January / March 2022

# OZDIVER

AUSTRALIA'S PREMIER DIVE MAGAZINE

## DENÉE

## BASSAS DA INDIA

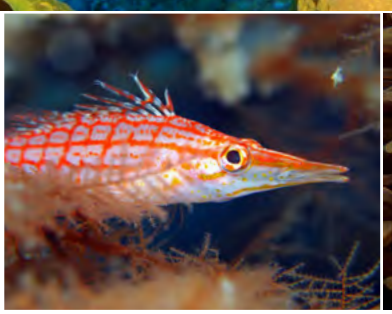
## GERMAN CHANNEL

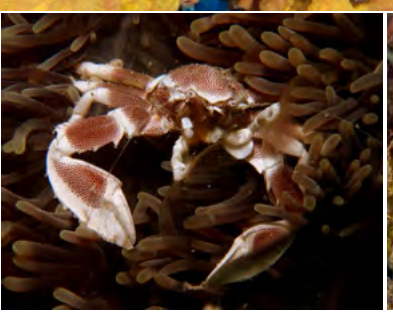
## GUNS FOR HIRE

## GIANT AUSTRALIAN CUTTLEFISH

## MASTERCLASS

# COCOS ISLAND





Christopher Bartlett

# January / March 2022 Edition

# Editor's Deco Stop

Ethics is a valuable commodity that is disappearing day by day from societies around the world, and this unfortunate trend has managed to worm its way into the diving industry as well.

There are a lot of people out there who just don't care about the diving industry or the divers. Their only concern in life is how well they can line their pockets with money made by taking advantage of their clients.

Bad service from instructors, dive shops and dive charters is a huge problem currently being experienced. Some shops put staff behind the counters when they have no idea about any of the equipment, or any diving at all for that matter. Many of these employees work on commission basis and will sell customers anything just to make a sale. After a couple of months the divers realize that the sales person gave them bad advice on equipment and that diver will never trust that dive shop or buy equipment from them again.

If we lose one diver, it doesn't matter if they are qualified or not. The industry as a whole gets hurt. Dive instructors will never give another course to that client again. Dive shops will never sell equipment to them either. Equipment importers will lose money because their products will not be bought by that customer in the dive shops. Dive charters will have one less client to take out and travel agents will have one less aircraft seat to fill. And how many friends will that one diver tell his experiences to?

It is the responsibility of the diving community as a whole to make our industry grow every year and bring new people in instead of chasing them away with some of the older and more experienced enthusiasts.

I really hope that 2022 the currents will take you to bluer water.

Editor in Chief & Publisher

**Johan Boshoff**

But seek first the kingdom of God and His righteousness and...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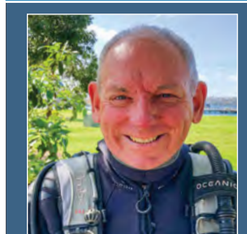
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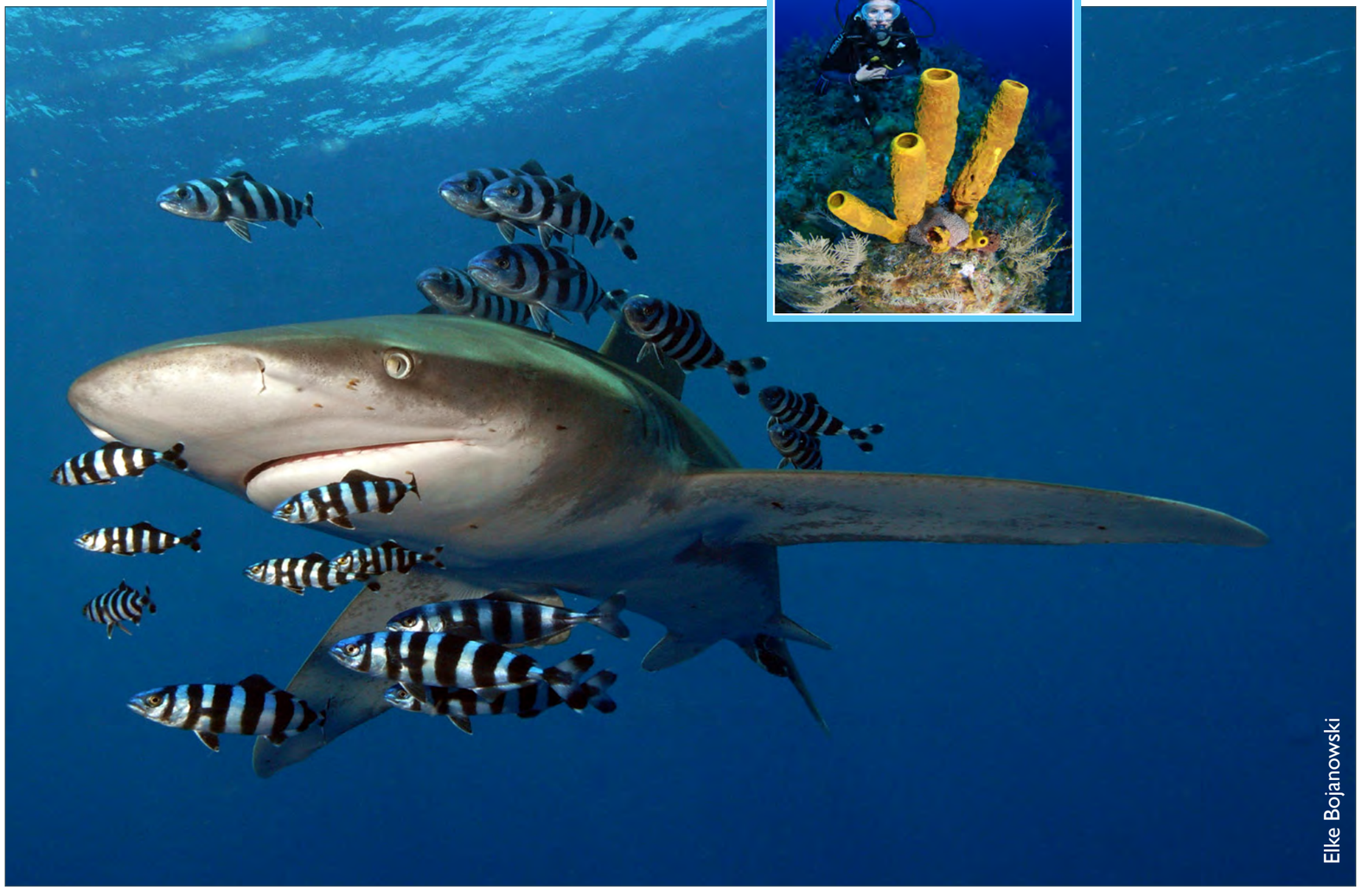
# CONTENTS

**COVER PHOTO**
Johan Boshoff (ILOVEYOU)





Elke Bojanowski

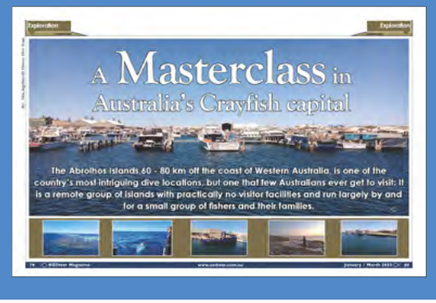


**Giant Australian Cuttlefish** - Pg 15


**Cocos Island** - Pg 45


**Bassas Da India** - Pg 63


**Masterclass** - Pg 79




**Guns for Hire** - Pg 109

# What was that yellow thing on the reef?


By: Dawie Schlebusch By: Christopher Bartlett

The alarm sounds in the background and I open my eyes and wonder why I am getting up at 5:30am in the morning if I am not at the coast.

Why do I need to get up at this time of the morning if I am not launching a boat? Well, because today we are doing something deferent.

Once again I am behind the steering wheel and in control of our journey, but today I have six eager nature lovers and bird watchers with me and not the usual diving fanatics and fish lovers.

We didn't have to go very far before I heard the first command from the back. "Stop stop!" My heart started beating, my eyes searching in vain. It must be a lion, I am sure of that.

But people started talking… "It looks like a robin," the one girl said. "Yes, I think you are right," says another.

The next moment people started pulling out their books, and I realized that we were looking at a bird. To me it looked like a Mossie or some small brown bird, but no, this was some seriously cool bird because everyone was looking for it in their books.

Five minutes later they found it and every one agreed on the name. The books were closed and a small list came out of a bag with all the birds listed alphabetically on it. The one we found was ticked off and we could start moving again.

I thought to myself when the next, "Stop, stop, stop," came from the back. There, high up in a tree was a small, green and yellow bird.





The binoculars came out and we were redoing the whole books and list scenario. Suddenly I realized that divers don't have the same passion for fish life that these people have for birds – four days and we spotted 146 different birds.

But I left concerned about the way that divers enjoy nature and what are we doing to conserve it?

One thing that came to mind was that diving itself is an enjoyable sport and being underwater is what it is all about.

Breathing from a regulator is what we crave to do, and most probably the reason we go diving whenever the opportunity arises, but there must be more to it than just breathing underwater?

I looked at the bird watchers again and examined their books – each person had at least two, and these were not the cheap ones – if you are serious about what you are doing, you need the best, the one that tells you everything about the birds out there.

So I asked how much these books cost. I got the shock of my life when I was told that, "A good bird book will set you back at least $100, but they can go up to as much as $250."

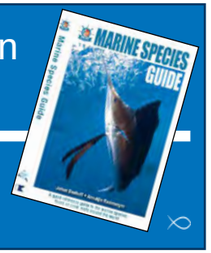
Why doesn't every diver have a fish book? I have a few which I lend to divers after every launch, but you can buy a good book. Most dive shops stock these books, and best of all, you can do a Fish Identification course with your instructor or even an underwater Naturalist course to become more aware of the underwater environment and how to conserve nature.

So next time you go blow bubbles and suck some air from a regulator, think about everything around you and try remember what they looked like so that you can identify them are back on land.

Next time you see a fish down there with a funny horn on its forehead, is not the nitrogen talking, you actually do get a unicorn fish, and no, skippers do not know all the millions of marine species in the ocean.

## WIN

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




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

# OZ NEWS

## OZTek Advanced Diving Conference & OZDive Show

October 1-2, 2022

OZDive Show Podcast Keeping you up to date!
Have you caught the podcast yet? Dr Peter Buzzacott kicked off with his excellent presentation on Diving near misses, Injuries and Fatalities... so, so good.

Following hard on Peter's heels, Dr Neal Pollock provided an intriguing and informative Knowns & Unknowns in Breath-Hold Diving, which, dovetailed neatly with a recent discussion in InDepth Magazine by Charly Stringer on the potential increased health benefits if scuba divers switched to the Frenzel method of equalising ....

Emily Turton took us back to the 80th anniversary of the sinking of the HMS Royal Oak in Scapa Flow. Emily tells the extraordinary story of this great battleship catastrophe, extra special because this wreck is a protected war grave and cannot be dived by 'regular' divers.

Coming up is Deborah Johnston's explorations of Australian' deepest cave & Dr Matt Carter on the Japanese midget sub attack on Sydney Harbour in May, 1942.

Links and additional information is posted on the website for each pod: https://ozdiveshow.com.au/OZDive-Show-Podcast

Hosted by Dean Laffan and Michael Menduno (M2), with the odd sound bite from myself (Sue Crowe), this bi-weekly podcast provides insight into the incredible diving stories, research and adventures you can expect to see in October 2022!
The OZDive Show Podcast can be found at Apple, Spotify, Amazon or anywhere you find your podcasts.

For those who have never attended a show, these podcasts provide a snippet of the camaraderie, topics and a taste of what is to come.

Watch Facebook / Instagram / LinkedIn & Twitter for more news - as well as keeping in touch through the website: OZTek.com.au/ & OZDiveShow.com.au

**Start Planning**
October 1-2, 2022
Venue: MCEC

OZTek ADVANCED DIVE CONFERENCE | OzDive '22 EXPO



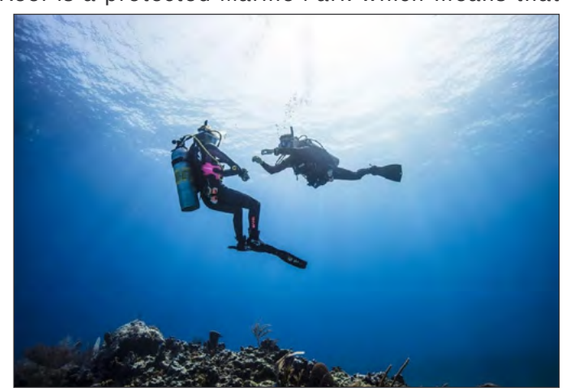


# Why You Should Take Your PADI Instructor Development Course in Australia

Are you thinking about becoming a PADI Instructor? If you are, it's likely you may have heard of the PADI Instructor Development Course (IDC). The PADI IDC is the course you are required to take, after you have achieved your PADI Divemaster rating, in order to become a PADI Open Water Scuba Instructor.
After completing your IDC, and when you have logged 100 dives, you'll be ready to take the PADI Instructor Exam. This might sound daunting but it's not – it's just to check that you have fully understood what you learned during your IDC.

As a PADI Instructor, the world is your oyster. You can get paid to travel and work at amazing dive destinations worldwide. So if you have decided to make the ocean your office, read on to find out why you should consider taking your PADI IDC in Australia.

**Why Choose Australia?**
Awesome Diving
From Cairns to Ningaloo, Australia's waters are home to whale sharks and some of the world's most impressive marine life species. The Great Barrier Reef alone is home to over 1,500 species of fish, 134 species of sharks and rays, over 30 species of marine mammals and 6 out of the world's turtle species. But that's not all, the reef itself boasts a staggering 411 species of beautiful hard corals! Since being declared a UNESCO World Heritage Site in 1981, a large part of the Great Barrier Reef is a protected Marine Park which means that year on year it continues to thrive and flourish – and this could become your future office!



**Endless Choices**
As one of the most sought after places to dive in the world, Australia is home to an incredible amount of PADI Instructor Development Centers.

From small and exclusive centers through to larger operations with liveaboards, take your IDC in Australia and you have an unparalleled amount of choice of where to study.

**Course Directors**
As one of the world's most famous diving destinations, Australia attracts Course Directors (CDs) from around the world. PADI Course Directors are the PADI Professionals who conduct Instructor Development Courses and Instructor Exams.
In Australia you can select the CD who you think you will work with best. If you are not a native English speaker, don't worry, it's possible to find CDs who speak multiple languages from around the world, in Australia.

**Reputable Operators and Safety**
As a professional diver, safety is a big concern. In Australia there are some of the most stringent regulations in place to ensure the safety of student divers, recreational divers and professionals – like you!

**Employment**
With so many PADI dive shops in Australia, there are multiple employment options to look into after your IDC. If you choose to work outside of Australia after becoming a PADI Instructor, having experience in Australia will be a great asset to your scuba diving CV!

**How to Get Started?**
If you are already a PADI Divemaster, have at least 60 logged dives and have completed Emergency First Response Primary and Secondary Care (CPR and First Aid) training within the past 24 months, you are ready to embark on the Instructor Development Course.

To become a PADI Instructor, you will need to first work through the PADI core courses; Open Water Diver, Advanced Open Water Diver, Rescue Diver followed by your PADI Divemaster course. You will also need to have your Emergency First Response training up-to-date to complete your Rescue Diver and Divemaster courses.

Find a PADI Instuctor Development Center in your local area.

If you know that being a PADI Instructor is your calling, many of the Instructor Development Centers in Australia offer 'Zero to Hero' programs which will take you from PADI Open Water Diver (or whatever your current scuba diving level is) through to PADI Instructor, ensuring that you log the required number of dives in Australia along the way. Learn more about becoming a PADI Professional and locate a PADI dive shop in Australia to start working towards having the job of your dreams!





# Amity Blue

Strolling at the Agnes Water Market, I am attracted by the colourful Amity Blue stall displaying beautiful towels.

Feeling the very soft fabric and reading they are made from 80% recycled plastic, I know I am on to something special.

Katie, the business owner, is very passionate and explains that 20 plastic bottles make one large towel, which gives them amazing properties: sand-free, super absorbent, quick drying and anti-microbial!
Totally seduced, I indulge in purchasing one with a zipped pocket for my keys and phone.

Since then, my beach adventures have been an absolute dream!
Never will you experience a wet car seat or a smelly towel forgotten in your bag or in the car!

The Amity blue towel truly is a revolution when it comes to all its benefits and being made from recycled plastic, you also contribute in helping the environment.
Pro surfer & former World Champion Layne Beachley says she also loves Amity Blue products and ethos.

Since then, I added the beach mat for the kids to play on , our collie gets a quick dry with its own towel from the doggie range and we would never go back to old tea towels now that Amity Blue offers a super absorbent range with extra quick dry off.

And being antibacterial just makes these products absolutely perfect!
Find them all online at www. amityblue. com.au
Free Shipping Australia wide.

