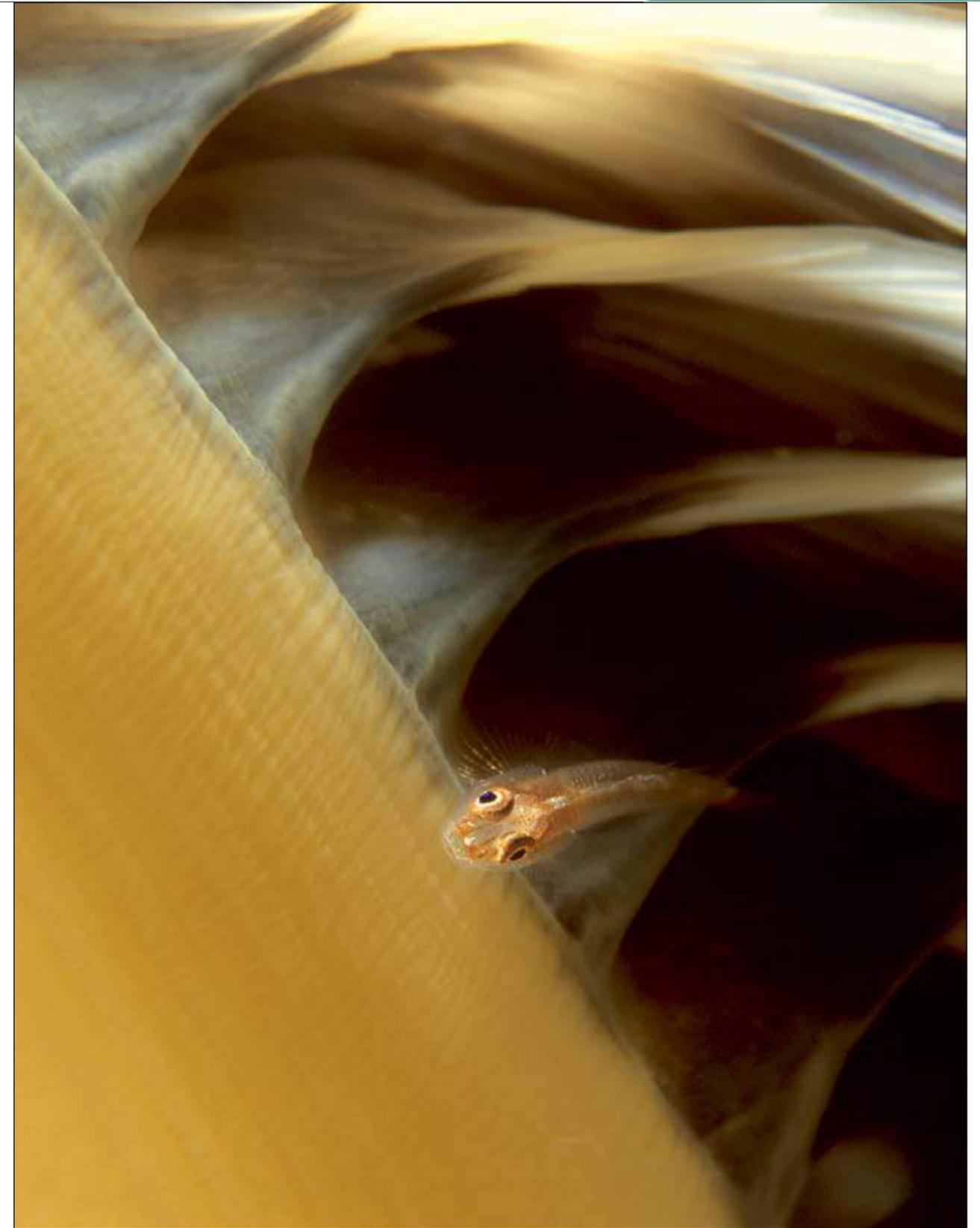


new on the block, get used to my presence." This conditions the adults to their presence, allowing the juveniles to share feeding grounds without being terrorised. Whatever the theory, it's worth remembering that bright yellow often means bad taste.

Small damselfish are not brightly coloured, but they too have taught larger fish a lesson in feeding decorum. Damselfish have extremely strong sharp dorsal spines, which get wedged in the gullet of the greedy diner. Having once experienced a fish bone stuck in my throat, I can imagine the discomfort of a whole fish being stuck. The pufferfish family goes one step further. When threatened, pufferfish dramatically increase their body size by pumping water into a part of their stomach. Whoever thought the puffer would be a small, easy meal now faces a fish too big to eat. But just in case the attacker is not intimidated, pufferfish have an extremely toxic skin. Porcupine pufferfish are extreme puffers. They take the second rule of fighting for survival to the limit. Not only do they puff but they also turn into inflated mobile spiny pincushions. A serious deterrent.

Adopting the foul taste method or risking a potential meal challenge by a predator is not something every fish would want to try. The simpler method is to live within something that is itself a hostile environment. The clever clownfish have learnt to live within the folds of anemones. The anemone tentacles are loaded with stinging nematocysts yet the anemone offers the clownfish blanket protection from their enemies. However, as the clownfish cannot lay their eggs within the anemone folds, the eggs are open to attack. No matter the size, clownfish zealously defend their offspring by attacking everything encroaching on their territory. Many a diver has had blood drawn by these fearless over-protective parents. Male goldies are not concerned about their young, but they are protective over their harem of females. The dominant male spends the better part of the day chasing and nipping at other males to keep his extended family happy.

A popular application of the third rule (avoid detection) is the use of camouflage. Topping the master class here is the frogfish. I don't know how many frogfish I must have swum past over the years. Disguised as a blob



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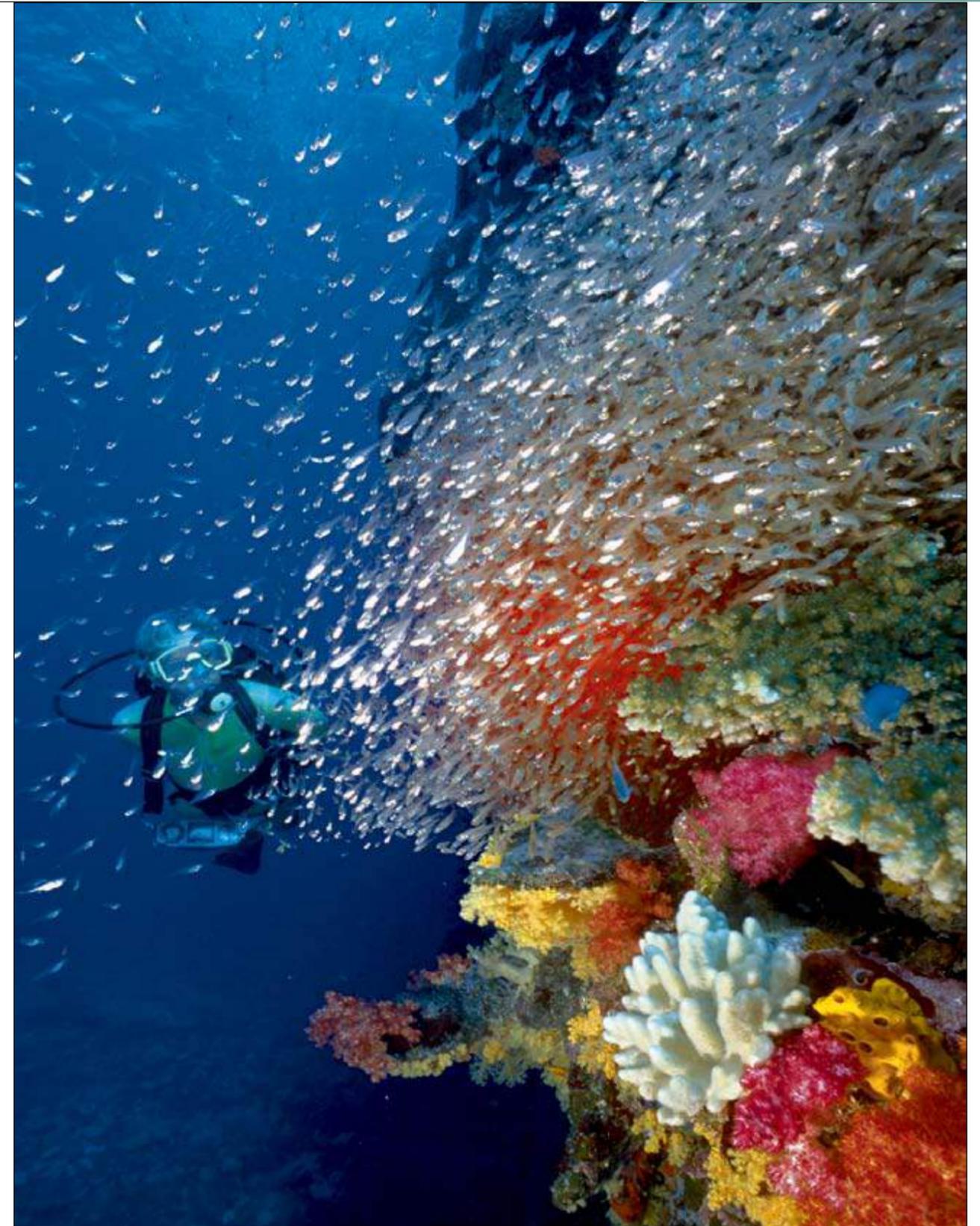
of reef or sponge with authentic colouring, these guys are near impossible to find. This is their ultimate ploy. Frogfish are lazy hunters. Their first dorsal spine, or esca, serves the purpose of a fishing rod and lure. The frogfish must remain invisible so that unsuspecting fish think that the lure is a tasty morsel and take the bait (excuse the pun). As soon as the prey gets close enough, the frogfish opens its enormous expandable mouth creating a vacuum of note and sucks in its prey whole.

Another fish that disguises itself as reef to avoid detection is the scorpionfish. Their bodies are bedraggled with ragged appendages resembling seaweed. Fish that aren't 'streetwise' may venture too near and fall into a deathtrap as the scorpionfish move with lightening speed to grab the hapless victim. While the frogfish and scorpionfish use camouflage to deceive their victims, others use camouflage to hide from their enemies. The many-host goby is practically see-through allowing it to roam freely on whip corals, gorgonians, fans or hard corals undetected,

while the juvenile rock mover wrasse masquerade as a piece of drifting seaweed in order to avoid detection.

Even fish that don't possess camouflage abilities have techniques to apply the first rule – kill or be killed. Trumpet fish lurk apparently innocently in amongst shoals of fusiliers or snappers. This enables them to sneak up on their prey, as their 'hosts' are often peaceful herbivores scrounging for reef debris. And the aptly named surgeonfish have minimal yet effective weapons of destruction. Armed with a samurai sword at the base of their tail, they inflict serious wounds as they lash out at their attackers. The only defense the strikingly beautiful triggerfish have is to create an earth-shattering noise to scare off would-be attackers. They do this by raking their gills. It's loud and effective.

Each and every fish from the leviathan whale shark to the teeniest goby has a plan to implement the fundamental rules of nature and follow their basic instincts in the fight for survival. 



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# OZ DIVER



# WWW.OZDIVER.COM.AU

# Mercury

**Sharks are dangerous – but only if they are dead  
They belong on a hazardous waste dump instead of in  
the oceans!**

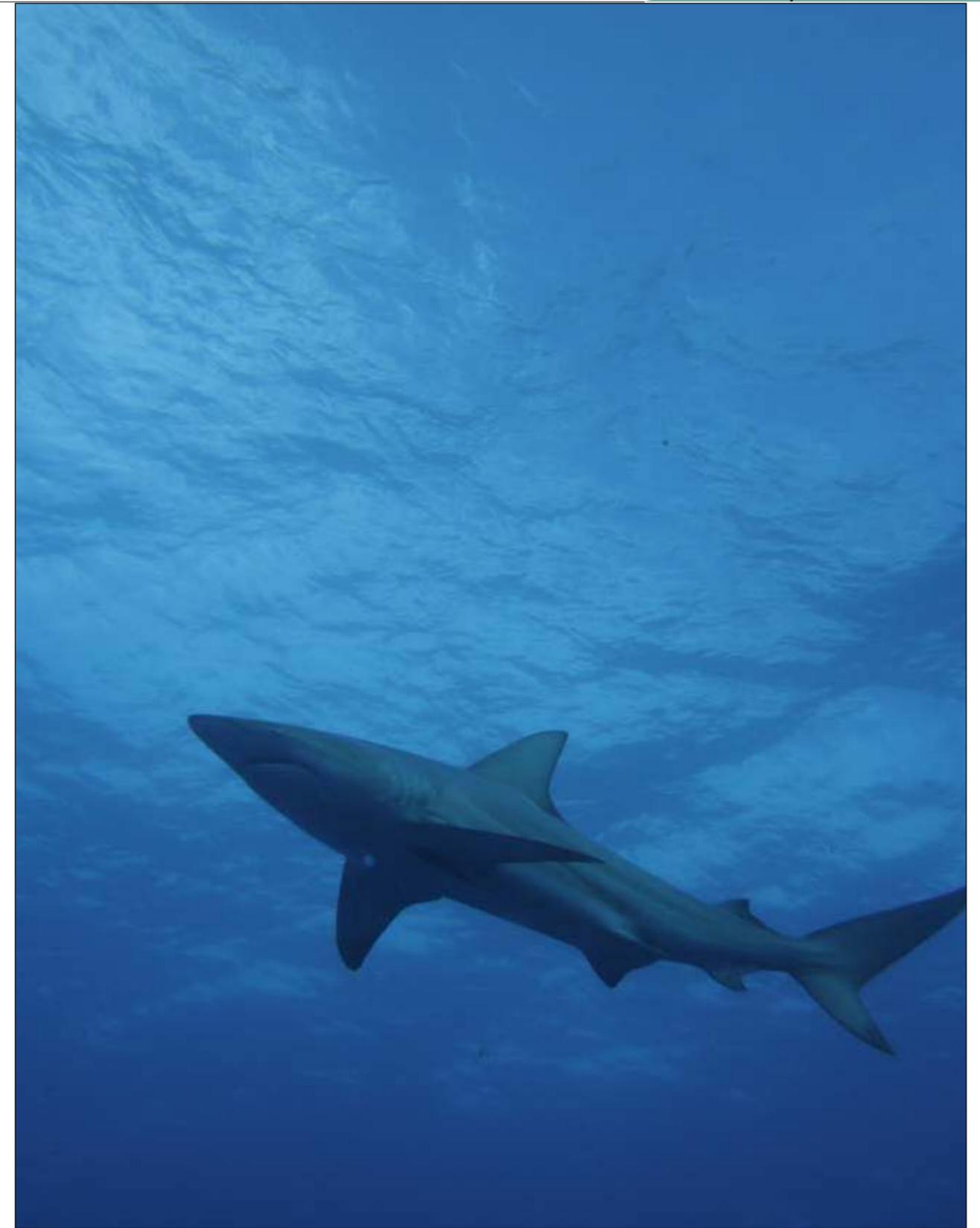
A new scientific study from two universities in Mainz and Kiel, Germany, has come up with frightening but highly interesting results.

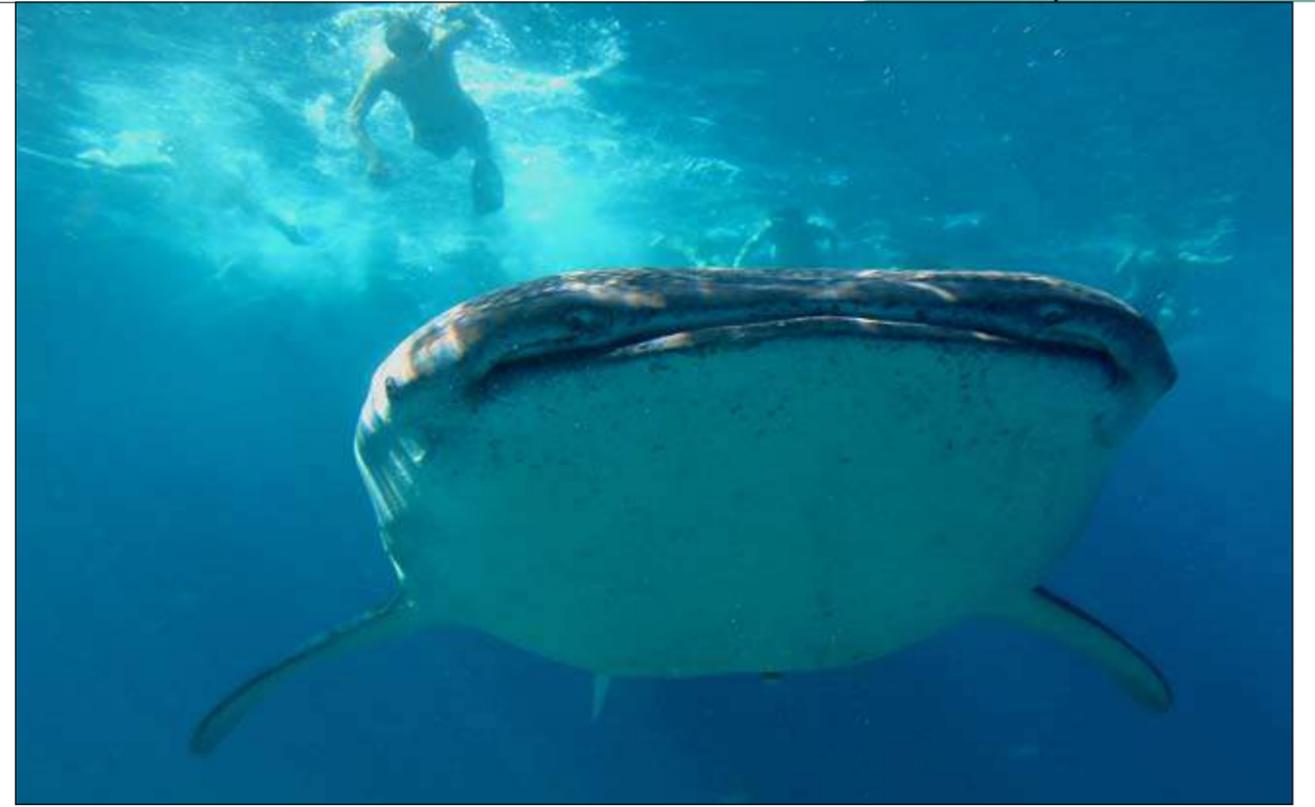
Prof Klaus Heumann, from the University of Mainz and inventor of the newly patented method of analysis, has found an alarming concentration of up to 1400 micrograms of methyl mercury in a kilogram of blue shark steak. That means that a normal portion of 300 grams would contain 420 micrograms. The legal limit, as set by the Toxicology department of the EPA, is 0.1 microgram per kilogram of body weight per day.