## *Dive Schools / Operators / Organisers / Instructors*

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

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

Please send to info@ozdiver.com.au

# Solomon Is. Diving

visitsolomons.com.sb

Photo by Matt Smith

Dive the Continent
Dive OZ

By: Graham Willis

# Giant Australian Cuttlefish

## Whyalla the winter home.





By: Graham Willis

What brings you to Whyalla? If you are in a Hi-Vis vest then it's the more than likely the steelworks…if you are in a wetsuit then it's more than likely the aggregation of Giant Australian Cuttlefish (Sepia apama).

The Cuttlefish come in from the far reaches of the Spencer Gulf every year, usually between May and August, to a small stretch of the coast around Whyalla. Mathew, Andrew and I had left our Hi-Vis vests behind in NSW and we were definitely there in June; peak Cuttlefish season.

The sheer numbers of S. apama make this event unique, not just in Australia but anywhere in the world.

More is known about the Upper Spencer Gulf Population than many of the other species because of the annual breeding aggregation in shallow water, thus allowing easier observation.

Having said that no one is quite sure where the Cuttlefish go after hatching, nor why this specific stretch of coast is so attractive….a few theories but no certainty.

The Giant Australian Cuttlefish is the largest of the Cuttlefish and can grow to 50cm in length (around twice as long once those tentacles extend) and weigh in at 10Kg.

Professor Roger Hanlon, of the Woods Hole Oceanographic Institute, called the breeding aggregation "the premier marine attraction on the planet". That is a big rap but, having witnessed the event over several dives, there is no doubt that this event is right up there and well worth a visit.

The Upper Spencer Gulf population of S. apama has some hallmarks that differentiate it from other Giant Cuttlefish species and, as such, are quite sensitive to environmental impacts in a relatively constrained location.

To that end, despite a bit of to'ing and fro'ing there is an exclusion zone for

Dive the Continent
Dive OZ

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**SEEK ADVENTURE. SAVE THE OCEAN.℠**

By: Graham Willis

Cephalopods stretching all the way from the BHP Jetty in Whyalla to Point Lowly Lighthouse. This year there was a temporary extension of that zone to the area East of Point Lowly up to the Point Lowly boat ramp. Keep an eye on the exclusions because politics often dictates what is protected and what is not.

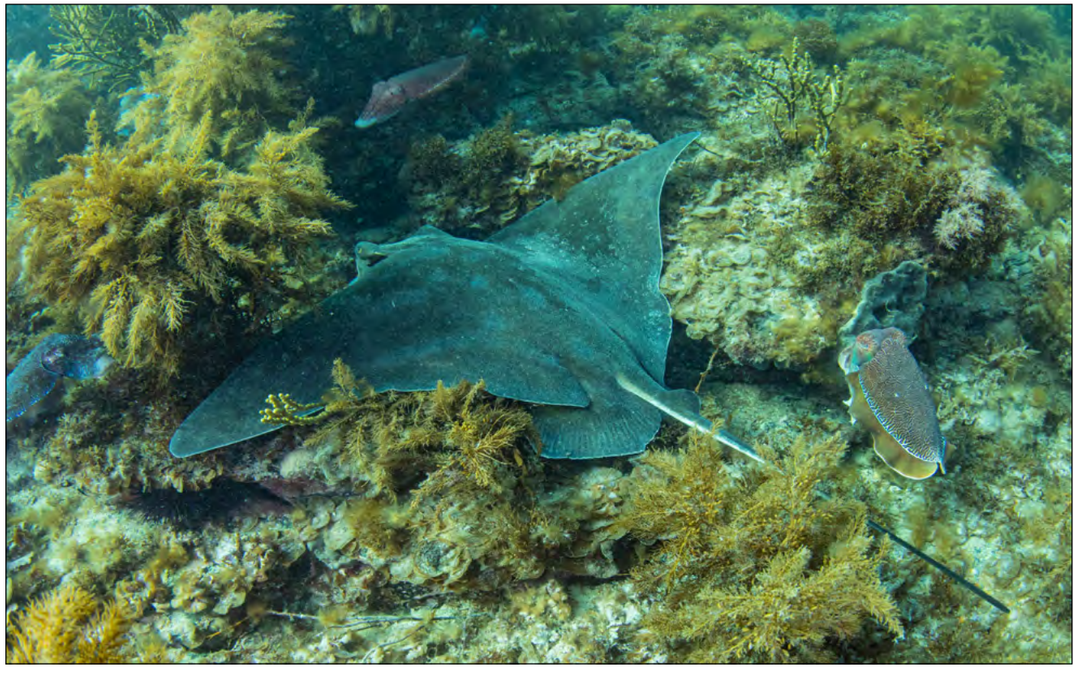
It's great to report that the Cuttlefish are on the comeback trail! In 2013 their numbers had fallen to below 15,000 but in 2020 they were measured at just shy of 250,000… smaller than they used to be but the numbers were the highest on record.

The Cuttlefish come in every year to breed in 2-6 m of water. It is their last act; they do not make it back for another chance to mate. Most Cuttlefish live for only one year…some live for two years but then it is game over...they had better make the best of the opportunity to procreate.
The Cuttlefish aggregate around the Point Lowly area, some 35Km East of Whyalla, and Stony Point (5Km from Point Lowly) has some good facilities for Snorkellers and Divers.

The road access is good and there are both changing rooms and toilet facilities there. In addition, there is a large, covered table for snacks and gear and a freshwater tank for limited rinsing. Stony Point has a well-defined path down to the water and a chain that helps with keeping your balance along the way.

There are a couple of other good access points if Stony Point gets crowded (such as on the June Long Weekend) at Black Point and Point Lowly, both some 5km away.

The three points are quite exposed to the Spencer Gulf so you will have to mindful of the weather…but we were lucky and had flat conditions accompanied by visibility in the 8-10m range. Access is not quite as friendly at Point Lowly and Black Point, but still very manageable, and there are public toilet facilities at the Point Lowly campground.



Dive the Continent
Dive OZ

By: Graham Willis

One of the real pluses is that this spectacle is very accessible to snorkellers. The Cuttlefish are in such shallow water that it is easy to observe all the mating rituals that are playing out some 3m below you.

The density of Cuttlefish does have to be seen to be believed. From the moment you walk into waist deep water there are Cuttlefish meandering around. The males outnumber the females by around 5:1 so there is a lot of jostling for position.

If you stop and observe a group of Cuttlefish for 10 or 15 minutes you will see a whole range of interesting behaviour which is repeated in spots all over the seabed.

If you see a larger Cuttlefish flattened out on the bottom you know that they are guarding 'their' female from other interested males. They are either keeping her to themselves or providing them cover whilst they lay their eggs under a ledge.

The Males are always watchful because a moments lack of attention will see another male sneak in there and attempt to mate with a female.
The males are in full display mode with any attempt at camouflaging themselves traded for the chance to show off their vibrant, rippling colours.

Often, it is like the Cuttlefish equivalent of a 'dance-off'. Two males engaged in a tit for tat display, mirroring each other's movement and yet each trying to outdo the other.

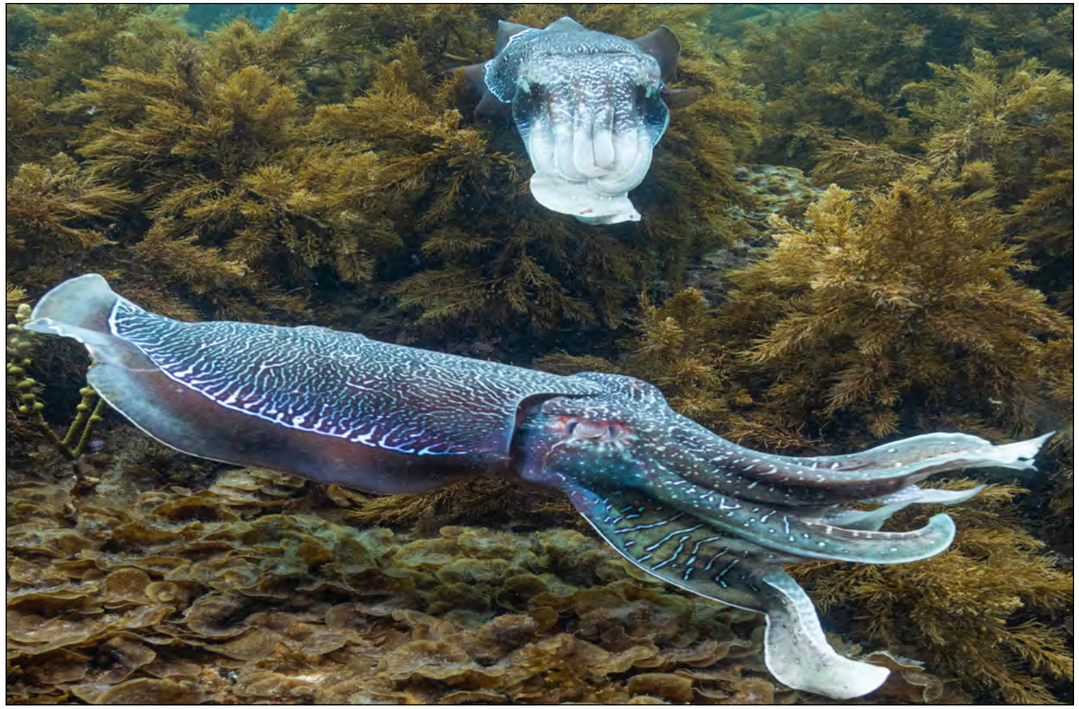
On other occasions a smaller male manages to sneak under the defences of a larger male and will start coupling with the female.
To achieve this, they quite often mimic the colouring of a female…slightly throwing the dominant male off their game. When that happens, the larger

By: Graham Willis

male seems to hover and stare at the couple until the female decides that she has made a mistake and really wants to couple with the larger male… game over for the youngster!

It really is fascinating to watch and knowing that it is a unique event makes it even more special.In this photo the smaller Cuttlefish has ‘sneaked in’ and the larger male is trying to intimidate him to desert the female. Note the horizontal white strip on the female’s right fin, which means “not interested”! Whether she is not interested in junior or not interested in senior is anybody’s guess.

Other than the Cuttlefish there is not a lot of other fish life around. Although the Cuttles are not feeding that much during this period of mating I guess no smaller fish are taking the chance! We did see one case where a Cuttlefish had not got the ‘not eating’ memo and had a hapless fish in its grasp…other than that not much going on apart for



By: Graham Willis

the mating rituals.

We did spot a couple of Eagle Rays swoop through, the one in the photo below came into land, and we did see a Seal down at Black Point.

The Cuttlefish achieved global star status with their appearance on David Attenborough's Blue Planet II. That global recognition has no doubt helped keep some of the politicians in check when it comes to rolling back some of the protections that have been put in place.

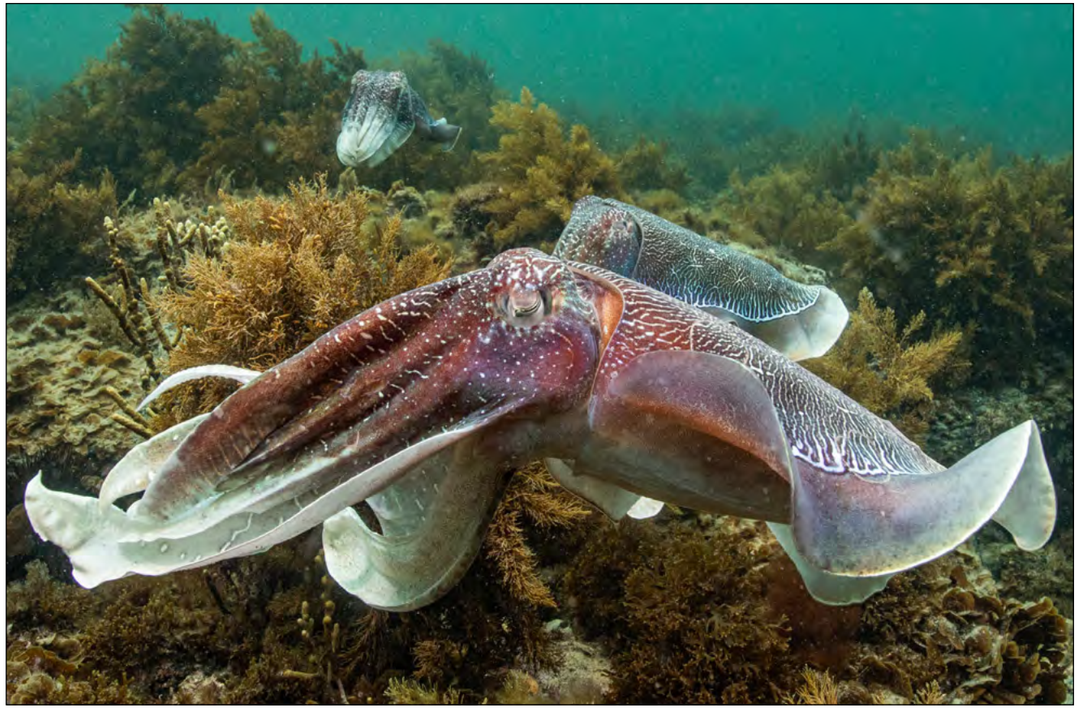
The recognition that Whyalla is home to a global aquatic attraction has also spurred along Cuttlefest! The festival runs from June to August and apart from offering guided snorkelling events also offers educational talks and a 'cuttlehunt' around the streets of Whyalla.

If you get bored you can always download a game of Cuttle Scuttle' and help Lola, Lulu and Mimi navigate the

hazards of the waters off Point Lowly!

The Cuttlefish aggregation is a unique event, accessible for both divers and snorkellers and takes place over several months.

There is no good reason not to get down to Whyalla and witness it for yourself.



Dive the Continent
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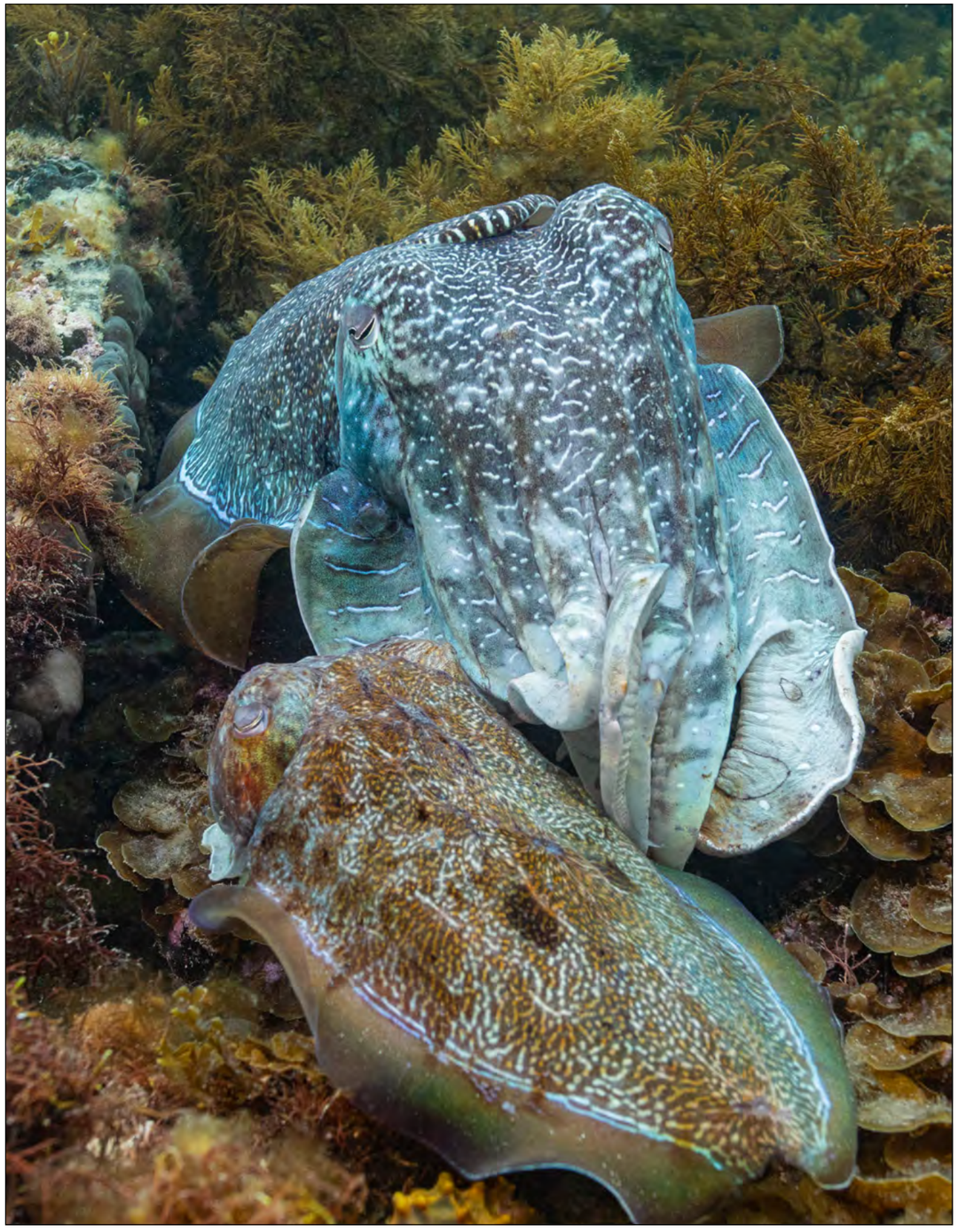

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# DITCH THE GEAR

and discover a new way to explore

Weird and Wonders
Marine Life Facts

By: JP & AP Marais Photos: Valda Fraser

# Triton Shells

**Charonia tritonis, commonly known as "Triton's Trumpet" is one of the most exquisite large shells of the Indo-Pacific.**

Reaching a length of 500mm, the Triton's Trumpet is a formidable predator feeding on other molluscs and starfish.