That means that a person weighing 70kgs would get 60 times the legal amount in just one portion of 250 grams. The legal amount for this person, as determined by the EPA standards, would be 7 micrograms. Shark meat is sold in the US under the following names: blue shark steak, mako steak, steakfish, gray fish, white fish or cape steak.

Inorganic mercury is converted into biologically active methyl mercury by microbes that live on the bottom of the ocean as well as in lakes.

It is then concentrated in the flesh of fish where it is never dissolved. Since sharks eat a lot of fish during their relatively long life span, they carry a highly concentrated amount of methyl mercury in their bodies, which also does not dissolve over the years.





By Andy Cobb  
Between 1953 and 1965, there were over a hundred adult men and women developing symptoms of central nervous system disorders such as ataxia, alterations in gait, tremors, altered sight and sensation.

In 1955 in the Minamata Bay area of Kyushu, Japan, there was a large increase in cases of severe neurological disorders in newborn children. There were cases of cerebral palsy, some children were diplegic and others were tetraplegic as well as being mentally handicapped.

Some villages had 6 to 12 percent of their newborns affected by such illnesses. These disorders are now referred to as Congenital Minamata Syndrome and in 1959, it was found that methyl mercury was being dumped into the bay by a plant of the Chisso Corporation. (<http://teratology.org/jfs/Agricultural.html>)

"Methyl mercury is a killer", says Prof Herman Kruse from the Kiel University. "It's one of the most biologically active and dangerous poisons to humans. It also works

like a Trojan horse. It can easily work its way through all of the safety barriers of the human body. That's something that most other poisons can't do as easily".

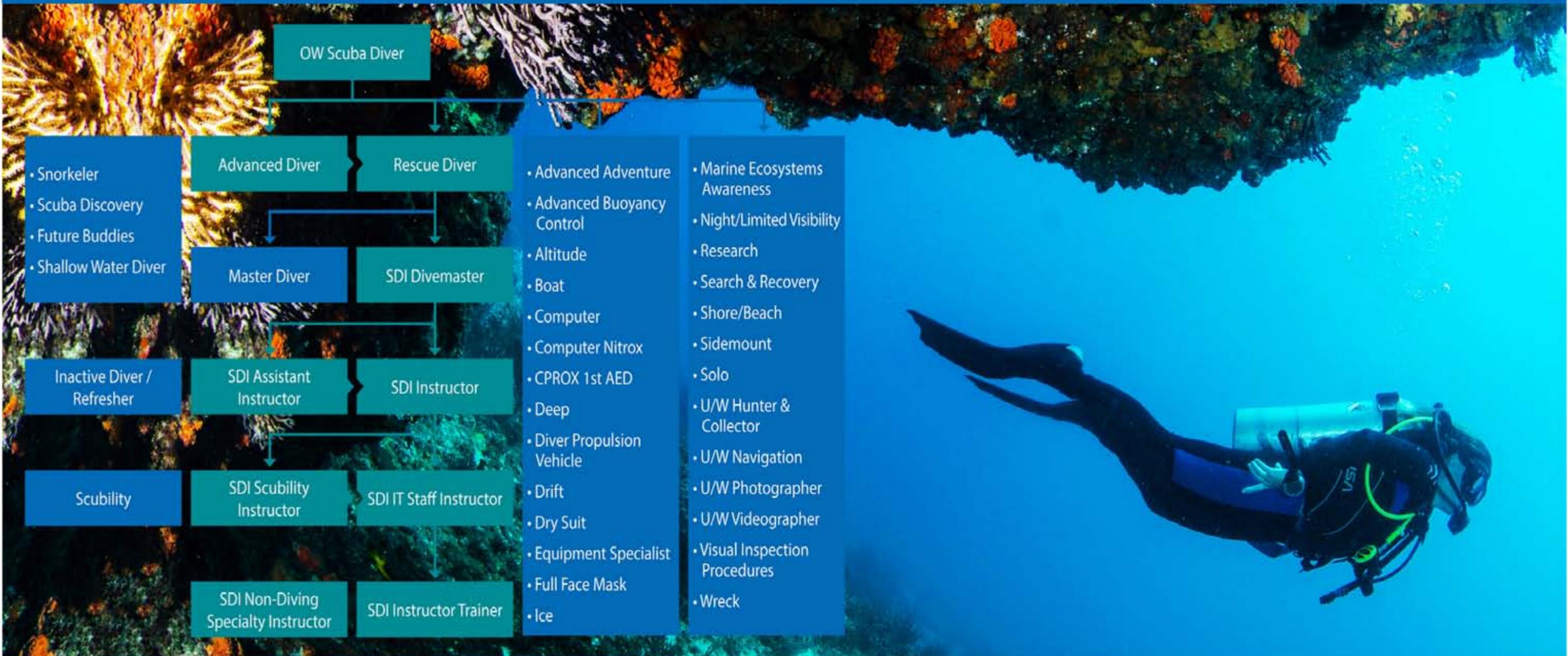
Once in the body, methyl mercury damages the brain and other organs. Even the diaplacental barrier, the dividing mechanism between a mother's blood and that of an embryonic foetus can't stop it and that will lead to intra uterine methyl mercury poisoning.

Methyl mercury poisoning can also result in kidney damage as well as influence fertility. In high enough doses, it can even be lethal. During the last 30 years, Minamata disease has claimed at least 3000 lives, mostly through consumption of fish that were poisoned with methyl mercury.

There are probably more deaths that could have been contributed to this poison, but the testing methods have never been as accurate and reliable as the new one that has been developed in Germany. 



## Scuba Divers Trained Here



# Technical Wreck Diving

Technical wreck diving is hazardous at the best of times, but more so when the environment gets more hostile. Diving to wrecks beyond recreational limits of 40m and generally incurring decompression obligations is great fun, especially when you know that you are perhaps the first person to set eyes on the wreck following the sinking, which may be years later in some cases.

Fun it may be, but if you are not well prepared for such a dive it can easily turn into a life or death situation. Whole books are written on the subject, but the simple truth is that time underwater building your experience and knowledge, slowly pushing your envelope together with as much background understanding is the only solution.

Penetration is always exciting (did I say that)! But at depth it can be more dangerous than perhaps cave diving. Sharp, rusting metal must be treated with respect, not forgetting siltation, wire, lines, cables and everything else you may expect to find on a ship which may be useful on the surface but can be a real menace underwater to divers.

The other problem encountered more than once are multiple fishing hooks suspended off the wreck. Whilst one end may be securely snagged on the wreck, and the monofilament line is very difficult to see, the hooks are seriously dangerous, catching you without warning and trapping you within seconds. Struggling only drives the hooks deeper and without a knife the fishing line cannot be broken.

I know how a fish must feel! I was alerted to

hooks once when I noticed a fish struggling in such a situation. Setting it free was not as easy as it sounds!