Damage to the coral reefs by Crown-of-thorn starfish takes many years to recover, and large outbreaks of starfish may cause considerable damage to reef systems.

The Triton shell has gained fame for its ability to attack and devour the coral-eating Crown-of-thorns starfish.

The Triton shell is an active hunter locating the scent trail left by prey in the water.

The located prey is probed by the proboscis, a tube like organ resembling an elephant's trunk, to locate the relatively unguarded oral orifice.

The mouth is situated in the middle on the underside of the starfish, and realising the imminent danger, it will try to flee, but is in turn pinned down by the heavy shell of the attacker before being turned round to expose its underside.

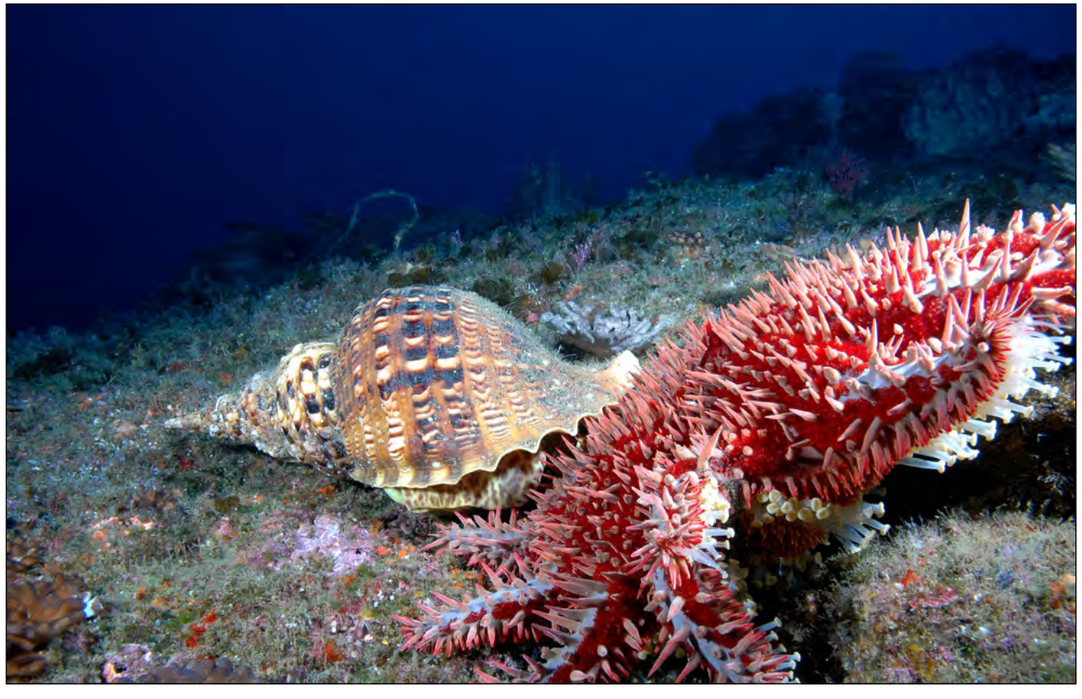
The mollusc immobilises the starfish with an injection of paralysing saliva containing, amongst other nasties, some free sulphuric acid.

The proboscis is long enough to reach all the edible internal organs, thereby literally hollowing out the entire starfish.

Polynesians have been using the shells as trumpets since early times and it is still customary in Hawaii to blow the Triton's trumpet at sundown, a noise which can be heard for kilometre, Unfortunately, it has become an endangered species due to over exploitation for souvenir purposes.

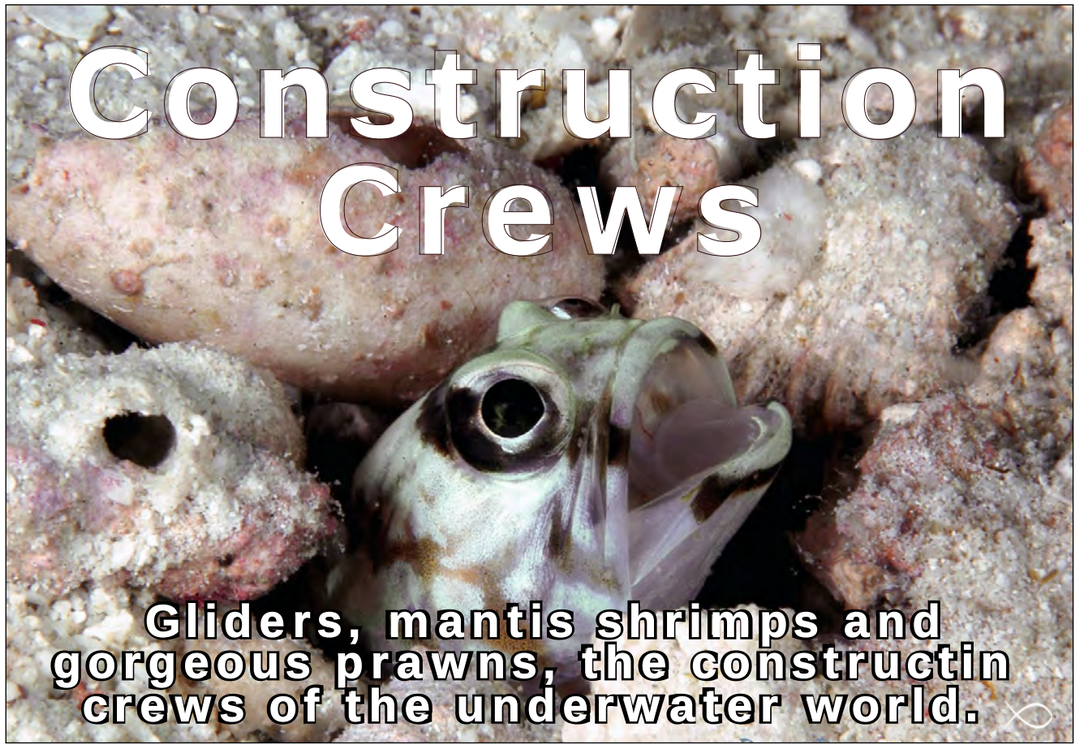
Charonia tritonis is known to occur in relatively shallow waters throughout the Indo-Pacific, southern Japan, the Red Sea and along the tropical coast of Africa.

Numbers are dwindling world-wide and it has been considered for inclusion in the CITES list for endangered species.



By: Jill Holloway Photos: Ketricks

# Construction Crews



**Gliders, mantis shrimps and gorgeous prawns, the constructin crews of the underwater world.**

Mouth filled with sand, the pennat glider (Valenciennea Stringata) emerged from his hole and expelled his mouthful of sand onto the growing pile at the edge of the hole.

His partner darted into the hole and emerged with another mouthful of sand that he too spat onto the pile. Their burrow was formed in a crevice in the sandy rubble bottom and they had simply taken up residence in it and kept it clear.

But the varying currents kept filling it, shells rolled into it, and they maintained it by suction and jet expulsion. This simple method of clearing a hole is used by many fish species as a sort of undersea vacuum cleaning system.

Not all such undersea residences are natural, however. Some of the most impressive burrows on the reef are made by the mantis shrimps. They have immensely powerful raptorial front claws, and some species are able to break a camera lens with a blow. They can easily dig out a substantial hole in the sand, and mantis shrimps are largely responsible for the more impressive lined burrows on the reef. The giant mantis (Lysiosquilina Lisa) creates a fully lined, superbly constructed burrow for himself in soft sand.

These holes seem to be lined with cement made with spittle and bits of sea-grass, and they are extremely strongly built.

Smaller natural crevices become the home of commensal partnerships between a prawn and a goby.

The goby can see and hunt but can't dig, and the prawn can dig but is blind and can't hunt. So they team up, and form a mutually beneficial relationship. The goby's task is to find food, and the prawn shares his bounty. The goby acts as the attack alarm, and is incredibly sensitive to movement and light. Few people know to wait and watch their interaction but it can be hilarious.

The prawn's job is to dig and shovel the debris out of their home as it accumulates, depositing it in the right place by following the spine of the goby with a feeler.

The goby moves to point in the direction where the prawn must shovel the next pile of sand. This works very well until an extra goby arrives, or another shrimp joins the team.

We watched for half an hour as a pair of industrious shrimp both shovelled sand, small coral pieces and bits of shell out of the hole under the direction of a rather harassed-looking goby.

The problem came when they both shoved at the same long coral piece, and it got stuck in the mouth of the hole. Looking baffled, his line of retreat closed, the goby darted off and hid under a rock. The two prawns shoved vigourously until the mouth of the hole ruptured, and a full day's work dropped back into the hole.

The goby came home, and you could almost hear him muttering with rage as he haughtily dived through the debris to seek sanctuary below.

Where there are two gobies and only one shrimp sharing a hole, it is even funnier, as the two gobies point the prawn in opposite directions.

We watched a completely paranoid prawn shoving a pile of sand and shells out of the hole as directed by the first goby and then pushing the same pile of sand back into the hole by following the spine of the second goby.

The hole never changed, and we left before the prawn gave up.

Look out for holes in quiet corners on rubble or sandy bottoms, duck behind a rock, and watch. It's worth it.

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By: Annatjie Rademeyer

# Alien Invasion

**Aliens species have been found everywhere on our planet. They silently invade our lives and before you know it, you can't imagine life without them.**

Have you heard of maize or corn? Originally from South America, it was first introduced to the world by the Chinese who sailed around the world and planted non-native species wherever they landed.

Coconuts, sugar cane, cotton and pepper are a few more examples of plants growing in countries other than where they originated. Humans utilise most of these alien species to their advantage, but what happens when alien marine species are introduced?

Alien marine species are mainly introduced by ships, indiscriminately and unbeknown to the captains and crew. Ships introduce them via ballast water, ballast soil, waste water and hull fouling.

Ballast water is taken in by ships to compensate changes in weight as cargo is loaded or unloaded. It is also used to compensate for fuels and other materials used during a voyage. Ballast water usually contains materials such as plants, small marine animals, viruses and bacteria.

Waste dumped by ships is controlled by strict regulations, but remains a source. Hull fouling is caused by marine animals like barnacles that hitch a ride on the hulls.

All of the above sources are usually obtained or deposited in harbours. The lack of natural enemies and the calm conditions make harbours excellent environments to start a new life.

Random introduction of marine species causes havoc to existing marine ecosystems. Marine ecosystems, as with any other ecosystem, are completely independent units of interdependent organisms which share the same habitat.

They are finely balanced and the introduction of alien species can disrupt them very quickly – depending on the adaptability of the aliens.

In the world we currently have three major invaders – the European green crab (Carcinus maenas), the Mediterranean mussel (Mytilus galloprovincialis) and a type of barnacle (Balanus glandula). These species are adaptable to any condition and their growth rate ensures that their population establishes quickly.

They foul the areas they invade by many different means, which include oxygen depravation of the sand, over harvesting of a certain type of food and invasion of water pipe inlets.

Extensive studies have been done to control and eliminate them within marine boundaries, but field tests must still be conducted. The most effective current means is by physical removal, as in the case of the Mediterranean mussel.

**About aliens**

Special traits that invasive species have are their ability to produce both sexually and asexually, a fast growth rate and dispensability, tolerance to a wide range of environmental conditions and the ability to live off a wide range of food (generalist).

They are sometimes introduced several times before they start to establish and dominate a new habitat, because they have to survive in that habitat first before they can start to adapt to it.

Marine aquaculture (Mariculture) is another method of introducing alien species to the ocean.

Wasted food and excretion can cause decreased dissolved oxygen in the water. In certain instances, up to 6kg of wild fish is used to cultivate 1kg of maricultured fish. Fish that escape from the marine pens can also introduce and spread diseases to the wild population. Intensive research reduced most of these causes and new technology such as vaccines also helps to improve these fish farms. Our fish population is rapidly declining and it needs all the help it can get from maricultured species to survive.

Yet alien species are not limited to the ones we can see. Smaller marine organisms such as the algae that causes 'red tides' are such an example. They excrete a toxin into the sea water which makes filter feeders highly toxic to humans, sea animals and birds.

Then there are other micro algae, macro algae, phytoplankton, diatoms, sea grass, worms and gastropods to name but a few. Each one has its own unique method of invasion and impact on the ecosystem, with an even wider range of preventative measures.

Preventative measures include that ships are forced by law to dump their ballast water in mid ocean and not taking water in during a 'red tide' period.

Furthermore, chemical treatment of the ballast and grey water tanks at regular intervals reduces planktonic larvae in the water. Physical removal of hitchhikers from hulls and chemical treatment of the paint used for painting of the hulls is another method of prevention.

People handling and exporting fish or marine products must ensure that no accidental hitchhikers are included when transporting marine products worldwide.

Marine invasive species are one of the four biggest ecological and economic threats to the oceans and well-being of the planet. They can alter ecosystems, change the biodiversity of areas, transport diseases and be the cause of huge social and economic consequences for mankind.

Humans must take responsibility for their actions. Stop the alienation.

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# GLOBAL NEWS

## DAN To Unveil New Courses, Safety Resources at DEMA Show 2021

Divers Alert Network® (DAN®) will be showcasing several new first aid courses and dive safety resources at DEMA Show 2021: Version 3.0 of DAN's first aid training courses, Safety Tips for Dive Operators, and a brand-new edition of the Travelers Medical Guide.

All are products of DAN's 41 years of expertise promoting safe diving and managing emergencies.

Whatever your level of training, Version 3.0 of DAN's first aid training courses can prepare you to handle nearly any dive emergency. Version 3.0 integrates the latest international protocols for performing CPR, first aid, and related skills. Courses focus on basic life support, emergency oxygen administration, and first aid skills that dive professionals need. To learn more, email DAN at Oxygen@DAN.org.

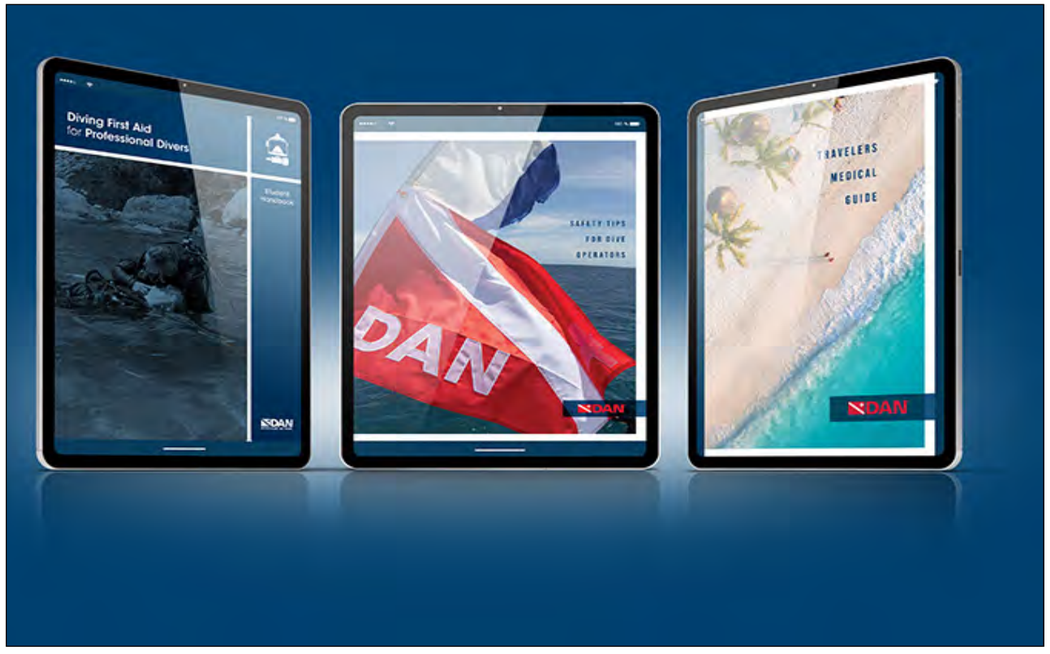
DAN's new Safety Tips for Dive Operators book is a comprehensive guide that will help dive professionals gain a better understanding of the risks inherent to dive operations — and how to mitigate them.

In addition, the new Travelers Medical Guide is a must-have resource for divers, boaters, and adventure travelers as it explains common injuries, illnesses, symptoms, and treatments in an easy-to-understand manner. Both of these digital guides are packed with information of practical interest to divers and dive pros.

As the show draws nearer, don't forget to check out DAN's seminars so you can plan your DEMA experience. And be sure to schedule a one-on-one appointment with a DAN representative to learn more about products and programs that can benefit your business. Send an email to DANPros@DAN.org to set up your appointment today.

These products and programs are the latest examples of DAN's commitment to divers, dive professionals, and dive operators. DAN is excited to be back in person at DEMA Show, celebrating with members and fellow industry professionals.

About DAN: The world's most recognized and respected dive safety organization, Divers Alert Network (DAN) has remained committed to the health and well-being of divers for more than 40 years. The organization's research, medical services, and global-response programs create an extensive network that supports divers with vital services such as injury prevention, educational programs, and lifesaving evacuations. Every year, hundreds of thousands of divers around the world look to DAN as their dive safety organization. Join the DAN community or learn more at DAN.org.

# Sea Shepherd

WASHINGTON, DC –Sea Shepherd's CEO Captain Alex Cornelissen and Director of Campaigns Captain Peter Hammarstedt participated in a panel discussion hosted by the American Security Project, a non-partisan public policy and research non-profit founded by former Secretary of State John Kerry and former Secretary of Defense Chuck Hagel.

Entitled "The Battle Against Illicit Fishing", the distinguished panel also featured Liberia's Minister of Defense, Hon. Major Gen. Daniel Dee Ziankahn, Jr., (Rtd)., Admiral William Fallon of the United States Navy (Ret.), Rear Admiral Scott Clendenin of the United States Coast Guard, Charles P. Rego, and Sally Yozell of the Stimson Center. Joshua Goodman of the Associated Press and American Security Project Senior Fellow David Haines moderated the session.

The panel of maritime security experts agreed that addressing the issue of IUU fishing requires a strategic partnership between government and NGOs, capitalizing on the knowledge, experience, and strengths of both parties.

"In the business of international security, we tend to think navies, big ships, grey hulls, destroyers, aircraft carriers, submarines," said Admiral Fallon. "But from my experience, a much more important resource is the kind of help that we can provide from the US to other countries – not in these aforementioned big grey hulls, but in the kind of cooperation and assistance that we can engender to allow the smaller countries to actually get the resources to be able to police their own EEZs, which for many of them stretch out 200 miles. That's a lot of ocean to cover. But by helping them to get the resources, not big hulls but smaller vessels, to get the communications systems that enable them to be able to talk to one another, talk to their neighbors, this is an area that we can really help spread security around the world, and we can also help people to help themselves in this challenge of overfishing."

"I'm incredibly proud of the eight country partnerships that we have, which have resulted in 73 arrests entirely under the direction of our African country partners," said Captain Peter Hammarstedt. "What Sea Shepherd is providing is a critical tool that is missing from the law enforcement toolbox – vessel assets, civilian offshore patrol vessels. We've created a model, together with our partner countries, that we can see really works. Now we are hoping to export that model to other parts of the world, including Latin America and the South Pacific."
"We can actually stop IUU fishing in a large part of the ocean," said Alex Cornelissen, "and that is through cooperation with governments and other NGOs. By forming partnerships, we can really look at this issue and really address it."

"This is such a great panel," noted Rear Admiral Clendenin. "From a foreign partner to a private organization to DOD and Coast Guard working together, and that's the way this is going to happen."

Sea Shepherd's experience in the field combatting IUU fishing received praise from the panel participants.

"About two months ago, it was through Sea Shepherd along with the Liberian Coast Guard that we were able to save 12 lives from a sunken vessel," said Major Ziankahn. He stressed the importance of a multi-faceted approach to the issue, combining intelligence and satellite technology with on-site patrol vessels. "You have to have boots on the ground, and so some of those developing nations who don't have the resources – I think it would be great for them to partner with an organization like Sea Shepherd."

After the panel discussion, Major Ziankahn presented an award to Sea Shepherd's Captain Peter Hammarstedt, Captain Alex Cornelissen, and Chairman/President Pritam Singh in recognition of Sea Shepherd's work in the coastal waters of Liberia.





# Solomon Islands celebrates one year of teaching local youngsters to dive.

More than 100 Solomon islanders youngsters have now been introduced to the destination's amazing underwater world as part of a highly successful Youth Diver Sponsorship Program introduced in 2020.

Initiated shortly after the closure of international borders, the Youth Diver Sponsorship Program is an initiative of Dive Munda partnering with Solomon Airlines and the Agnes Gateway Hotel with support from Tourism Solomons.

The successful completion of phase one of the program sees 110 youngsters – 60 per cent of them female – achieving a Scuba Schools International (SSI) 'Open Water Dive Certification'.

Phase Two, already underway having been initiated on 31 July 2021, has seen a further 10 youngsters receiving initial dive training for SSI Advanced Adventurer Certification.

A further two, both female, are receiving additional training to qualify as Dive Instructors.

Other projects underway include youth experience dives, beach clean-ups, coral restoration while a third phase is in development.

The driving force behind the initiative, Dive Munda operations director, Belinda Botha described the project as an outstanding success.

"Initially, we aimed to train 50 youth to dive by the end of 2020, but due to enthusiastic response from sponsors and youth applicants, we far exceeded that goal," she said.

Under phase two of the program, in partnership with Agnes Gateway Hotel, Solomon Airlines, SSI, Blue Oceans Program. Coral Sea Foundation and Plasticwise Solomon Islands, sponsors can contribute to support the development of youth.

This includes training local girls certified under phase one to launch a Munda-based plastic recycling project and to spearhead a coral restoration and rehabilitation program supporting monthly beach and underwater clean-up dives.

Sponsoring a local youth to undertake the SSI Advanced Adventurer certification course costs AUD$250.

To participate in the program contact Dive Munda via email at dive@divemunda.com.

Pictured: former Miss Solomon islands, Gladys Habu and four of the youngsters sponsored by Tourism Solomons.

Dive the World
Cocos Island

By: Johan Boshoff

# Cocos Island

## Like diving Jurassic Park

Wow, wow and more wow. After many years of travelling, people always ask me where is the best place that I dived, but I never had the answer. Being fortunate enough to see the world and after many amazing dive sites, I finally found my answer, and with no doubt it is Cocos Island just of Costa Rica. I knew after this trip that diving would never be the same again if I have to compare it with my 10 day trip to this island.





By: Johan Boshoff

If I have to try explain what Cocos Island looks like, I don't know where to start. Go and have a look at the movie Jurassic Park, as that was the inspiration for the original book – forested mountains and thousands of waterfalls are the norm. I did not see any dinosaurs but on every dive I saw the most fish and sharks that I ever seen.

Cocos Island Marine Park is located in the Eastern Tropical Pacific, 550km southwest of Cabo Blanco off the coast of Costa Rica. A rugged and incredibly beautiful island, this World Heritage Site is the crown jewel of Costa Rica's many National Parks. Cocos Island has an irregular coastline, which makes estimation of land area more a matter of opinion than a surveyor's science, but it is roughly 3 x 8km.

The island was formed during a volcanic upheaval about two-and-a-half million years ago and is composed of basaltic rock, labacorite and andecite lava flows. Its landmass is punctuated by four mountain peaks, the highest of which is Cerro Yglesisas at 634m. The island has two large bays with safe anchorages and sandy beaches: Chatham is located on the northeast side and Wafer Bay is on the northwest. Just off Cocos are a series of smaller basaltic rocks and islets.

The terrestrial life at Cocos also exhibits a high number of endemic plants. There exist around seventy out of the two hundred thirty five identified vascular plant species in the world, some twenty five species of moss, twenty seven species of liverwort and eighty five species of fungus. There are upwards of eighty seven bird species, including the famous Cocos Island cuckoo, finch and flycatcher. There are three hundred and sixty two species of insects, of which sixty four are endemic, and two native reptiles.

Beneath the waterfalls and in the rivers are freshwater fish that mystify scientists by their very existence. Because of its remote location and abundance of fresh water, Cocos has long been a favourite stop-over and re-supply station for pirates, whalers and sailors.

Early visitors left pigs on the island as a self-perpetuating source of fresh meat. To this day feral pigs and deer abound, much





to the detriment of the island's indigenous ground-nesting birds. These animals, introduced by man, are also responsible for hastening soil erosion by their digging, undermining and degrading the native vegetation.

Cocos Island receives an average of twenty five feet of rainfall per year, resulting in a covering of lush green foliage. Waterfalls abound, of which there are up to seventy of varying sizes during the peak of the rainy season.

The island also supports a verdant, high-altitude cloud forest. Rare for a small island, this is made possible by dramatic topography, abundant rainfall and surplus water stored in the porous reservoirs of the island itself. This extraordinary island ecosystem is unique to Cocos alone, of all the islands of the Eastern Tropical Pacific (Clipperton, the Revillagigedos, the Galapagos Islands, and Malpelo). Due to the heavy rainfall, the island is also prone to frequent landslides, which helps to account for its irregular geography.

The history of Cocos Island is replete with true tales of pirates and explorers. The evidence is everywhere. It can be found in the archives of Spain and England as well as on Cocos itself. For four centuries, adventurers and sailors have left their mark carved in the numerous stones and boulders along the beach of Chatham Bay.

Portuguese Captain Juan Cabezas is thought to have been the first to have made a written record of the island in 1526, but whether it was 'known' prior to that or if Cabezas could claim to be the first to discover it is still an open question.

In 1685, buccaneers, led by Captain Edward Davis, ransacked the city of León in Nicaragua. They chose Cocos Island as the site to hide their treasure, thus beginning a tradition that continued for centuries. The island's reputation and many enduring legends of ill-gotten and untold wealth hidden on Cocos Island continue to this day. The Treasure of León was said to be buried at Chatham Bay, but whether it was later unearthed and removed remains a matter of speculation.

The most valuable treasure said to be

By: Johan Boshoff

buried (or to have once been buried) on Cocos is the fabled Treasure of Lima. According to the legend, in 1821 a Captain Thompson was entrusted with ten years' accumulated wealth mined and pillaged from the South American continent. He was supposed to safeguard this property of the King of Spain by sailing well offshore for a period of time until invading armies advancing upon Lima could be defeated.

He was then to return the treasure to its rightful owner. It was supposed to be a charter with an honest sailing ship, with the king's trusted guards in attendance 'just in case'. The temptation was evidently too great.

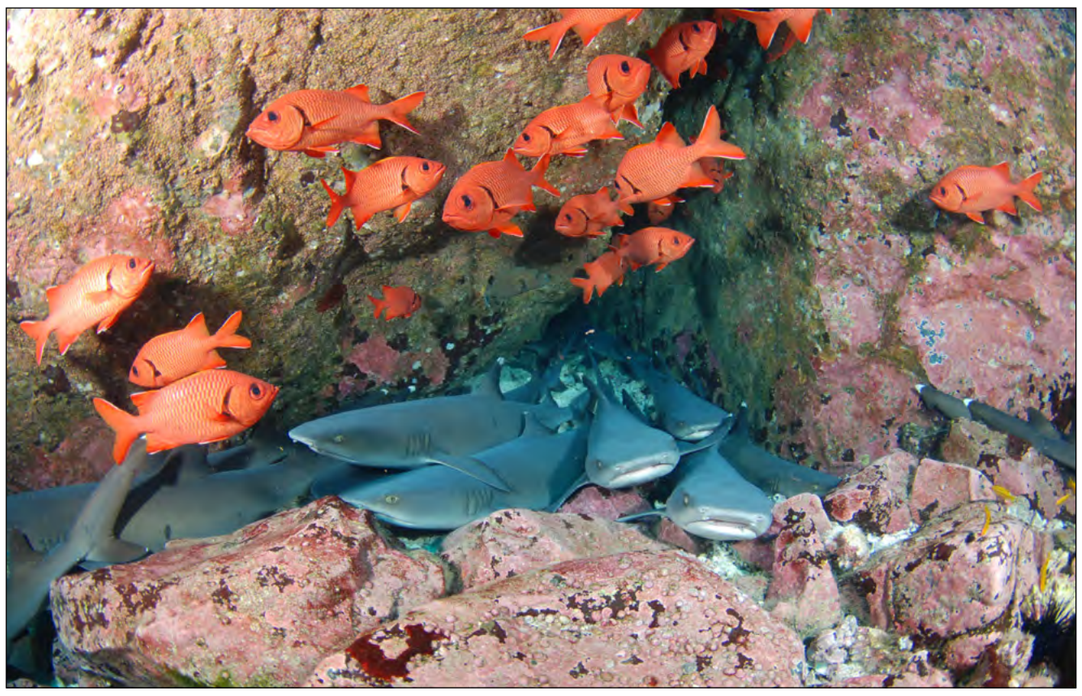
Thompson and his men dispatched the guards and took off with the treasure that had been loaded on board. Naturally, Thompson chose Cocos as the spot to hide the vast treasure, reputed to be worth US $300 million in today's currency. Thompson was captured at a later date but the treasure has, to this day, never been accounted for.

Piracy was a lucrative industry in the 1800s and none was more successful than Benito "Bloody Sword". Bonito was a Portuguese sailor turned pirate. After a prosperous run in the Atlantic, and with the British Admiralty actively hunting him, Bonito moved on to the Pacific coast of the New World, plying his trade from Mexico to Chile. The Spanish outposts were simply too far from Europe and thus poorly defended.

Tremendous quantities of gold were being mined and stolen from Mexico by the Spaniards and Bonito and his men successfully took it from them. They had vast amounts of gold and jewels and also the problem that was perpetual to pirates –where to store their loot so that it would be safe from… pirates.

In 1865, however, the answer again was Cocos, which Bonito found perfectly suited as a base for operations. Over the years many treasure-hunters have mounted expeditions to Cocos. A man named August Gissler was granted half-ownership of the island and he spent 19 years and

Dive the World
Cocos Island



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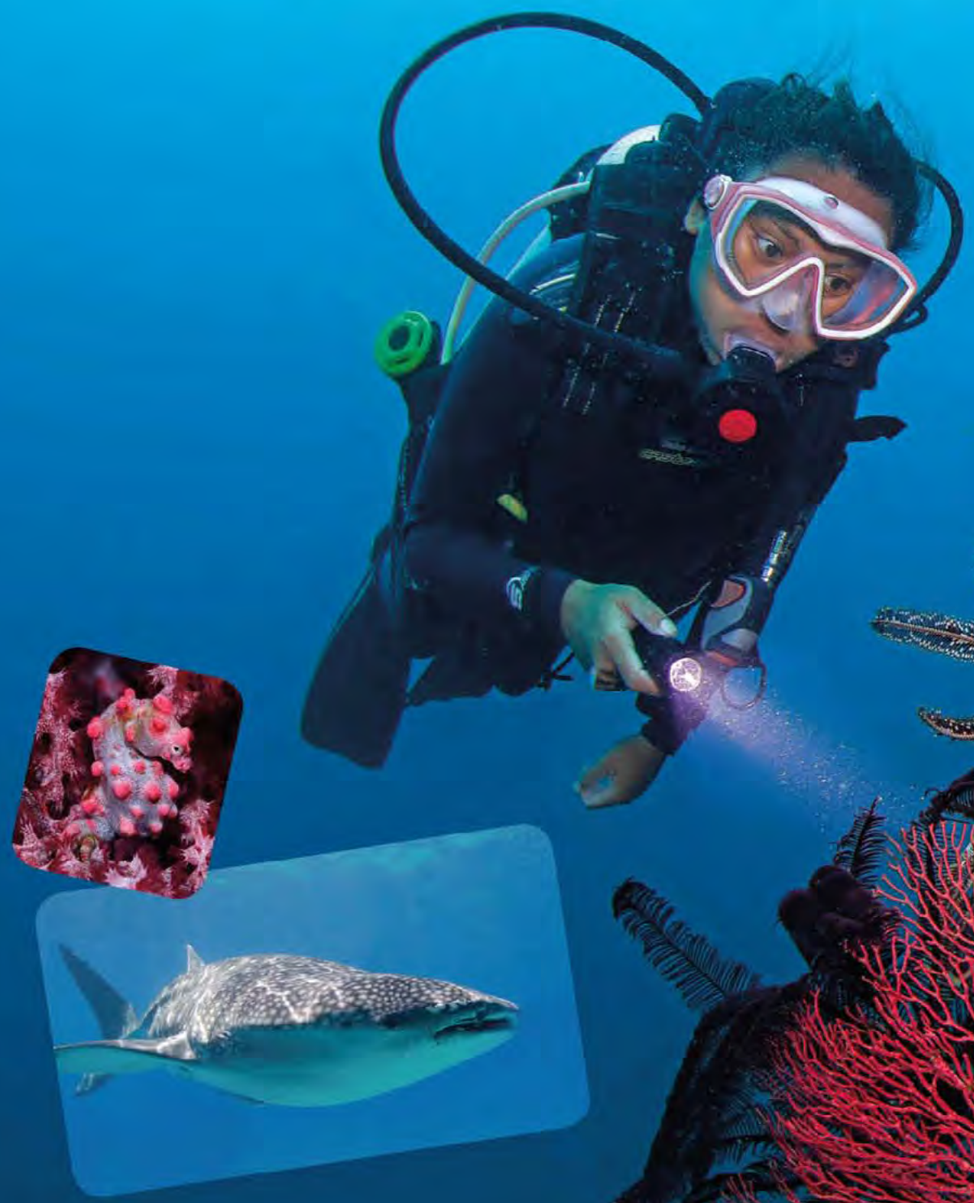





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By: Johan Boshoff

tens of thousands of dollars searching unsuccessfully for the elusive treasures of Cocos.