Most of my diving on wrecks is along the Natal South Coast and the currents present a



By Barry Coleman Photos: Peter Pinnock

formidable challenge. Getting down to them in the first place and back up without getting lost at sea is a concern and worry.

It is not uncommon to have strong surge over the top and around the sides of the wreck, making passing these areas a real interesting experience and not for the faint hearted.

**My kit technical diving**

An Inspiration Rebreather with side mount BCD and spare bladder/wing; spare mask; primary umbilical torch/light; back-up light; a sailor's tool pouch with pliers, marlin spike/shackle too; primary knife; back-up knife; light stick; signal mirror; underwater notebook and lead pencil; 1,5lt drysuit cylinder; 1,5lt spare oxygen cylinder mounted on the side of the rebreather; bail out open circuit cylinders according to dive plan, and a submerge underwater scooter. (All the inflator hoses are interchangeable).

Two SMB and reels with 150m of line each. I am now also looking at a smoke flare and waterproof cell phone in a case attached to the surface buoy. Yes, quite busy but then I have a scooter to pull me along comfortably. Oh, I forgot to mention a HD camera as well mounted on top the scooter.

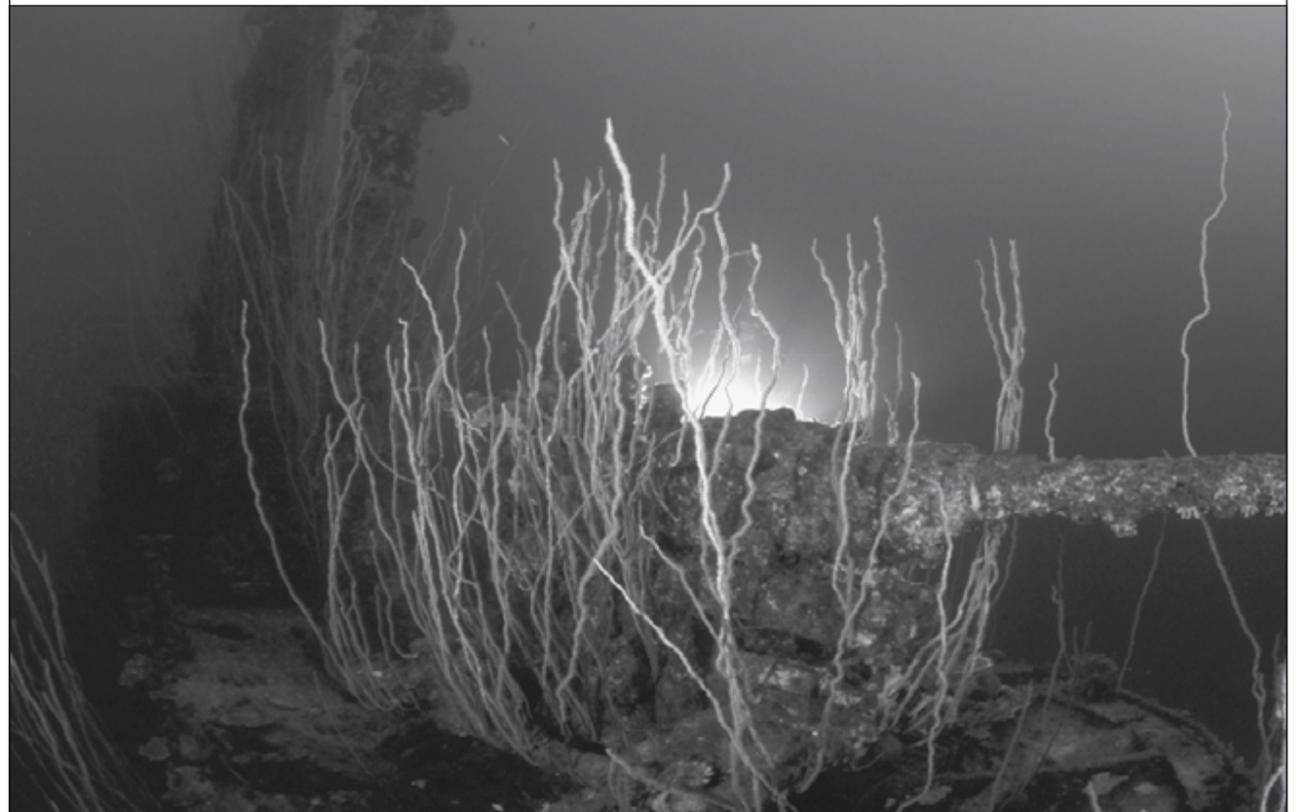
Some may ask what I do with all that kit penetrating a wreck? That depends on the space I have to work with. For example, in the Oceanos

Wreck, there are quite large rooms to play in and then there are some that are not big enough to move around in. In tighter space I simply hook off the scooter and the deco cylinders at a convenient place on the wreck and return later for them. Easily said, but this requires you to account for the extra time taken to do this and the ability to return to the 'Hook Off' point based on, yes, the open circuit bail out gas supply.

Some divers that I have been with have decided that if they have to bail out to open circuit in these situations then tough luck! I prefer to keep my options open and have an alternative plan if need be; each to their own. There are no hard and fast rules with this type of diving; pushing any envelope is a risk for each person.

Your limit may be a 20m wreck or a 120m wreck – it makes no difference, only the mental ability and capability make the real difference. Mistakes can be made at any depth with similar results. Technical wreck diving thrives with a good team, from the skippers to your buddy. Build up the knowledge together and work towards some rewarding dives. How do you get into this? The correct qualifications are needed and then you start building on that.

With this type of diving, much like cave diving, qualifications are the key to the door and you now begin your journey – slowly! 



# Which essential accessory makes dives more comfortable, easier and safer for tech divers?

## Q & A

### Nuno Gomes



Technical divers should always use only the equipment that is required for a particular dive. Unnecessary equipment and gadgets should be avoided at all costs. There are many technical divers that think the more stuff they

have around their bodies and the more complex the equipment looks or is, the better divers they will seem to be. It is important to remember that the more equipment a diver has and the more complex the equipment is, the greater the chances are of something failing. The more equipment one has, the costlier it will also be to maintain it. There is an acronym worthwhile remembering; KISS; Keep It

Simple, Stupid.

I have quite a bit of technical diving equipment but there is a piece of equipment which I do not have. That piece of diving equipment would make my dives more enjoyable, easier and safer. I am missing a technical diving scooter. Because of my tendency to do deep diving I would try and get a scooter rated for a depth of at least 200m.

A dive scooter allows a diver to cover great distances, at depth, with minimal exertion. The dives are safer and the risk of decompression sickness is greatly reduced. It is important to have a reliable scooter, even more so when doing cave diving. Going a thousand metres into a cave with a scooter is fun, but having to swim back out, especially against a current, could be fatal. Battery duration, speed, depth rating and reliability are very important considerations when acquiring a scooter. 



### Barry Coleman

Not so long ago a trimix dive computer was a great tool to have, as most dives were completed based on dive tables.

Today dive planning and implementation is changing and the dive tables are now the back-up to a trimix dive computer. For me a second trimix dive computer is the accessory to the primary dive computer and the written out tables are more a general plan and found in an emergency pocket. Does this mean the second dive computer is an accessory?

Is this not now required equipment? The same can be asked of the second DSMB and reel. The 'accessory' in tech diving is not the equipment that you have to look good but the equipment to make the dive safer. The trick is to get the balance between safe back-up and overloaded back-up. 

### Pieter Smith



Being able to plan and control a technical dive fully before and during the dive, and to adjust according to circumstances whilst underwater is key... that equals VR3 (mixed gas dive computer par-excellence!)

As a technical diver that started diving with, at the time, limited depth and timing devices that could go beyond 100m, the only planning was done before the dive and you had to stick to that plan at all costs. The VR3 dive computer nowadays gives us the facility to control and manage the dive 'on the fly'.

It is still necessary to plan the dive upfront,

to stick to that plan and to dive the plan 'manually', but the VR3 is there as an extra control facility as well as being a pin-point accurate in-water computer where possible life threatening situations can be managed more effectively and accurately. It is the best computer I have used, an essential accessory to my kit, and has most certainly made my dives much more easier and safer. 

### Pieter Venter



For technical dives I like to dive with the simplest set-up possible, and unless an accessory is essential equipment, I prefer not to dive with it. Naturally there is a bit of a blur between essential equipment, equipment and accessories and

sometimes an accessory may become essential equipment.