These factual pirate stories, demonstrating the island's historic role as a covert depository, served as the inspiration for the timeless Robert Louis Stevenson book Treasure Island. Here is a case of Cocos lore actually providing the basis for a fictional story and now that fictional story continues to propagate the mystique of the island's enigmatic history. To this day Cocos Island continues to fascinate and inspire mystery.

Many partnerships have been formed, and these treasure companies have descended upon Cocos using the most modern of technologies available, enduring hardships and expending countless man-hours in search of the 'stuff of legends'. All to no avail! Quite possibly, more money has been spent searching for treasure on Cocos than could realistically be buried there. The only treasure that you will find today on Cocos are its lonely scenic beauty and unparalleled sea life.

Cocos Island was always a dream of mine, but I never had the opportunity to dive there. The amount of travelling to get there was always a nightmare, but every hour that you spent to get there and every dollar that you pay is worth it. This is the best destination that you will ever dive if you like the big things, and everything that Cocos offers is fantastic.

The trip started with two flights – one to Europe and then another to Costa Rica. The other option is to fly to the States and then down. These are long flights, but again, it is worth every mile that you fly. In Costa Rica you land at San Jose airport and after a good rest and catching up with the jetlag, the Sea Hunter Group picked me up and took us to the harbour in Pota Renas where we embarked on the luxury Argo liveaboard.

The crossing to Cocos Island is about 32 hours, and as you know, that is a long time on a boat. But when I got on the boat and saw the Argo, it was more than what I had expected – a liveaboard that was more luxurious and had more features

Dive the World
Cocos Island

By: Johan Boshoff

than my own house! I even had my own television with a variety of DVDs to make the crossing even shorter, and again, a crew that was willing to do everything for you.

The Argo is a rare combination of workship and luxury yacht. She was designed from the keel up in 2008, to pamper up to 16 discriminating passengers in seven spacious, well-appointed staterooms. She is a 40m vessel with a full global reach.

Fourteen well-seasoned crew look after the ship, the projects and the guest's every need. Argo was conceived of to serve as the ultimate platform for a deep diving submersible as well as for remote operating vehicle (R.O.V.) deployment. She offers heavy lift capabilities, stability and ample deck space for any chore imaginable. Extended, multi-task cruses are its forte.

The Argo is equipped with Nitrox Gas Blending Systems, Partial Pressure – as well as Membrane Compressor, Nitrox Dive Computers, and other technical diving equipment and supplies to support these operations.

After we got to the island, a long briefing from the divemasters was given to us. The briefing was in detail and went into how the diving was going to work for the next couple of days and the 27 dives that were lined up. I realised how professional this operation was when they told us that safety is their first priority and that the nearest hyperbaric facility in San Jose was a day and a half sailing away, thus they have to maintain a safe diving practice within the recreational diving limits.

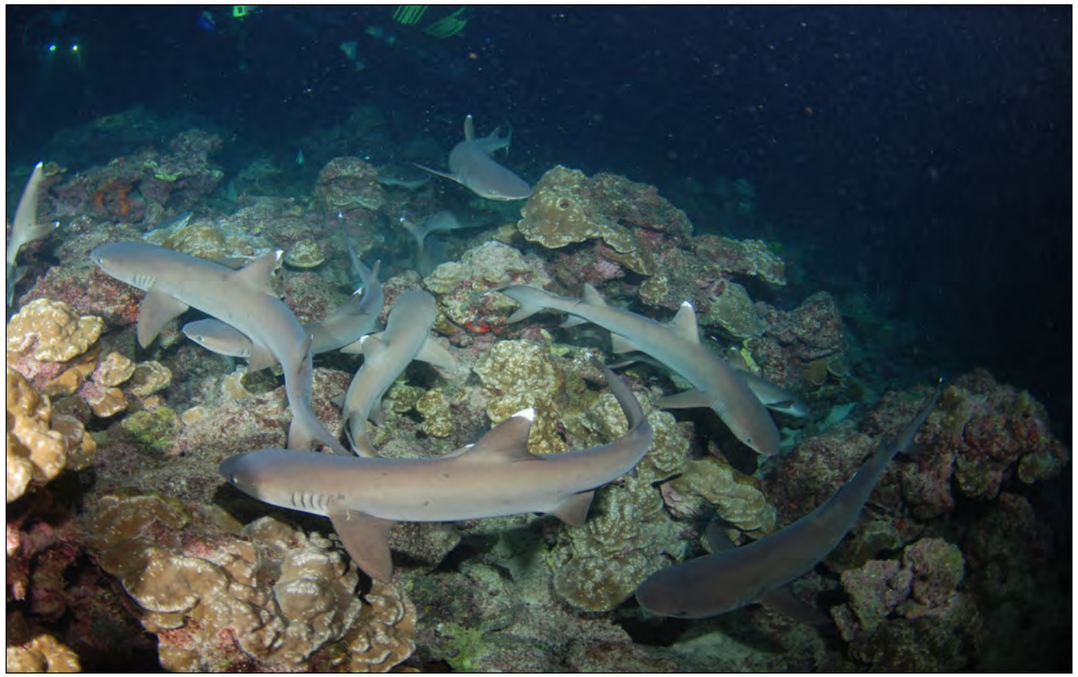
Decompression dives are thus not permitted and a maximum depth of 40m is set. To increase safety, it was compulsory for Nitrox dives and Nitrox was included with no extra costs. They even gave all the guests a Safety Kit that included an extra-large orange dive sausage, a powerful storm whistle, a special safety light and a Personal EPIRB together with a high-tech Radio Direction Finder from Sea Marshall which can help locate a diver more than five miles away. These electronic units are fixed to the individual divers BCD and an on-board homing receiver guides the vessel towards the missing diver. These units also transmit the international marine distress signal that is monitored by all ships and coastguard vessels.

The dives were scheduled as two dives in the morning, one in the afternoon and a night dive after 6pm, all at different locations. For these dives we were given a short briefing about each dive site from the div master who led our dive. We were lucky to get Warren Fernández, one of the most experienced divemasters at Cocos.

When we got outside for the first dive all your diving kit was already loaded on the dive skiffs for us. Skiffs are heavy-duty, fibreglass dive cruisers which provide the stability and safety that is essential at Cocos Island. There were six divers plus Warren and we had all the room we needed plus a solid and stable ladder to make the boarding easier. All your dive gear stays on the skiffs for the duration of the trip (they even do the gas filling on







By: Johan Boshoff

the skiffs – how easy do you want it?) The skiff driver remains on the skiff and follows the group throughout the entire dive with all the safety equipment and extra dive gear.

After a short ride it was time for the check-out dive. This was the most boring dive of the trip and we only saw about 100 white-tip reef sharks, 50 marble rays and some hammerheads. There were also thousands of fish all over the reef in 26ºC clear water. I could not believe it – this but was the best check-out dive I had ever done!

The place blew my mind after only the first dive and I could not believe what I had seen. I could not wait to see what else was in store for us.

Cocos Island is the only point above sea level of the Cocos Ridge, which runs from Costa Rica almost to the Galápagos. This is a line of otherwise submerged volcanoes formed over the margin of the Cocos and Pacific Tectonic Plates, which is being actively sub ducted under the Caribbean plate. The island rises thousands of metres from the ocean floor in the middle of nowhere, and the strong currents push the colder, deep waters against the island, bringing plankton, which in turn brings the big animals. Cocos Island was declared a Costa Rican National Park from 1978 and you can see why the National Park works – it is guarded 24 hours a day.

The rich coral reef, volcanic tunnels, caves, massifs and deeper waters surrounding Cocos Island are home to more than 30 species of coral, 60 species of crustaceans and 600 species of mollusks as well as over 300 species of fish.

These include large populations of yellow-fin tuna , giant mantas, sailfish and sharks, such as the white-tip reef shark, Galápagos sharks, black-tip reef sharks, silver-tip sharks and silky sharks. The largest of all species of fish is also present; the whale shark. Other large marine animals include humpback whales, pilot whales and bottlenose dolphins. The

By: Johan Boshoff

reptiles include hawksbill turtles, green turtles and olive ridley turtles.

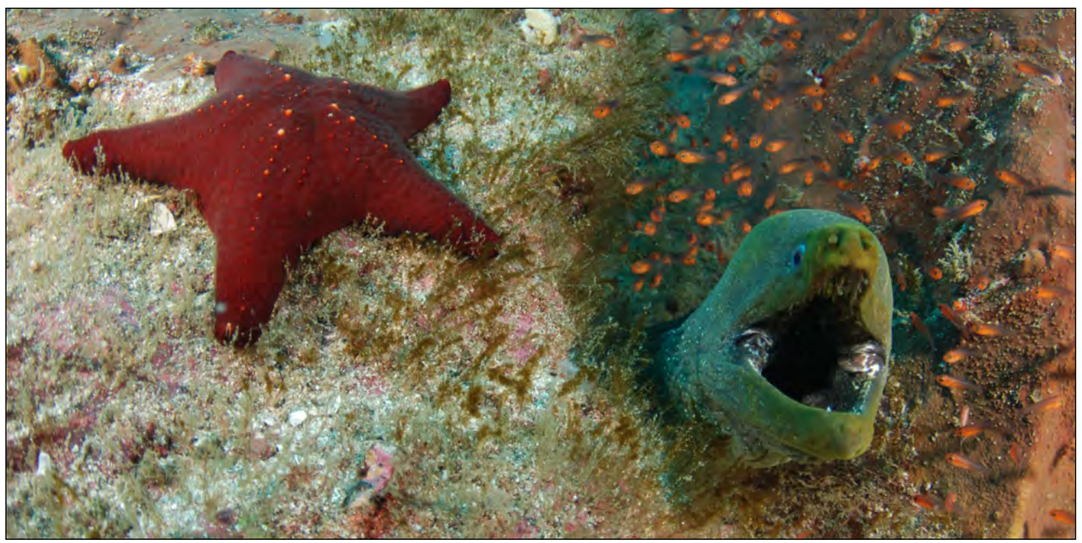
But the big thing that everyone comes to this part of the world for is the thousands of hammerhead sharks that visit Cocos every day to get cleaned by the butterflyfish. Every day, schools come past there for a cleaning and we had numerous encounters with dozens, if not hundreds of these amazing animals on nearly every dive. Each dive just gets better and better and encounters with large schools of jacks up to 100 000 is normal on the dives.

This island's world-renowned waters explode with life, including innumerable white-tip reef sharks, schooling hammerhead sharks, dolphins, mantas and marbled rays, giant moray eels, sailfish, and of course, the occasional whale shark. Other which are common include silky sharks, silver-tip sharks, marlin, Creole fish, green turtles and octopus. We even had some encounters with tiger sharks and Galápagos sharks.

But one of the things that I really liked, and the highlight of the whole trip, was the three night dives that we did with white-tip reef sharks while they were hunting. These shallow dives up to 15m attract literally hundreds of sharks that use your light to hunt. White-tips come from everywhere, and as soon as you shine your torch on a fish they attack it like a pack of wolfs. Sometimes the fish look for shelter behind, and the white-tip reef sharks have only one thing in mind for supper…it is not you, it's that little red fish behind you, so you need to make sure that you are not in the way. This is an experience that you will never get anywhere else in the world, and it reminded me of the movie "Island of the sharks".

On some of the dives we saw hundreds of hammerheads and rays, thousands of white-tip reef sharks and game fish and millions of reef fish. The scenery also changed on every dive – we saw pinnacles sticking out of the water and some just below the surface, we swam through arches that created by volcanoes many years ago, and it's a place that I will always remember and dream about returning to.

Today I understand why Cocos Island was named as one of the 10 best scuba diving spots in the world by PADI and why the famous oceanographer Jacques Cousteau visited the island several times and in 1994 and called it, "the most beautiful island in the world." It doesn't matter what your current diving dreams are, Cocos has to be one of them.



Dive the World
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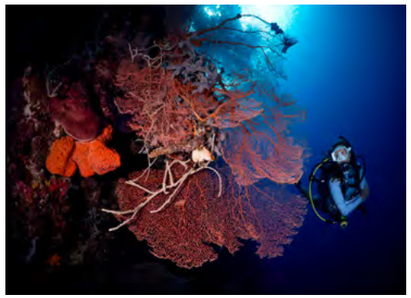


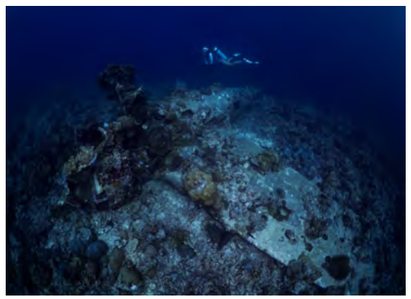


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Dive the World
Bassas Da India

By: David Caravias

# Bassas Da India

"Been there, done that," is all you hear these days from well travelled international divers. There are only a few well known and unique prime dive locations in the world such as Galapagos and Cocos and it seems that any well travelled diver worth his salt has visited these sites.

## Bassas Da India

By: David Caravias

Naturally, when hearing about a special place that is one of the top five wild diving sites in the world, you would think that this would be in one of these far flung places.

Bassas Da India is a submerged volcanic atoll which rises up from 3 000m to break the surface on low tide in the middle of the Mozambique Channel.

The atoll was first recorded by Portuguese explorers in the early sixteenth century and was named Baixo da Judia (Shoal of Judia), after the name of a Portuguese ship that ran aground there.

The name later became Bassas Da India due to transcription errors by cartographers. This is a well known graveyard to nearly 100 shipwrecks where many came to their peril in what was thought to be deep ocean in the middle of nowhere.

On high tide all but a few small boulder-like jagged rocks can be seen as well as the only two visible wrecks of the many ships that met their destiny here. Without these references at high tide many more ships could possibly have met their peril.

You would think that after the first few ships had landed on Bassas Da India that this would have been a known hazard to avoid, but even up until now Bassas Da India is plotted 1,5 miles off course on most instruments.

If it was not for the incredibly deep waters dropping away down the shaft of the atoll there would be an endless number of wrecks to dive. There are a few known wrecks to dive but unfortunately they are still relatively deep.

In monsoon season the waters are extremely rough and what exists within diving reach has been flattened by the huge seas.

The atoll is patrolled by the French Navy as these are French governed waters and they are very protective over the atoll for obvious reasons and

By: David Caravias

any attempts to salvage any of the wrecks would result in tough measures being taken. Up until now access to the atoll was not permitted yet now all boats mooring at the atoll require a permit from the French Government.

Breathtaking is the word for the experience from start to finish. To start with there is the flight into Vilanculos (Mozambique) with the stunning scenery of the white of the sandbanks contrasting with the turquoise and jade coloured waters of the Bazaruto archipelago.

This breathtaking scenery really gets the blood pumping with the need to immediately slip that wetsuit on and drop into the Indian Ocean.

The crossing to Bassas Da India takes two days, with the first day dedicated to exploring Vilanculos (Mozambique) to get your last minute supplies, checking gear and receiving a thorough briefing before the epic journey.
The second day starts early with a stunning meander through the narrow channels of the archipelago which can take up to three hours.

The striking landmark of the high sand dunes on Bazaruto Island marks our exit point through what is called the 'washing machine', where the calm flowing current from inside the archipelago meets the swells from the open seas.

Depending on the sea conditions this can be a baptism of what is to come. Once the boat is through the sails go up and autopilot is set to a tiny reference point on the map in the middle of the deep Mozambique Channel.

If you look at the map you will see that the Mozambique Channel runs between Mozambique and Madagascar, and you would therefore naturally think that these waters are fairly protected by this huge island.

With a distance of nearly 1 000km between the two you could not be more wrong. We chose the time to visit Bassas Da India very carefully (typically people go between the months of May and September as any other time would normally be rolling the dice with the threat of monsoons).

The 30-40 hour journey can have vast contrasts, from plain sailing on calm waters to a marathon, gut wrenching roller coaster, so this is a warning to the faint hearted – this is not a Caribbean cruise, it is the real deal but totally worth it.

You may ask yourself "Why would I want to go through four days of this just to get there and back to a dive spot?" Well we cannot explain the feeling that you will have when catching a glimpse of the New Holland shipwreck as a dot on the horizon.

This dot on the horizon will be something that you will never forget as this is the icon of this wild and unforgiving place. As you get closer you will see the beauty and the beast that is Bassas Da India.

The approach to the wreck is slow but with every minute that passes the excitement builds as the dot morphs slowly into a huge wreck in front of us. Seeing the twisted, rusty structure will send a chill down your spine and have you thinking about what those unfortunate sailors and crew went through.

They had nowhere to go when striking the atoll and for them the closest dry land was at least 500km away – an eternity in rough, shark infested seas.

As we approach the perimeter of the atoll, which runs 10km across, suddenly out of the deep blue from 50m deep we can see the bottom – what a sight! All we see is striking reef which lines 35km around the perimeter of the atoll.

This is when you realise what we have ahead of you for the next six days! The water is so clear that you can pick your dive spot from the surface just by watching the bottom as we amble along the edge of the atoll.

There are no dull, lifeless spots around

Dive the World
Bassas Da India

By: David Caravias

the atoll and even on the mooring spots you can dive stunning reefs boasting an abundance of life. Fortunately, the atoll does not just fall away from the rim immediately and there is a constant diveable perimeter around the atoll.