My favourite accessory does not contribute to the safety of a dive at all, and in fact only adds to the workload of the dive, causes a bit of tunnel vision, distracts and divides my attention. It is expensive and need a lot of care. This accessory has almost caused me a concussion underwater and dragged me into the black depths at the Blue Hole on a deep dive when it imploded. It also has motivated me to squeeze into awkward spaces to have a peek around the next corner or into a hole and getting stuck. In early times it has caused havoc with my trim and balance. It causes drag underwater.

It can quickly waste valuable bottom time. It takes longer to set-up than my actual dive equipment. Its lights can be useful but it normally does not last as long as the dive. The accessory I am talking about is of course a video camera and the footage that can be viewed and enjoyed for years to come certainly makes the burden of this accessory worthwhile. 

# GO DEEP with RAID

## RAID Deep 40

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

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# Instructor Diaries

The worth of a rescue diver

Personally I encourage all my students to get to at least a rescue diver level. Why would you think it's important to become a rescue diver in the first place if diving is really all you want to do? The rescue diver course itself is an interactive course all the way from the classroom sessions to the practical dives.

The organisation I dive with has structured the course in such a way that the student's knowledge and ability is greatly enhanced, making the rescue diver an asset on any dive. In addition to enhancing confidence and skill, the best thing about rescue divers is the augmented awareness. They seem to 'look' differently at the dive and the underwater world, translating into them being safer divers and directly minimising risk on the dive by being able to look after themselves.

Rescue divers should be responsible and assist with fellow divers when they are in need, not only in emergency situations, but also before dives when some people may succumb to stress.

Remember that the dive master is focusing on the dive and all the logistics around it, not only ensuring safety, but fun as well. If you as a rescue diver can subtly assist where required you will be seen as someone to rely on during the dive, enhancing safety and ensuring that the dive is enjoyable for all.

A critique I do have on rescue divers is that

after a while they seem to lose the confidence to help or assist when an emergency does arise. This is not due to a lack of training, but rather a lack of practice in my mind. Being a rescue diver means that you can deliver a service, and being able to deliver top quality service means that you have to be good at it and the only way to get good at it is to do it often.

To this point I encourage all current rescue divers to join your instructor when he or she is presenting the next rescue course. Go play patient, take in the student's reactions to situations and listen to your instructor's comments – I am sure that you will increase your knowledge and up your skill level. Although the focus is on rescue divers, the above point actually applies to dive masters too. I have come across a few dive masters who are absolutely clueless when it comes to safety and the skills around basic emergency procedures and tactics.

To end off, I hope to see more quality rescue divers on my future dives having trust in their own ability and knowing their limitations. 



# A tale of two threads



We have yet another dangerous situation in South Africa, and this time it is for divers. So far, we have had several injuries but fortunately no deaths.

Valves are tearing their way out of cylinders and resulting in many ashen faces, a couple of wet pants and some blood. There has also been the complete destruction of one poor man's hand.

And these are only the incidences which we know about. To give you a better insight into the severity of the problem, there have been four occurrences connected to a single dive shop this year!

So what's the cause? There are two different valves: Metric valves M25 X2 and the American valves 3/4 inch. Now, 25mm and 3/4 inches are very, very close in size, however, the threads have different angles. So a M25 valve will fit into a cylinder with a 3/4 inch thread, but the threads make contact at different angles.

The actual contact is so small that the valves often get shot out on the first fill. In other cases though, it can take months.

### How does this happen?

Several shops, instructors and individuals have been importing the 3/4 thread American cylinders and the valves over the last 10 years and some other importers have brought in the M25 X2 valves and cylinders. The 3/4 thread American

cylinders and valves tend to be cheaper than the British made metric ones and they also have a better configuration for use with technical diving.

They are imported with the correct valves installed but the cylinders last much longer than the valves. When the valves need new seats or any spare parts, it is sometimes difficult to find the spares, and usually for some divers the only solution is to replace the whole valve.

The owner then wanders into the local dive store and after the changing hands of some dosh a new valve is purchased and a catastrophe is now in the making.

The shop owners and the divers have no knowledge about the different valves on the market and through a lack of knowledge they buy the wrong valve for their cylinder.

### What can be done?

\* Educate the diving industry and the public about the differences between the Metric M25 X2 and the American 3/4 inch valves.

\* Make sure when you buy your cylinder that you know what type of valves it uses.



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By David Cowan

\* Label all 3/4 inch valves cylinders. At best with a warning sticker, at worst with a marker pen.

\* If you replace the valve on your cylinder, make sure that you buy it from someone who knows what they are doing.

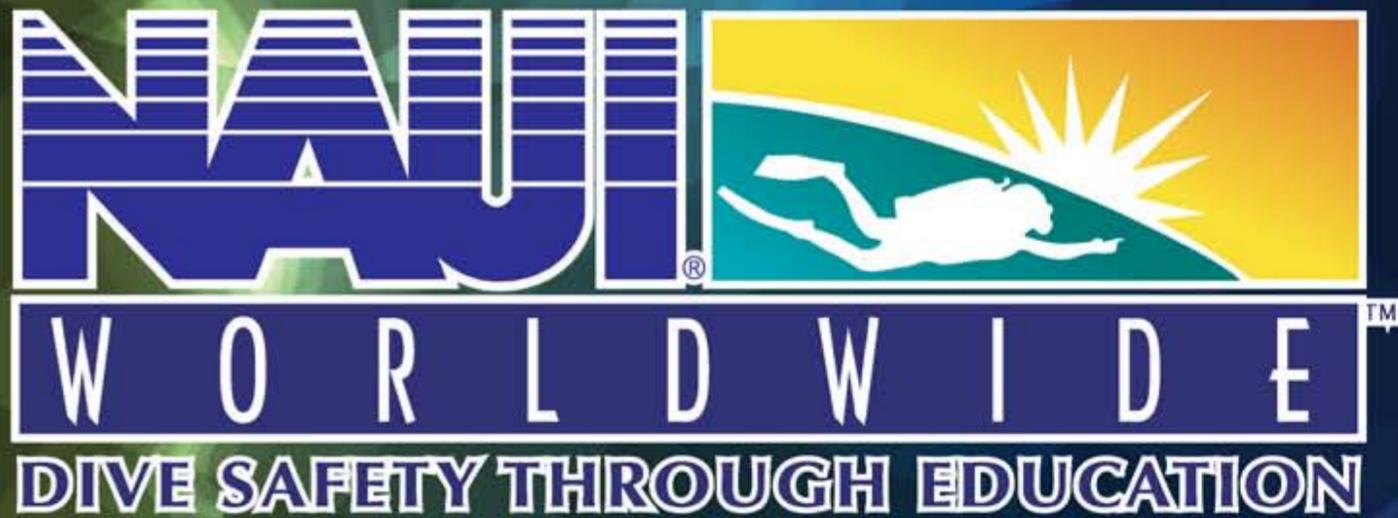
\* Do not take a chance! If you are not sure, make sure what you are doing before you kill someone.

**How to identify the American cylinders**

The American cylinders don't have the thread size stamped on the shoulder. Nor do most valves have 3/4 on them. The European ones produced in the last 10 years do. It will read M25 X2. See this on a cylinder and you can safely fit a M25 x2 valve!

The problem is when you can't see the thread size on a cylinder. Look at the markings. If they have DOT/CTC and you can't see a cylinder size in litres then it may well be an American. If you turn in the new valve and it at first feels loose but then very tight on the last few turns, then it is probably an American.  



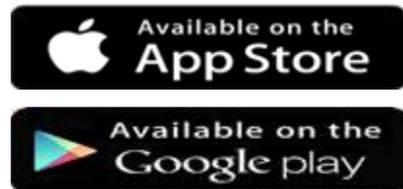


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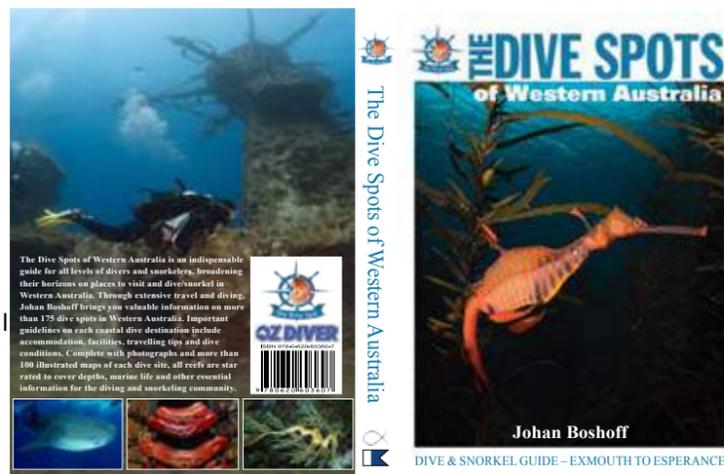
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# OZDiver Apps available



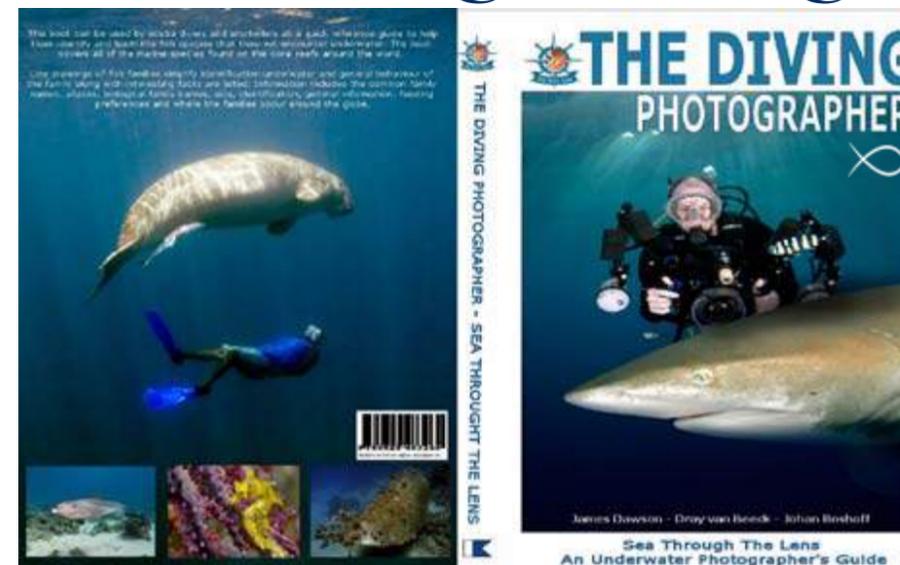
# The Dive Spots of Western Australia

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



For more information visit [www.thedivespot.com.au](http://www.thedivespot.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](http://www.thedivespot.com.au). Cost: \$20

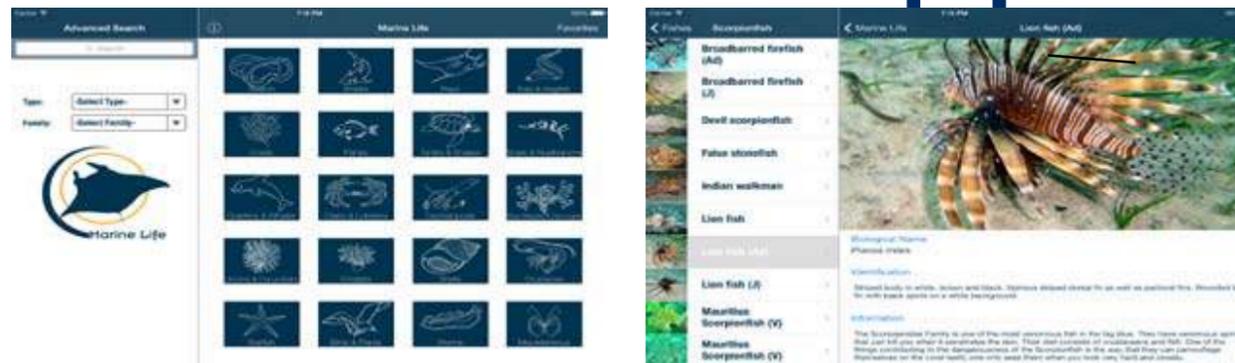


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# Marine Life app



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

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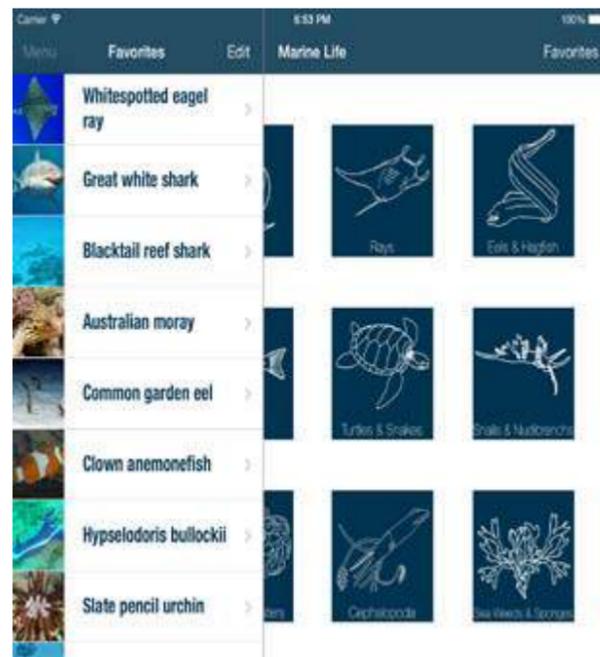
**Biological Name**  
Caretta caretta

**Identification**

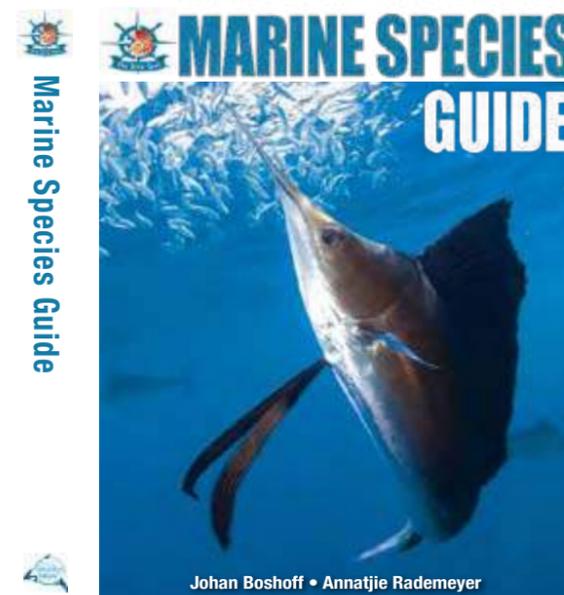
Five plates on either side of the central row on the carapace, unhooked bill and large eyes.

**Information**

Loggerhead turtles the second largest turtle on the South African coast and can be found on coral reefs. The huge head and neck that is much bigger than the Hawkehill and the Green turtles identifu



# Marine Species Guide -



Johan Boshoff • Annatjie Rademeyer

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

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 behaviour of the family along with other interesting facts are listed.

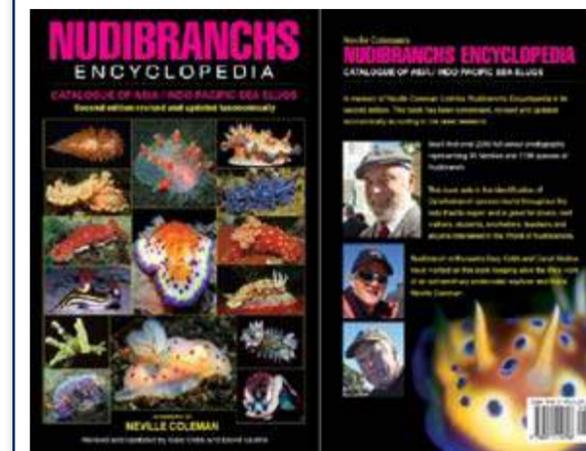
Information include common family names, aliases, biological family names, size, identification, general information, feeding preferences and where the families occur around the globe. Photographs of the most common of the species found when scuba diving or snorkeling are included and the fish families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

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

To buy your copy for \$ 22, visit [www.thedivespot.com.au](http://www.thedivespot.com.au) or email [info@thedivespot.com.au](mailto:info@thedivespot.com.au)



# New Nudibranchs Encyclopedia: in memory of Neville Coleman-



We are proud to announce the launch of the 2nd edition of the popular 'Neville Coleman's Nudibranchs Encyclopedia - Catalogue of Asia / Indo Pacific Sea Slugs'. A large hole has been left in many people's hearts after the passing of one of the most passionate underwater naturalists in the world, Neville Coleman in 2012. His most popular book, the Nudibranchs Encyclopedia sold out a while ago and we decided to publish a revised and updated 2nd edition of this bestseller in memory of Neville.

Significant part of the proceeds of this book support the Neville Coleman Legacy, a fund that aims to make his life's work available to the world in digital form.

This book contains over 2000 full colour photographs presenting 54 families and 1198 Species of Nudibranch. Gary Cobb and David Mullins, both keen Nudibranch enthusiasts, have worked on this book keeping alive the life's work of an extraordinary underwater explorer and friend, Neville Coleman.