The atoll is vast and has contrasting sides which offer an extremely diverse range of dives and marine life. During this season we experience predominantly south easterly winds and the mooring locations are set on the north and northeast of the atoll (these are sheltered from the open sea swells).

This side offers unbelievable world class reef dives with amazing underwater topology. From huge table corals to an abundance of soft corals, you will be constantly snapping away with your camera. There is an abundance of fish on the reefs with large schools of Parrotfish, Fusiliers,Anthias, Wrasse, Butterflyfish, Angelfish, Moray eels, turtles and much more.

There is everything for the keen photographer too, from large predators to intricate macro life. The reef starts from the top rim of the atoll and there is a fairly sharp drop off of approximately 6m which offers the most unbelievable snorkelling.

From the bottom of this wall there is a gradual sloping shelf with an abundance of marine life.

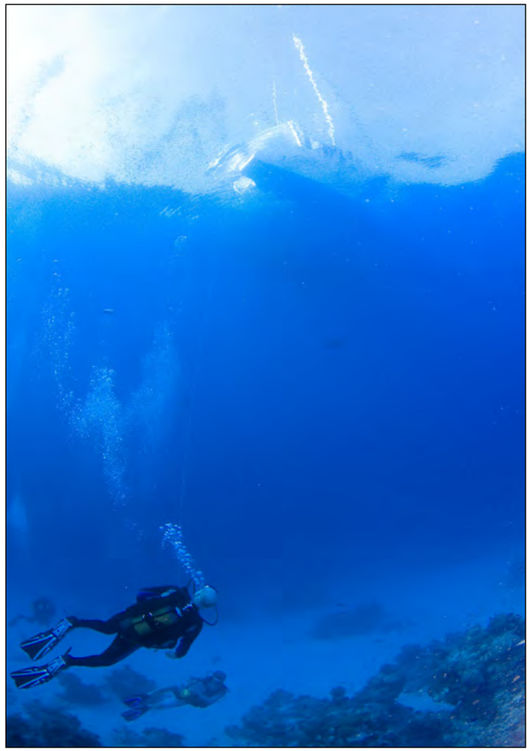
Sometimes, depending on the tide, the closer you get to the rim of the atoll the worse the visibility will be due to the debris running off the reef, because at low tide the water cascades from the rim of the atoll, running like a waterfall into the ocean. The ledge can be up to 300m wide, and as you go deeper the ledge drops away down to more than 50m, which can offer the most amazing wall dives packed with marine life.

This is an excellent place to look out for game fish and predators and it is not uncommon to see Kingfish up to 50kg in size, Silver tip sharks, Hammerhead sharks, Zambezi sharks and even the odd Sailfish if you are lucky. On nearly all dives you can see large Potato bass, which seem to be everywhere around the atoll in abundance, as well as some gigantic Napoleon wrasse over 2m in length.

Everything at Bassas is big and this may be because of its remoteness and the fact that it is protected by the French Navy. There are no commercial fishing boats, illegal or legal, bar a few private chartered game fishing boats from time to time, and this is evident as soon as you immerse yourself into this oasis.

On your descent you can basically pick what type of dive you want as it is all there for you within easy reach. The best thing about the northern side is that it is nearly always diveable as it is normally protected by the atoll from the wind and swells.

From experience the currents on the north side are mild and gentle and



By: David Caravias

dives are easygoing. The reef and dives can be easily compared to Palau with striking colours and a vast array of corals and marine life – these reef dives alone are worth the trip to Bassas without the thrills from the 'Wild Side'.

South of the atoll is aptly named and aforementioned Wild Side. This coastline is treacherous with a constant swell thrashing the reef, and if there are supporting winds this can be a very difficult place to dive. This side of the atoll is, however, a Mecca for predators and shark activity with a healthy population of game fish and many different shark species.

If conditions are suitable for diving then this side is a must for the adventure diver with an awesome number of sharks and large scale predators in the waters.

Care must be taken even dropping off the boat into the water as the waters are populated with Oceanic white-tip sharks, Zambezi sharks, Hammerhead sharks, Tiger sharks, Silver-tip sharks and even Galapagos sharks. The Galapagos sharks have only been spotted at Bassas Da India and nowhere else in the Mozambican Channel, which leads scientists to believe that this could be a nursery ground for this shark species.

The Wild Side is definitely where the action is and don't be surprised to find yourself surrounded by Zambezi sharks on your first dive. The operators will make sure that you are ready for these dives and well briefed for what to expect and how to behave.

All of the trips are guided by a shark specialist and safety is the number one focus on these dives. You are in extreme territory here in a remote destination and any accidents, even small, could escalate into a major problem. The Wild Side is a difficult place to dive as the dive is close to the breakers and the atoll – caution must be exercised when planning these dives, especially with regards to the weather.

The weather can change quickly at sea and a concise call must always be given with regards to the weather, and especially with regards to the skills of each diver. Mistakes cannot happen this far out at sea as a lost diver will be very difficult to find and this is definitely not the place to be lost at sea.

The amazing thing about the sharks at Bassas is that they do not seem to swim separately from one another and many divers have witnessed multiple species of sharks swimming together. Normally you would expect to see different sharks at separate times during dives, but divers have witnessed Zambezi sharks swimming with Silver-tip sharks and Galapagos sharks.

These waters are teeming with life and there is an abundance of supersized game fish close by. Between dives we will tow tracer lines without bait and as the atoll drops so dramatically away we do not have to travel far from the edge in search for the big game fish. Normally it does not take long before

Dive the World
Bassas Da India

By: David Caravias

everyone is yelling with excitement as the reel fizzes and dips.

These waters are a bounty with shoals of Tuna, Wahoo and an abundance of Barracuda and sharks. Once a fish is hooked then it is a race against time to bring the fish in as quickly as possible before it is taken by one of the many sharks on the prowl.

After the first Yellowfin tuna is caught it will be only minutes until the freshest sushi you have ever had will be on the table. Nothing goes to waste on the fish as the scraps are used for bait for fishing and the carcass is used to tempt some of the bigger residents in the water to the boat at night.

On one of the mooring spots there are a couple of huge Zambezi sharks over 4m in length that are not shy to come to the boat. To see such large Zambezi sharks the size of a Great white is a spectacle and definitely a chilling reminder of how wild this place is.

If you don't like the thought of not putting your feet on solid ground for 10 days then you will love the idea of walking on the atoll at low tide.

The atoll walk is the most amazing experience as it is like a walking dive! As you step onto the atoll, water cascades past your feet in a frantic rush to escape to the ocean.

As you look along the edge of the rim you will spot many fast flowing channels where the bulk of the water escapes at low tide. At these exit points, flashes of green and blue will catch your eye as schools of Parrotfish line up and feed from the lagoon water gushing into the ocean.

The lagoon inside the atoll is 1m higher than the outside on low tide, and with an internal area of approximately 75km² there is a lot of water moving over the rim.

This is a huge body of water which is trapped inside the atoll, and twice a day water flows over the exposed reef into the ocean. When walking on the rim you will be blown away with the amazing, pristine corals that are exposed and endless amounts of oysters and clams that populate this area. If fresh oysters are your thing then this is the ultimate place to shop for lunch as they are everywhere!

As you walk towards the emerald green lagoon in the middle you will see bright colours darting around in the pools around you. Tropical fish of every kind charge their way through the tight maze of channels to the open sea, the lagoon or the many deep pools offering protection until the tide once again rises.

As you walk along fish will leap from pool to pool and you will see the wake from the backs of large Surgeon and Parrotfish slipstreaming just under the surface.

This is truly spectacular and right then and there you will find it almost impossible to believe that you are standing in the middle of the Mozambique Channel, 500km from civilisation and just 500m away the water is thousands of metres deep.

As you approach the lagoon, reef turns to sand, and if you are lucky you will find a patch of beach to sit on.

The lagoon is vast and on the horizon you may see the white horses breaking from the Wild Side. The water inside the lagoon is crystal clear with a sandy bottom a maximum 15m deep, but there is not much life inside compared to the outside reef, bar a few Tiger sharks.

On top of what there is around the atoll, from the end of June to October there are hundreds of Humpback whales in the Mozambique Channel and there is every opportunity to get up close and personal with these gentle giants.

This place is truly a paradise within reach. This is one of the last untouched natural phenomenon's left in this world and one that Africa can be proud of as one of the top five wild dive destinations in the world!

Dive the World
Bassas Da India

By: Gerrit Maritz Photo: Christopher Barlett

# Heat Loss

**A phenomenon that technical divers have long been exposed to is Heat Loss or Hypothermia during dives. Not all divers will have the same reaction to it and it is dependent on a variety of factors. Due to the long-term exposure to harsh conditions and cold water at depths, your body, and especially your core, cools down to such an extent that it starts to become dangerous, or in extreme cases, deadly.**

**PART I**

For the recreational diver the danger also exists, even if you dive mostly in tropical waters. In this article we are going to delve deeper into what exactly happens to your body, what causes it, the telltale signs thereof, the consequences and finally how to prevent hypothermia from occurring in the first place.

The technical explanation for hypothermia is that it is the condition in which the body's temperature drops below that which is required for normal metabolism and body functions. When the body is exposed to cold and the heat loss from the body is greater than its heat production, the body cannot replenish the heat being lost from the core through internal mechanisms, and the diver becomes hypothermic.

Let's do a little experiment. When we work with metal in our garages on a grinding wheel, the metal quickly warms up and starts to glow. Common sense tells us that we should not touch it because we will get burned, therefore we submerge it in water to cool it down – fast. Should we leave it in the open air it will take much longer to cool down and much time will have been wasted. This is exactly what happens to us when we scuba dive.

Due to the fact that water is almost 25 times denser than air, heat is conducted away from the body much faster than would normally be the case if you were standing in an open air environment. When we dive, the water that enters our wetsuits comes into contact with our body, which in turn warms up the water. The water then expands and is carried away from the body, and as a result of this exchange of heat you quickly start to feel the cold.

I am sure that most of us have at one time in our life experienced hypothermia. Remember that summer pool party during which you spent most of the day in the water having fun in the sun? The water started off feeling very warm and soothing and only after a couple of hours you started to feel the cold, or you went to Sodwana, and to escape the heat you entered the water that felt as warm as the outside temperature.

The heat loss is so gradual and slow that your body's defenses may not even be triggered. You don't feel cold, you don't shiver and you don't gasp. Constriction of near-surface blood vessels, your body's main heat conservation mechanism, may not occur, and in this case it would not be particularly dangerous. This is referred to as 'Silent Hypothermia' or 'Warm Water Hypothermia', but should your body be allowed to cool down further it may become much more serious.

Now I am sure that you will argue with me and tell me that there is hardly anything deadly about it, but you would be dead wrong (pun intended). To understand the dangers regarding hypothermia we must first understand what happens to the body when subjected to cold water.

**Cold water immersion**

Immersion in cold water causes a complex response in the diver. As your body temperature falls, you first start to feel uncomfortable, and then, as your body tries to increase heat production in the muscles, shivering begins. If cooling continues, your ability to perform tasks becomes more difficult. It will impair your sense of touch, which is dulled, and your hands lose dexterity.

As your shivering becomes more intense, it will start to cause a lack of co-ordination and you may even experience difficulty in keeping your mouthpiece in place.

This is already cause for concern due to the possibility of choking or drowning, but you will also soon lose your ability to think clearly and you will find it more and more difficult to concentrate, becoming a danger to yourself and to those around you.

Heat during scuba diving can be lost from many areas of the body and it is therefore important to consider wearing an exposure suit, even when swimming in relatively warm tropical waters.

Studies have shown that the areas where major heat loss occurs are the head, neck, chest and groin. Much of the heat lost during diving is lost from the trunk area due to the fact that heat is transferred only a short distance from the deep organs to the surface of the skin.

Feet and hands are, however, not considered major heat loss areas, even though they are the first to feel cold due to the shutting off of the blood supply when exposed to a cold environment.

Another cause of heat loss during diving is the simple act of breathing. Breathing is said to account for a quarter of your body's heat loss in the form of exhaled warm air. Due to the prohibitive expense of re-breathers. most of us use open circuit scuba gear.

As air is released into our second stage regulators the drop in pressure results in the cooling of the air mixture that we breathe. This cold air is warmed in our lungs and expelled into the water, and so heat is lost.

Diving with re-breathers does not have the same problem as most of the heat in the exhaled air is retained within the closed system of the re-breather.

The deeper we dive, the denser the air that we inhale becomes. At a depth of 10m the air we breathe in and exhale is twice as dense as on the surface, which means that the heat loss from exhaling is twice as large as well.

When you are exposed to extreme cold the body automatically reduces the flow of blood to the extremities and top layers of the skin to minimise heat loss and to protect the body's core heat supply (vasoconstrictive regulation).

This, however, only provides a narrow range of protection to the body, because even though the body is combating the cold by increased shivering, the temperature of the body will still steadily decrease further and heat loss will reach a point at which death will occur.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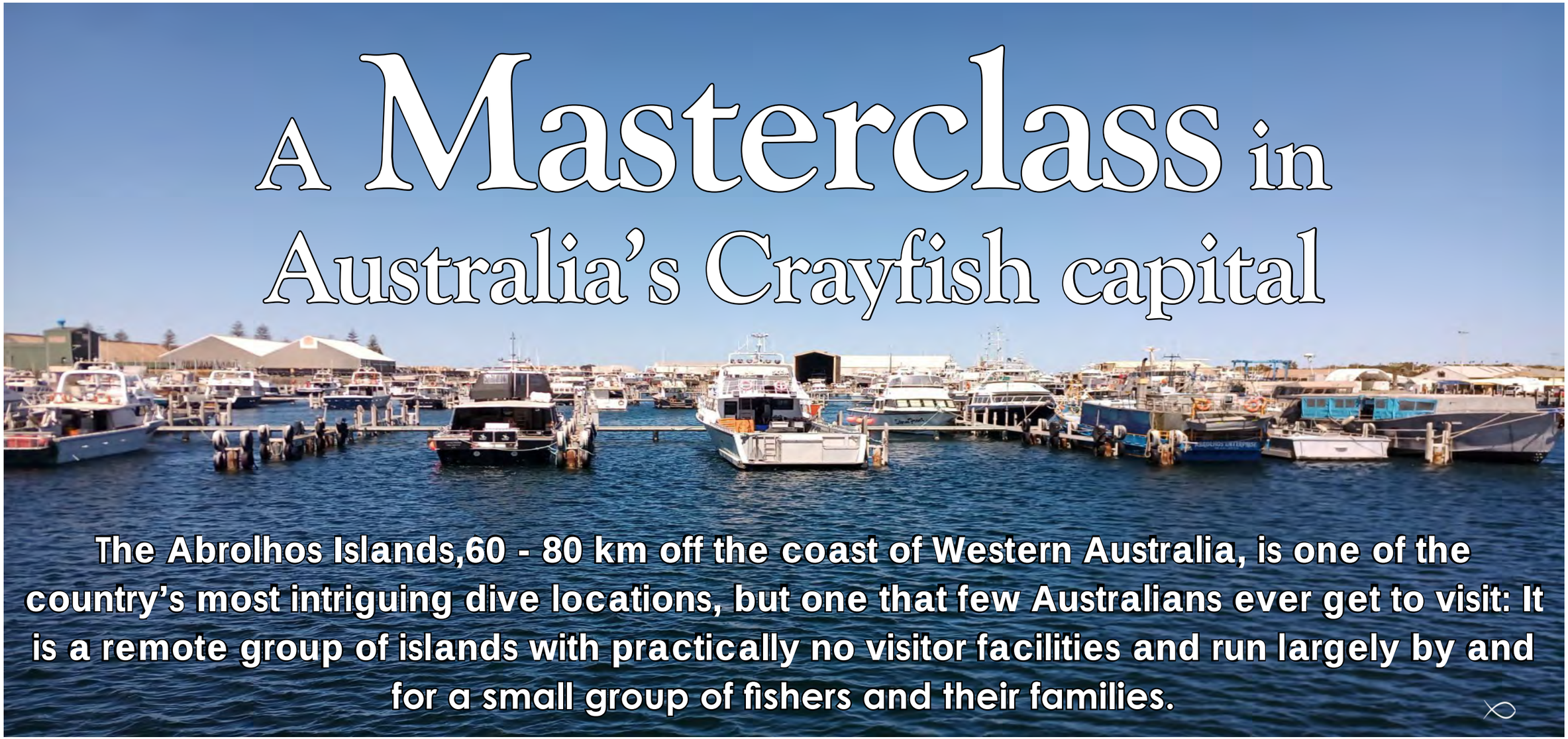
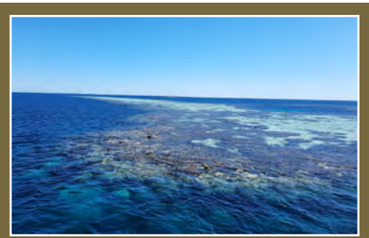
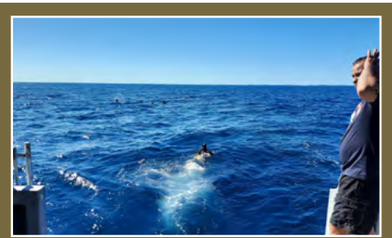
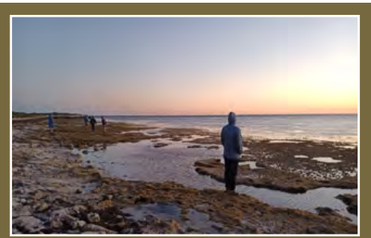
By: Nick Ingelbrecht Photos: Dive Team

# A Masterclass in Australia's Crayfish capital



**The Abrolhos Islands,60 - 80 km off the coast of Western Australia, is one of the country's most intriguing dive locations, but one that few Australians ever get to visit: It is a remote group of islands with practically no visitor facilities and run largely by and for a small group of fishers and their families.**




By: Nick Ingelbrecht Photos: Dive Team

Historically, the Abrolhos was the scene of the Batavia shipwreck in 1629 that resulted in the sinking of a huge boatload of Dutch treasure and the massacre of scores of survivors by a band of mutineers. (If you are up for the full story of “Shipwreck, Murder, Greed, Rape, Lust and Survival” plus the odd bit of Courage and Honour, then the place to go is Peter FitzSimons’ book Batavia).

Commercially, the Abrolhos is the hub of Western Australia’s $505-plus million annual fishery for western rock lobster (Panulirus cygnus).

Ecologically, the Abrolhos Islands comprise a unique marine environment, comprising both tropical and temperate water species of fish and coral supported by the warm offshore Leeuwin current, flowing south off the WA coast bringing eggs, larvae and juveniles of different species of fish and coral with them.

Inshore, the Capes current pushes cool, salty water from the Southern Ocean northwards during the summer months resulting in a big range of temperatures supporting an extraordinarily level of biodiversity.

The Houtman Abrolhos is an archipelago of between 122 and 210 islands (depending on whose numbers you believe). The islands comprise three main groups – Wallabi,  Easter and the Pelsaert Group -- spread across 100 kms of the Indian Ocean.

The islands were named by a Dutch explorer Frederik de Houtman in 1619, with the name ‘Abrolhos’ reputedly derived from the Portuguese for ‘Keep your eyes open’. Around 22 shipwrecks in the area attest to the difficulties of

By: Nick Ingelbrecht Photos: Dive Team

navigating the area with ubiquitous low-lying reefs and shoals that even experienced skippers refuse to navigate at night.

For most-non divers living in Perth, rock lobsters are an expensive luxury, currently selling for $90 per kilo and widely recognized as the de facto replacement for the Christmas turkey on roasting-hot December days. On a visit to China (pre-Pandemic), I came across WA rock lobsters selling for $160/ kilo in a Beijing restaurant and over $200/kilo in Shanghai.

I opted for the beef on both occasions, but just how those rock lobsters got to sell at those restaurants at such inflated prices has remained a matter of interest.

To find out more, I signed up for an education course run out of Central Regional TAFE, which provides vocational training for people entering the seafood and marine industries. The TAFE operates a 19m vessel named Masterclass, for training and research visits out to the Abrolhos. The boat is well equipped for scuba, offering basic but comfortable accommodation for around a dozen students and staff.

Our group of fairly mature students set off at 6am for the trip across from Geraldton to the Abrolhos, which takes around 2-3 hours (and considerably longer in rough weather).

On arrival, we geared up and plunged in at the start of an exhaustive programme of 4 dives a day, education sessions (including exam), plus practical experience of fishing with craypots.

Diving in September, we were blessed by great weather, 25m+ visibility and barely any currents underwater. There was a huge variety of dive sites – reef walls, gullies, shallow caves and

By: Nick Ingelbrecht Photos: Dive Team

canyons, expertly led by our on-board dive instructor, Wandoo.

The convergence of cool and warm waters results in a profusion of temperate and sub-tropical fish, soft and hard coral and kelp all in the one place.

The coral looks in good condition, with underwater fields of blue-tipped stag horn (Acropora abrolhosensis) along with great stacks of tabular, cabbage and Papadum coral.

The clouds of bait fish streaming around the top of the reefs in sparkling sunshine were something to behold, with occasional strafing attacks by mackerel chasing their lunch.

Higher up the food chain, our dive class were investing significant effort in locating supplies of crayfish to mop up the buckets of garlic butter bought in Geraldton in optimistic expectation of a feast.

WA Crayfish probably suffer from acute paranoia as everything in the ocean seems to want to eat them. On one dive site (Anemone lump) in the Easter Group of islands, our team of divers was escorted along the reef by a sleepy 2m Ornate Wobbegong (Orectolobus ornatus), who meandered along, waiting for us to flush out his lunch by our noisy presence.

Back on the boat, our friendly Australian sea lion (Neophoca cinerea) sat on the duckboard begging for scraps, too fat, lazy and sensible to bother catching his own dinner.

Occasionally elusive, but far from skittish, the Abrolhos crayfish come out at night.  On a night dive at Rat Island Home Reef, the coral was carpeted with crayfish just after sunset.

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Since divers are not permitted to take crayfish at night, we organized a surprise sunrise dive and packed our catch bags with the blighters before breakfast.

Above all, the Abrolhos reefs appear well-stocked with a great range and variety of fish - butterfly fish, clownfish, angelfish and pipefish alongside the cuttlefish, grouper, coral trout, bream, snapper and herring common in southerly WA waters.

Back on board, we had homework to do, not least learning how WA crayfish navigate the state's complex fisheries legislation and occupational health and safety provisions to move safely from the reefs of the Abrolhos to the Chinese restaurant fish-tank, in a journey impossible to most human beings nowadays.

Fortunately, Hayden our skipper is an ex-crayfisherman and a dab hand hauling up the cray pots for a live demo of the process, assisted by the chief mate Dan, who also turned out to be a brilliant chef.

We did not get to dive the Batavia, since Morning Reef in the Wallabis is an exposed site and only recommended for diving in calm conditions.

The Batavia wreck is at a depth of around 6m and aside from a few canons on the seabed, there is not much to see, according to divers who recently visited the site.

By far the best way to visit the wreck is to go to the WA Museum in Fremantle where the stern section has been preserved.

Alternatively, visit the Geraldton Museum which has a display that includes the 36-tonne stone portico façade which the Batavia was transporting to Batavia Castle.

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Exploration
Masterclass

By: Rian Bester

# Photo School

## Expose it right underwater

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

If you take into consideration how many underwater photographers have some sort of artificial lighting attached to their cameras nowadays, you can safely say that most underwater photographs are captured using a single strobe or more. Light can be a powerful creative element that transforms a boring photograph into one with a ‘wow’ factor.

With today’s technology, a feature known as through-the-lens (TTL) auto exposure can automatically measure and control almost all of the factors that artificial light creates.

Basically, how TTL works is that the camera has a light sensor system that calculates how much power the strobe must use to expose the subject correctly and then measures the light that passes back through the lens onto the CCD for the correct exposure.

Once enough light has been received onto the CCD, the TTL system then switches off the strobe. This all happens in a very short space of time and you won’t even notice it happening.

The TTL function works pretty well with close up and macro photography, but there is a slight drawback with the TTL system when it comes to wide-angle underwater photography.

The TTL function does not determine ambient background exposure very well, only the strobe exposure for the closest subject being measured, and this is in conjunction with the aperture selected.

One method of dealing with ambient light in the background is by making slight adjustments to the aperture and therefore either under or overexposing your background. Your foreground TTL exposure adjusts automatically in either case.

Another limitation of the TTL function is that it cannot provide more light than the maximum power of the strobe, so remember the maximum strobe-to-subject distances you can use. If sunlight dominates the subject then the TTL function becomes pointless and the strobes become a fill-in flash.

A good method of getting the correct exposure when using strobes is ‘bracketing’.

Bracketing is when you take three or more photographs of the same subject but you make a slight adjustment to the camera settings, usually the aperture, with each photograph. For example, you would take a correctly exposed photograph and then take one photograph underexposed by one f-stop and then another photograph overexposed by one f-stop. You can then choose the best result.

Finally, there is one element that often becomes a problem when using strobes – and that is ‘backscatter’. Backscatter is caused by small particles that are suspended in mid-water.

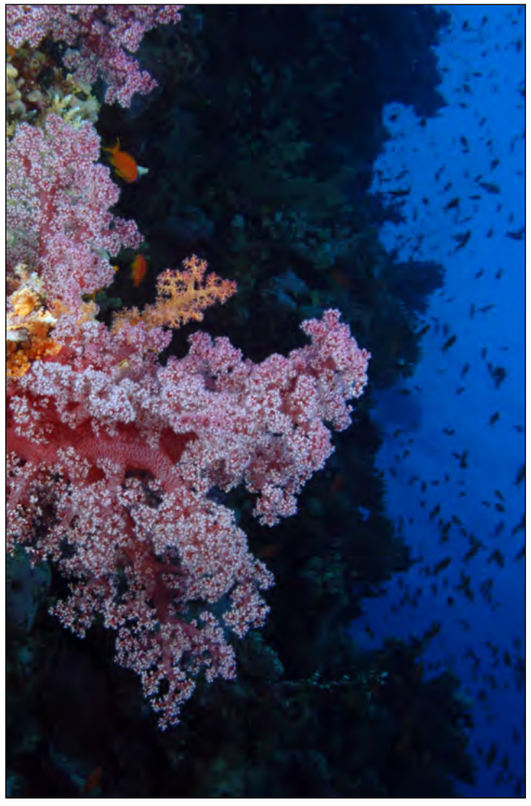
No matter how clear the water is, this will remain a potential problem. These particles block and reflect light and make your photographs look as though they were taken during a snowstorm.

Backscatter generally occurs when your strobes are incorrectly placed. To correct this problem and minimise potential backscatter you can place the strobes ahead of and above the camera or at an angle that will deflect particle-reflected light away from the lens.

Then there is always the question whether is better to use one or two strobes. When starting off in underwater photography, you will probably have one strobe and you will achieve pretty good results.

This has its limitations when doing wide-angle photography and with macro photography can cause unwanted shadows.

Ultimately, you would want to have two strobes that are identical as this opens up many creative possibilities as they can be used in many different situations.

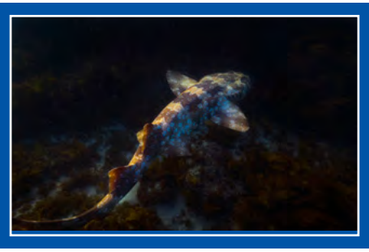


Through the Lens
Photographer

Rowan Dear

# Rowan Dear

## A journey through the Lens



Rowan Dear

I had always been an animal lover as a child, but I don't remember exactly when I became so fascinated by the underwater world, but I imagine watching David Attenborough's Blue Planet on the BBC in 2001 was certainly a good starting point.

Seeing the colours of the reef, the fish, the size of animals such as whales and sharks was incredible, and deep down I knew I wanted to see that first hand. However growing up in a small village in Wales, Uk I never truly thought it would happen.

I moved to Australia in 2010 with hopes of fulfilling those childhood dreams, but it wasn't until 2017 that I completed my diving course due to my deep fear of the ocean –I have since been fortunate enough to dive in countries like Thailand, Philippines, Belize, Mexico, Honduras, South Africa, Mozambique and Indonesia, although I carried a GoPro around on all these trips, and loved filming all the interactions I had with the animals I came across, I always knew I wanted to get into underwater photography.

After a trip to Byron Bay in March 2020: I had so many amazing encounters with leopard sharks and manta rays, and I was so jealous when I saw someone from my trips photographs and then comparing them to my low-quality videos, I finally bit the bullet and invested in an underwater housing for my camera.

So a week later, I purchased an Ikelite Housing and a Video Light for my Sony A6400 mirrorless camera.

Having been out diving around Sydney most weekends after that, I could see I was slowly getting better with my photography, but to really get to the next level where I wanted to be I knew I needed some help, so I enrolled in a 2-day underwater photography course in November 2020, down in Wollongong with Matty Smith, who was an award-winning photographer and also an ambassador for Nikon. Understanding more about settings, lighting options like strobes was a real game changer.

My favourite dive site in New South Wales has to be Julian Rocks in Byron Bay, so now armed with a camera, some knowledge and experience, I booked a trip 12 months after my first one there with the hope of this time returning with some shots I was proud of, of Manta Rays, Leopard Sharks and Turtles.

Although I know I have a long way to go, I was so happy with a lot of the shots I got and have sold quite a few images of the leopard shark in black and white and the turtle shots to people through social media.

Photography is a great way to tell a story to those who were not there to witness it themselves, the best photographers I follow on Instagram make me feel like I was there and also ignite a feeling inside of me that makes we want to see first hand what they saw.

I hope with my photography it does the same, and when I get feedback from friends or followers on my Instagram page who are addicted to waiting for my next post and seeing what strange animal from the ocean, I will post next gives me a great feeling inside.

Earlier this year I a 50mm macro lens and away I went on a whole new journey in underwater photography. Diving at Clifton Gardens in Sydney is like going on a treasure hunt to find to weird, wonderful, colourful and sometimes very well camouflaged creatures of the macro world.

I absolutely love the challenge of bringing these creatures to life and making something that may only be 2cm long appear like it's a giant and can stand up and show off its beauty to people who would never knew they existed otherwise.

I hope you enjoy my selection of photos from the wonderful underwater world.

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A weedy sea dragon taken at "Weedyland" , Shelly Beach in Sydney. 16mm 1/160 @ F8 ISO 250

A grey nurse shark, taken on a solo dive on Christmas Eve at Bushrangers Bay, NSW. 16mm lens? 1/160 @F7.1, ISO 200





Giant Cuttlefish encounters are always entertaining. Taken at shelly beach, Sydney in May 2021. 16mm with Fisheye converter. 1/160 @F7.1 ISO 320

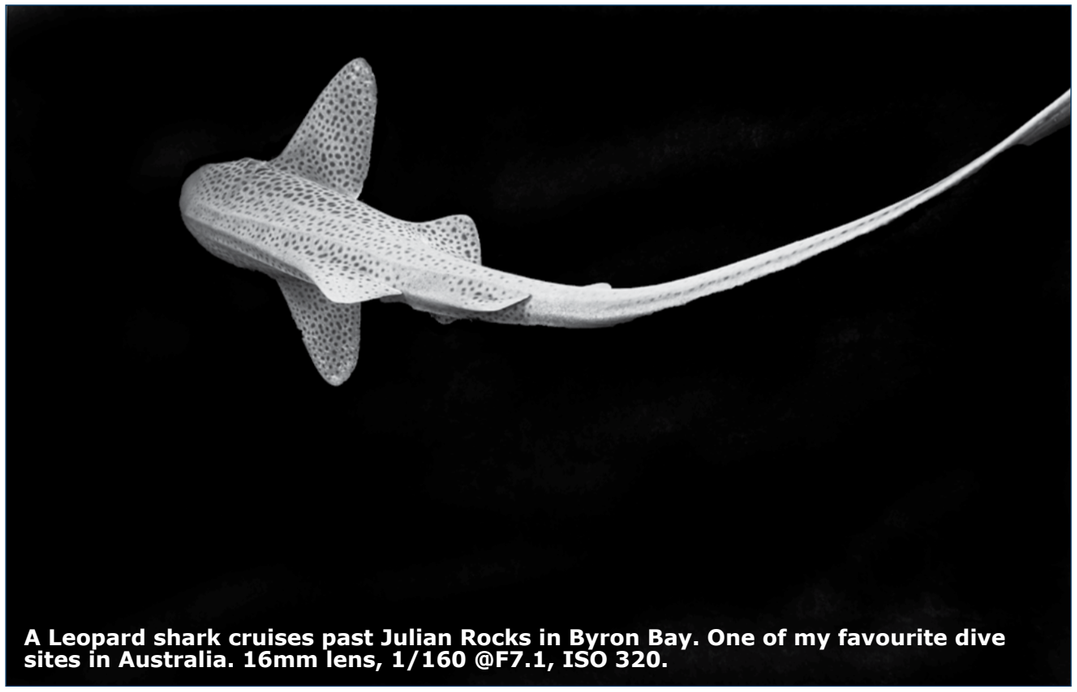
A sea turtle swims though the green water after the floods of March 2021. Taken at Julian Rocks, Byron Bay. 16mm with fisheye converter. 1/160 @F4.5 ISO 320

Rowan Dear

A close up of the amazing eyes of a Fiddler Ray. Taken at Bondi Beach. 1/40 @F11 ISO 320

A Port Jackson shark at Shelly Beach, Sydney has a little yawn. 1/100 @F16 ISO 400

Rowan Dear



A Leopard shark cruises past Julian Rocks in Byron Bay. One of my favourite dive sites in Australia. 16mm lens, 1/160 @F7.1, ISO 320.