This book is being published by underwater.com.au (Australia) and Masalai press (USA). It is currently available at a special launch price of A\$49.95 (inc GST) at <https://underwater.com.au/shop/nudibranchs-encyclopedia-catalogue-of->

**Is that a shark?**

Two divers were checking out a new reef when they saw a shark. The shark circled them, menacingly. One diver took off his fins and reached inside his BC and pulled out a pair of super-power fins. His buddy signaled: "What? You can't out swim a shark!" The diver signaled back, "I don't have to out swim the shark, I only have to out swim you!" 🏊

~~\*~~

**When do you need to practice better buoyancy control?**

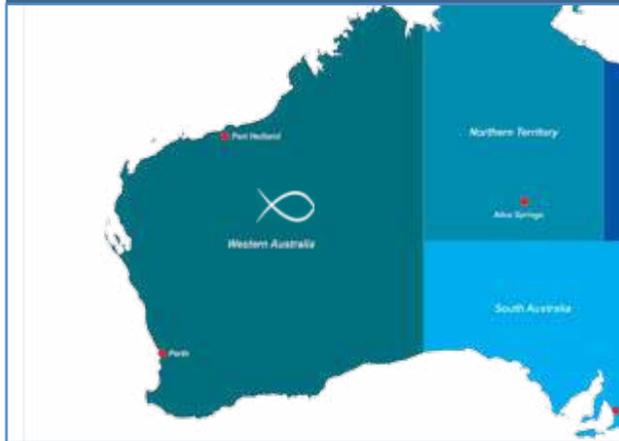
- a. You rely on the silt trail you always stir up to find the shot line at the end of the dive.
- b. You insist that you never wear fins because it makes it more difficult to walk on the bottom.
- c. The only place you can hover is at the surface.
- d. On ascents, your entire body clears the surface of the water.
- e. You use 50 bar for breathing and 150 bar for your BC.
- f. You are certain you went for one dive, but your computer has logged three.
- g. You think being neutral in the water means that you don't fight with your buddy. 🏊




Send your funnies to  
[johan@ozdiver.com.au](mailto:johan@ozdiver.com.au)




# Western Australia



## Perth Region

### The Dive Spot - South Perth



We specialise in a wide variety of dive related activities. Our scuba training range from beginners to the more advanced including specialities and professional courses.

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 Mail: [info@thedivespot.com.au](mailto:info@thedivespot.com.au)  
 Web: [www.thedivespot.com.au](http://www.thedivespot.com.au)

### Australasian Diving Academy



Australasian Diving Academy have 2 convenient locations in Nedlands and Rockingham where the water is right on our doorstep. We have a huge range of top quality diving and snorkelling equipment to suit all requirements.

Phone: +61 (0) 95279211  
 Mail: [info@ausdiving.com.au](mailto:info@ausdiving.com.au)  
 Web: [www.ausdiving.com.au](http://www.ausdiving.com.au)

### Perth Scuba - Canning Vale



WA's largest dive shop, best range of snorkelling, free diving and scuba equipment. WA's PADI Career Development Centre offers courses from beginner to professional and TDI technical training. Perth Scuba has a free dive club offering twice weekly guided dives.

Phone: +61 (0) 8 9455 4448  
 Mail: [info@perthscuba.com](mailto:info@perthscuba.com)  
 Web: [www.perthscuba.com](http://www.perthscuba.com)

### Perth Diving Academy - Hillarys



PDA Hillarys for all of your dive and snorkelling requirements local and friendly staff to help you make the right choices open 7 days come and see us down at the Hillarys Boat Harbour just north of the boat ramp see you there

Phone: +61 (0) 89 448 6343  
 Mail: [troy@perthdiving.com.au](mailto:troy@perthdiving.com.au)  
 Web: [www.perthdiving.com.au](http://www.perthdiving.com.au)

### OZDiver Dive Group - Perth



We focus on scuba diving at all levels and explore locations. We welcome any qualification level of divers including snorkel divers wanting to learn more about diving, and get onto club diving events to meet likewise divers.

Phone: +61 (0) 450 800 238  
 Mail: [izak@ozdiver.com.au](mailto:izak@ozdiver.com.au)  
 Web: [www.ozdiver.com.au](http://www.ozdiver.com.au)

### Scuba Imports & The DiveTub - Perth



Since 2007 to service the Australian Dive Industry with the best scuba equipment available. We offer high-end gear, including recreational, technical and commercial equipment. Wherever possible we'll price match any online dive store to ensure you get the best deal!

Phone: +61 (0) 8 92400163  
 Mail: [info@scubaimports.com.au](mailto:info@scubaimports.com.au)  
 Web: [www.scubaimports.com.au](http://www.scubaimports.com.au)

### Dolphin Scuba Diving - Welshpool



Perth's friendliest dive shop. Learn to dive in as little as 2 days! Small groups with a flexible schedule. Weekly. FREE Sunday Morning Shore. Providing Instructor training, Rebreather courses and support. Technical diving tuition and trips. Local and international diving holidays.

Phone: +61 (0) 8 9353 2488  
 Mail: [dolphin@dolphinscuba.com.au](mailto:dolphin@dolphinscuba.com.au)  
 Web: [www.dolphinscuba.com.au](http://www.dolphinscuba.com.au)

### Scubanautics Diving Academy- Rockingham



Welcome to Scubanautics, where customer service and satisfaction is our main goal. Drop in to say hello, our friendly staff are happy to help. Check out our new "online Store"

Phone: +61 (0) 8 9527 4447  
 Mail: [info@scubanautics.com.au](mailto:info@scubanautics.com.au)  
 Web: [www.scubanautics.com.au](http://www.scubanautics.com.au)

### Wizbang Diving Solutions - Perth



Technical Training for divers. The development of safe and technically competent divers through specialized training. Rebreathers, Mixed Gas or even just Nitrox, we will help you develop the skills and confidence that will carry you into a safe and enjoyable future.

Phone: +61 (0) 41 876 1727  
 Mail: [diving@wizbang.com.au](mailto:diving@wizbang.com.au)  
 Web: [www.wizbang.com.au](http://www.wizbang.com.au)

### Western Blue Dive Charters- Mindarie



We are the only dive company north of Fremantle that operates seven days offering double dive charters, returning before lunch, and allowing you to catch crayfish if you wish. Being a small company we offer a personalised service at an affordable price

Phone: +61 (0) 40 954 5553  
 Mail: [info@westernbluedive.com.au](mailto:info@westernbluedive.com.au)  
 Web: [www.westernbluedive.com.au](http://www.westernbluedive.com.au)

### Underwater Explorer's Club of WA



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

Phone: +61 (0) 402 310 854  
 Mail: [committee@uecwa.com.au](mailto:committee@uecwa.com.au)  
 Web: [www.uecwa.com.au](http://www.uecwa.com.au)



Mandurah

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**Mail:** info@oceanosunsandsea.com  
**Web:** www.oceanosunsandsea.com

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**Phone:** +61 (0) 43 892 5011  
**Mail:** kimroyce@gateway.net.au  
**Web:** www.octopusgardendivecharters.com.au

Geraldton

"A" Team Divers



A - Team Divers offers internationally recognized NAUI and SSI scuba diving courses. Small groups ensure personal attention during your training. We also have an active social club for after course adventures!  
**Phone:** +61 (0) 45 828 5497  
**Mail:** geoff@ateamdivers.com  
**Web:** www.ateamdivers.com

Exmouth

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**Phone:** +61 (0) 4 567 02437  
**Mail:** info@diveningaloo.com.au  
**Web:** www.diveningaloo.com

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**Mail:** info@snorkelningaloo.com.au  
**Web:** www.snorkelningaloo.com.au

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**Mail:** whale@divealbany.com.au  
**Web:** www.divealbany.com.au

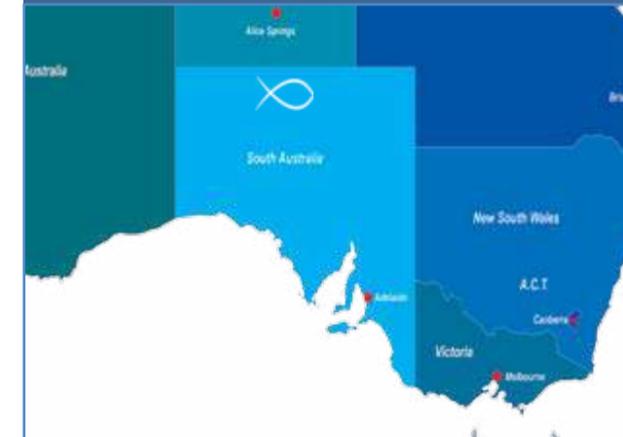
Esperance

Esperance Diving & Fishing



We operated since 1983 is Esperance's only dive store. Servicing locals and tourists with hire, sales, equip service, training and charters. With over 104 islands the dive sites are endless. Also offering guided dives to view Leafy Sea Dragons.  
**Phone:** +61 (0) 89 071 5111  
**Mail:** jaimen@esperancedivingandfishing.com.au  
**Web:** www.esperancedivingandfishing.com.au

South Australia



Port Lincoln

Calypso Star Charters - Port Lincoln



PDA Hillarys for all of your dive and snorkelling requirements local and friendly staff to help you make the right choices open 7 days come and see us down at the Hillarys Boat Harbour just north of the boat ramp see you there  
**Phone:** +61 (0) 86 82 3939  
**Mail:** info@sharkcagediving.com.au  
**Web:** www.sharkcagediving.com.au

ND Scuba - McLaren Vale



We are a small business that go above and beyond .we pride ourselves on providing safe and fun-filled courses at affordable prices. You get trained on a more personal level through to one on one, or small group tuition.  
**Phone:** +61 (0) 88 323 8275  
**Mail:** barrettn80@hotmail.com  
**Web:** www.nbscuba.com.au

Adelaide

Diving Adelaide



Diving Adelaide is Adelaide's newest PADI 5 Star Dive Centre. We run all PADI courses as well as Leafy Sea Dragon Tours. Diving Adelaide is located next to the tram and bus-stop in Adelaide; easy to reach with public transport.  
**Phone:** +61 (0) 8 73 250 331  
**Mail:** info@divingadelaide.com.au  
**Web:** www.divingadelaide.com.au

Underwater Explorer's Club of SA



The UEC is the oldest recreational scuba diving club in Australia, established in 1954. We do regular dives at locations within metropolitan Adelaide and have frequent trips to regional South Australia. Why not come and join us for a dive.  
**Phone:** +61 (0) 417 838 387  
**Mail:** secretary@uecofsa.org.au  
**Web:** www.uecofsa.org.au



Glengowrie

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Downunderpix is an underwater photography business established in South Australia. We provide all things underwater photography to the local, national and international markets. This includes supplying a range of underwater photography services as well as selling underwater camera equipment and scuba diving equipment.

Phone: +61 (0) 41 981 9083  
 Mail: info@downunderpix.com  
 Web: www.downunderpix.com

Victoria



Geelong

Australian Diving Instruction



Australian Diving Instruction is a PADI 5 Star IDC facility Offering everything for the Diver from Learn to Scuba Dive to Instructor including PADI Tec 40,45,50, Equipment Sales and Service National and International Dive Trips and Dive Holidays also Dive Charter Boat.

Phone: +61 (0) 40 836 5216  
 Mail: adigeelong@optusnet.com.au  
 Web: www.ausdivinginstruction.com.au

Bay City Scuba



Bay City Scuba is Geelong's premier dive shop. Offering all levels of training from Freediving through to Technical training and offering a huge selection of equipment to your diving needs. A RAID training facility offering extensive technical OC & CC rebreather training.

Phone: +61 (0) 35 248 1488  
 Mail: info@baycityscuba.com  
 Web: www.baycityscuba.com

Extreme Watersport



Extreme Watersport Specialises in all recreational, educational and technical SCUBA diver training, charters and tours. Extreme Watersport is Melbourne's premier 5 Star SDI/TDI Instructor Scuba Diving Training Centre. We are also house a wide range of scuba gear for sale.

Phone: +61 (0) 3 5982 3432  
 Mail: info@extremewatersport.com.au  
 Web: www.extremewatersport.com.au

Dive Victoria Group



Our Training, Dive Charter and Group Accommodation services cater for local, interstate and international divers. On our doorstep we have amazing wall dives from 10-100m that we can dive every day and wrecks 8-80m in the Ships Graveyard

Phone: +61 (0) 3 5258 4188  
 Mail: info@divevictoria.com.au  
 Web: www.divevictoria.com.au

Rye

The Scuba Doctor Australia



The Scuba Doctor is an online and in-store dive shop stocked with quality brand recreational, technical and commercial diving products. Low prices on scuba, spearfishing, freediving, snorkelling and watersports equipment, plus Air, Nitrox and Trimix fills.

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 Mail: diveshop@scubadoctor.com.au  
 Web: www.scubadoctor.com.au

New South Wales



Sydney

Plunge Diving



We are the only PADI and TDI dive center located on the waters of Sydney Harbour. We teach courses from Open water to Instructor level, and provide technical training. The Plunge dive boat offers dive trips for all certification levels.

Phone: +61 (0) 2 99695733  
 Mail: info@plungediving.com.au  
 Web: www.plungediving.com.au

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Southern Cross Divers is best known for rebreathers and "tec" diving - we do nothing else but "tec". We will not stock a unit unless we can offer the customers a complete solution to all their CCR needs. We are Australia's CCR specialist store.

Phone: +61 (0) 2 9969 5072  
 Mail: barry@southerncrossdivers.com.au  
 Web: www.southerncrossdivers.com.au

Underwater Research Group of NSW



URG is a not-for-profit scuba diving club with a regular boat & shore dive schedule in Sydney and surrounds. Join our club to explore local dive sites and if you like, get involved in research projects to help marine conservation.

Phone: +61 (0) 418 257 462  
 Mail: info@urgdiveclub.org.au  
 Web: www.urgdiveclub.org.au

Killarney Vale

Pro-Dive Central Coast



Located between Sydney and Newcastle with daily boat dives to the ex-HMAS Adelaide artificial reef, only minutes from the local boat ramp. Online booking and dive sales available 24/7. PADI Instructor programs available.

Phone: +61 (0) 2 4389 3483  
 Mail: info@prodivcentralcoast.com.au  
 Web: www.prodivcentralcoast.com.au



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Phone: +61 (0) 2 4984 2092  
 Mail: enquiries@feetfirstdive.com.au  
 Web: www.feetfirstdive.com.au

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South West Rocks Dive Centre



Our Training, Dive Charter and Group Accommodation services cater for local, interstate and international divers. On our doorstep we have amazing wall dives from 10-100m that we can dive every day and wrecks 8-80m in the Ships Graveyard

Phone: +61 (0) 2 656 66474  
 Mail: info@southwestrocksdive.com.au  
 Web: www.southwestrocksdive.com.au

Queensland



Sunshine Coast

Sunreef Mooloolaba



Sunreef Mooloolaba offers the ultimate water experiences on Queensland's Sunshine Coast. From diving the HMAS Brisbane and local reefs, to Swimming with Humpback Whales from July to November, to stand up paddle boarding, kayaking and bubblemaker kids programs.

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 Mail: dive@sunreef.com.au  
 Web: www.sunreef.com.au

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Dive one of Australia's top ten dive sites the Ex-HMAS Brisbane. We are the only operator that comes back to the sheltered waters of Mooloolaba bay for a relaxing morning tea. Enjoy hassle free diving from our private marina berth.

Phone: +61 (0) 7 5444 8595  
 Mail: rob@scubaworld.com.au  
 Web: www.scubaworld.com.au

Brisbane

Ozaquatec- Brisbane



Brisbane's largest dedicated scuba service centre, Ozaquatec has all of your servicing needs in one place at competitive rates. Our fast, friendly and professional customer service gives you, the diver, complete peace of mind.

Phone: +61 (0) 404 043 869  
 Mail: admin@ozaquatec.com  
 Web: www.ozaquatec.com

Gold Coast

Devocean Dive- Gold Coast



Devocean Dive is South East QLD's Premier PADI 5 star Instructor Development Centre. We offer unsurpassed service in a safe, fun environment with qualified, experienced Instructors. We look forward helping you achieve your SCUBA diving goals.

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 Mail: admin@devoceandive.com  
 Web: www.devoceandive.com

Brisbane

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You deserve the multi-award winning service of the ORIGINAL bespoke private diver training company - Serving Port Douglas since 2003. First for Bespoke Diver Training, the Dive Centre offers all levels of Recreational and Technical Dive courses.

Phone: +61 (0) 422 016 517  
 Mail: info@tech-dive-academy.com  
 Web: www.tech-dive-academy.com

**List your Dive School or Dive Company here.**

For a listing in OZDiver Magazine contact us at info@ozdiver.com.au

Tasmania



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 Mail: info@africadivesafaris.co.za  
 Web: www.africadivesafaris.co.za



# OZ DIVER

An underwater scene featuring a diver in the center, illuminated by a bright light. The diver is surrounded by a large school of small fish. The background is a deep blue, with dark, rocky structures visible on the left and right sides.

**It's FREE and it's ONLINE**

**[WWW.OZDIVER.COM.AU](http://WWW.OZDIVER.COM.AU)**

Peter Pinnock