Seals are possibly one of the most fun animals to dive with, and the seal colony in Narooma, NSW is the best place to see them. 16mm with fish eye converter, 1/640 @ F3.5 ISO 320

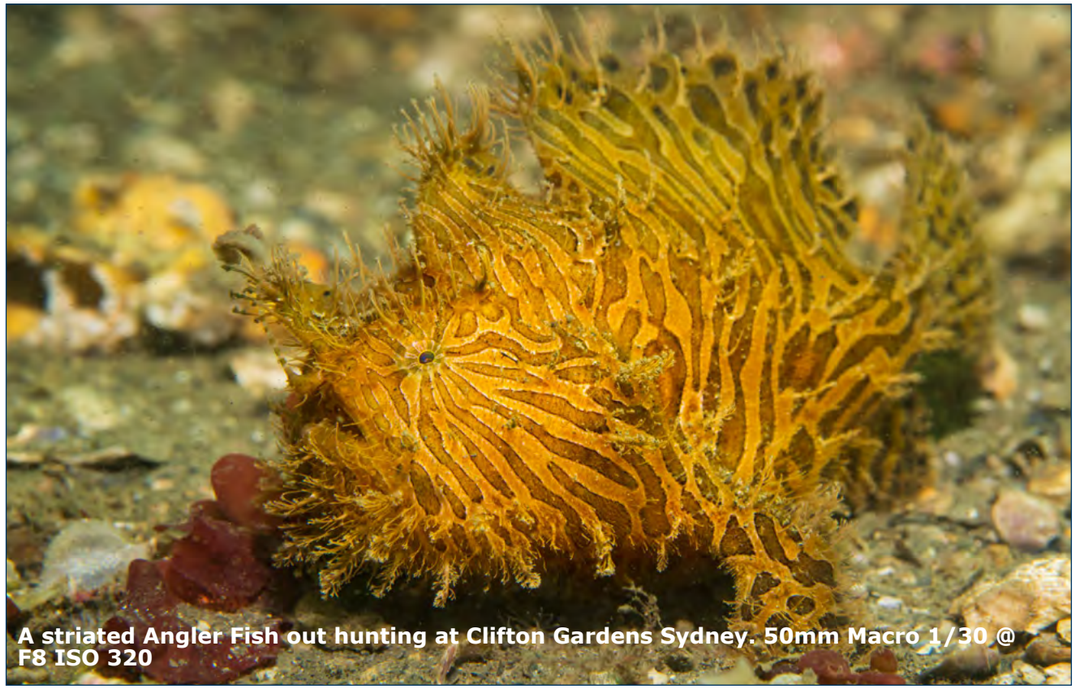
Rowan Dear

A loggerhead turtle at Julian Rocks, Byron Bay. 16mm with fisheye converter. 1/160 @F7.1 ISO 320

Taken at Clifton Gardens, Sydney. I never thought I could appreciate Nudis, but once you start photographing them it's addictive. 50mm macro lens, 1/160 @F7.1 ISO 320







A striated Angler Fish out hunting at Clifton Gardens Sydney. 50mm Macro 1/30 @ F8 ISO 320

A hermit crab coming at Bare Island, Sydney. 50mm macro, 1/80 @F9, ISO 320

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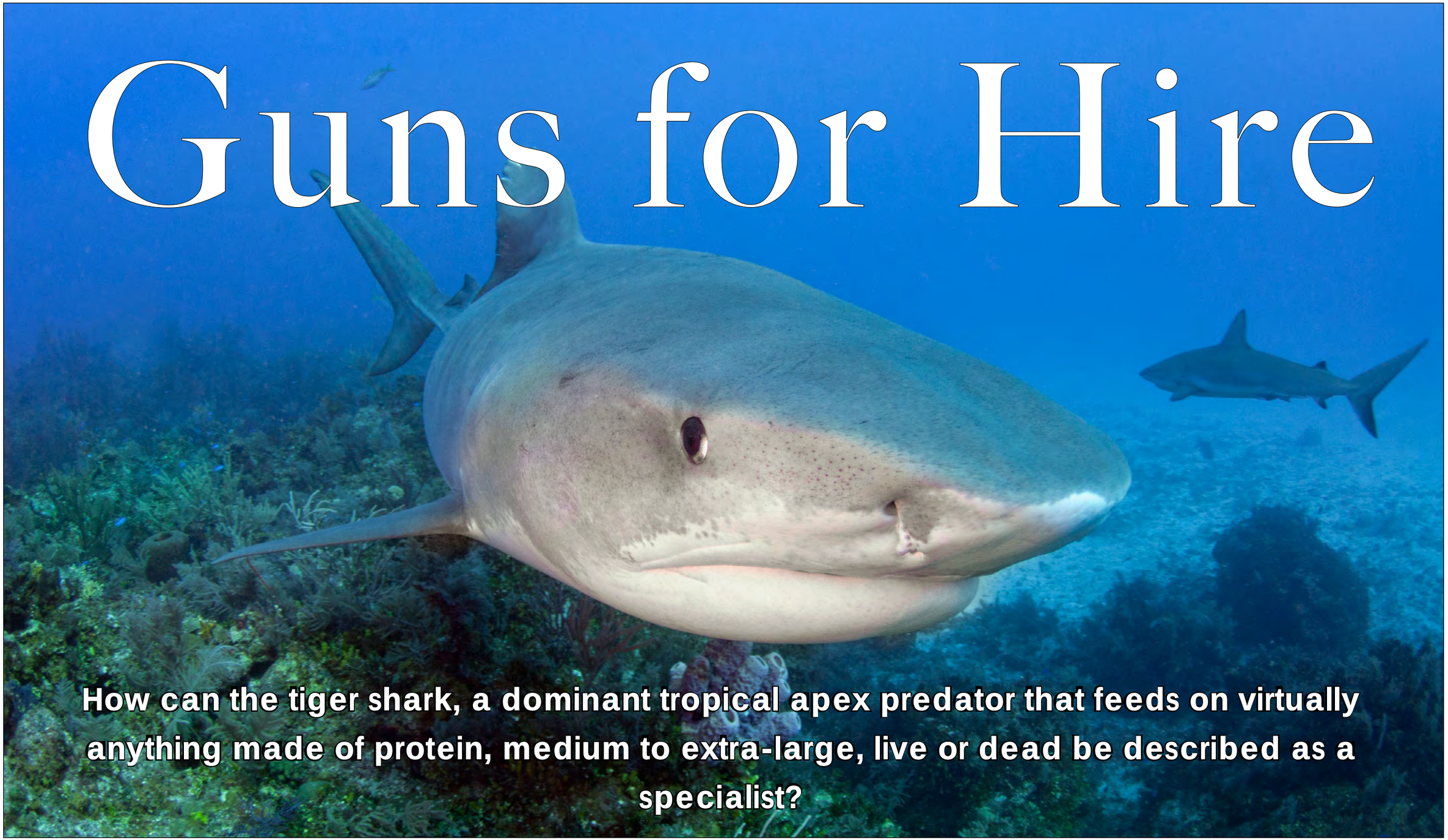
Giant Stride
Guns For Hire

# Guns for Hire

By: Laurence Buckingham & Malcolm Nobbs Photos: Malcolm Nobbs



**How can the tiger shark, a dominant tropical apex predator that feeds on virtually anything made of protein, medium to extra-large, live or dead be described as a specialist?**

By: Laurence Buckingham & Malcolm Nobbs Photos: Malcolm Nobbs

By being a "generalist" or specifically, by instantly occupying the critical apex predator role wherever it goes. With its great size and stamina, huge jaws and the ability to travel thousands of kilometres, the versatile tiger can exploit a far greater variety of prey items than sharks restricted to one habitat.

Its role as scavenger is critical too and it "takes out the trash", i.e., eat anything dead it finds, big or small, thus tidying up or "disinfecting" dthe many ecosystems it traverses.

If tiger shark populations are reduced or eliminated in our tropical seas, there will be an unforeseen but dramatic compromise to our ocean's health.

This article discusses the tiger shark itself, the results of recent satellite tag data studies, the implications of tiger shark population reductions on the ecosystems they dominate, and the worldwide threats not only to tigers, but all sharks worldwide.

The adaptable tigers are "broad spectrum" feeders eating almost anything they come across. Alive, wounded or dead -such as fish, sharks, dungongs, turtles, dolphins, birds and whale carcasses. They are easy to identify underwater with a broad flat head, wide girth, stripes that fade with age and length that can exceed five metres.

To capture and eat large prey, the tiger shark's jaw is armed with a set of 24 identical teeth top and bottom. Each tooth, unlike most sharks, has a highly oversized, serrated edge designed to cut. When the shark thrashes its head back and forth, the teeth act like a saw that can easily carve through turtle shell and fish bone like a hacksaw through metal.

Humans have five senses. Sharks have two more: a lateral line that detects vibrations in the water and the Ampullae of Lorenzini: an array of mucous filled nerve canals that detect minute electrical, temperature and

Giant Stride
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By: Laurence Buckingham & Malcolm Nobbs Photos: Malcolm Nobbs

water density changes of the smallest of muscle contractions that help sharks differentiate wounded or sick animals up close, a huge advantage for a predator.

Although slower than most large sharks, tigers nonetheless travel great distances and feed on the seasonally abundant prey in their gigantic ranges. The lumbering eating machines rely on stealth, not speed, to ambush unsuspecting quarry.

It is rare to see tiger sharks underwater in the wild. However, a handful of operators worldwide conduct shark feeds that almost guarantee a close look. The famous Tiger Beach in the Bahamas hosts a large female named Emma, an underwater ambassador that is probably the world's most photographed shark. Some of the operators that go there are now conducing satellite tag studies, the newest and most effective way to study tigers' migration patterns.

The deployment of shark tagging, i.e., putting tracking devices on or in a shark, has blossomed worldwide, especially over the past half decade. Results of Sat Tag studies, where satellite tags attached to the sharks' dorsal fin transmits data whenever the shark hits the surface, clearly show that migration patterns of individuals are highly variable, with much greater distances and depths logged than previously imagined possible.

For example, tiger sharks tagged by Neil Burnie of the Bermuda Shark Project leave Bermuda after a summer feeding session and travel southward through the 1,600 kilometres wide "Tiger Shark Highway" to places like the Bahamas, Central America, Cuba, Jamaica and the Virgin Islands, then to deep-water fishing grounds far from land and ultimately back to Bermuda's shallow reefs.

One tiger was attacked by another shark and sustained damage to its body and fin just before it was tagged yet still made an 8,000 kilometre open-ocean loop in just its first year and has 16,000 kilometres logged so far. On their return, some intrepid tigers stopped to feed in

By: Laurence Buckingham & Malcolm Nobbs Photos: Malcolm Nobbs

the SOFA (Shark Offshore Feeding Area) in deep waters of the mid-Atlantic that only one shark species, the great white, was previously known to exploit.

In the far north of the Great Barrier Reef (GBR), tiger sharks visit Raine Island in summer to feed on the dead and dying turtles of the world's largest breeding population of green turtles. Richard Fitzpatrick tagged the first tiger on the GBR at Raine Island but it was killed just three months later in an Indonesian fishing net 1600 kilometres away.

More recent studies show the tigers that visit Raine Island in the summer, scatter in all directions in the Coral Sea traveling far beyond Australia's waters, sometimes going as deep as 450 metres on their way to remote reefs and seamounts where they are highly vulnerable to overfishing. On the west coast of Australia, one tiger was tracked from Esperance on the bottom west end of the Australian continent to Indonesia and then to back to Ningaloo Reef, Western Australia (WA).

In Hawaii, The Shark Research Team publishes its satellite date live. (See http://oos.soest.hawaii.edu/pacioos/projects/sharks/ for up-to-date tracks of 23 tigers.) The results demonstrate a clear pattern showing individual migration paths are highly variable and distances travelled are far more than ever known before. These results have been repeated in all the worldwide sat tag studies that, taken together, have literally rewritten the book on tiger shark biology.

On the other side of the continent, Shark Bay in Western Australia hosts up to hundreds of tiger sharks each summer. The calves of its 3,000-strong bottlenose dolphin population are usually delivered before the tigers arrive and depend on a strong family unit for protection. Seventy-five percent of adult dolphins, many of which are protective mothers, have shark bite scars.

Inattentive mothers have little chance of keeping their calves alive. Tigers often use the rich sea grass beds for cover to attack from behind where the dolphin's sonar is ineffective. Large numbers of calves of the 10,000-strong dugong population (world's largest) are also taken every year. Green turtles and dugongs are unwilling to risk grazing in areas patrolled by tigers and that allows seagrass beds to flourish in the pristine Shark Bay ecosystem -- a classic example of how tiger sharks, apex predators (top of the food chain) also acts as a "keystone" predator (critical to the integrity of the habitat/ecosystem it is in). After each summer, most tigers haul off to distinct and distant ecosystems.

But what if tiger sharks become rare or absent in the tropics? Just look to America's Yellowstone National Park for a well-documented example of removal (and then reintroduction) of the grey wolf, a terrestrial apex predator and keystone species.

Its removal heralded a 70-year era of a compromised ecosystem or a "not so nice" Yellowstone. Deer ran amok and stripped much of the park's vegetation. Yet when only a small number of wolves were released into the park 70 years later, their impact on both the wildlife and the geography was felt immediately.

Like the dugongs of Shark Bay, deer would not dare go into dangerous spots, in this case newly un-grazed canyons and gorges where forests immediately sprang back to life. Beavers set dams (another keystone species but not apex predator) that recreated the once lost wetlands habitat where animals like otters, not commonly seen for generations, reappeared.

Trees quintupled their height in just six year, stabilized soil erosion and thus improved stream water quality. Coyotes were controlled leading to more rabbits and rodents, which led to more hawks. Songbirds moved in. And on and on it cascaded with a healthy environment ultimately being restored.

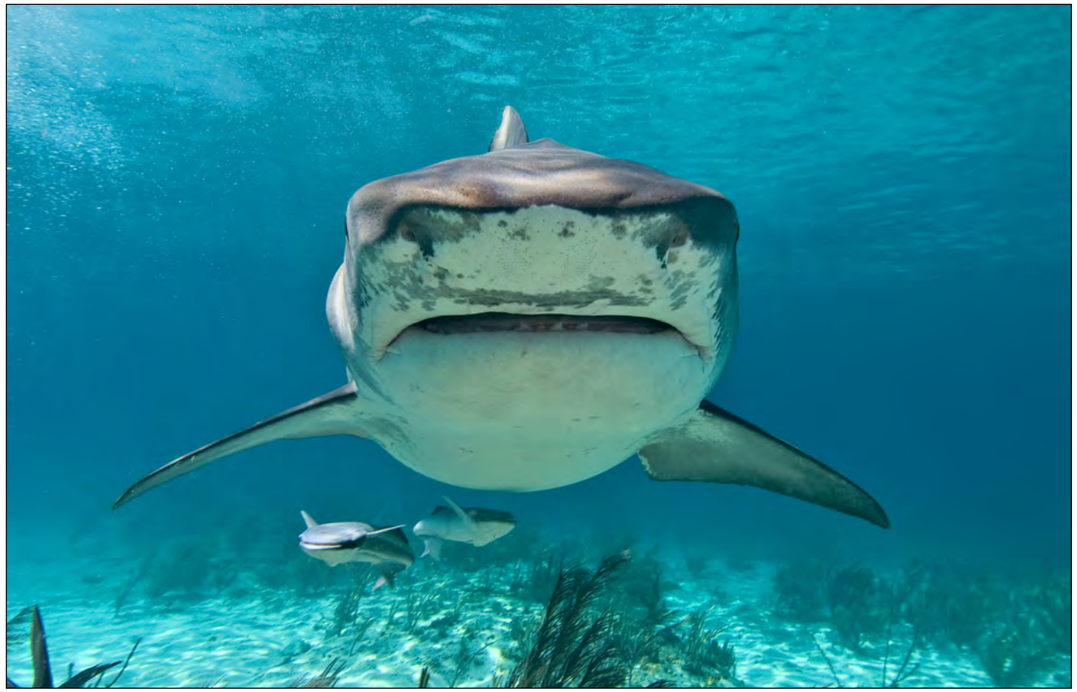
The intact and robust ecosystem of Shark Bay provides an example of a "before" scenario. Hopefully there will be no "after". Tiger shark removal could easily lead to dugongs overexploiting the sea-grass beds that not only are a critical habitat for many animals like rays and the dugongs themselves but a nursery for a large number fish species that could not survive otherwise in the Bay. The consequences of the absence of tigers cannot be predicted exactly but compromise or collapse of the ecosystem is a safe bet.

Unfortunately, the International Union for Conservation of Nature now lists tiger sharks as "Near Threatened". Some species are in even worse shape like the great white, "Vulnerable to Extinction" or the great hammerhead, "Globally Endangered". IUCN also reports a third of open-ocean sharks are threatened with extinction. Tiger sharks cross so many borders in their epic journeys that international coordination is required for the species' survival. Like all sharks, they are killed almost exclusively for their fins for shark fin soup.

There are other threats to tigers worldwide. From January through March, 2014, a highly controversial shark cull using drumlines (where hooked bait is attached to a large drum and deployed close to the shore) was started by the Western Australia government in response to a recent spate of shark attacks attributed to great white sharks. Although 64 tigers were ultimately killed, not a single great white was.

In Western Australia, thousands-strong demonstrations for and against shark culling pitted people who understand sharks' value vs. people who believed by that without a cull, innocent people would die. Politicians were in a difficult spot since some thought this would help tourism and none wanted the dreaded "blood on your hands" label. What was not controversial was that the cull did not work. The program, scheduled for three more summers starting in 2014/15, has been discontinued after cooler heads prevailed.

In Australia's eastern states of New South Wales (NSW) and Queensland (QLD), shark nets (and drumlines in QLD) have been deployed part or most



By: Laurence Buckingham & Malcolm Nobbs Photos: Malcolm Nobbs

of the year since the 1930s and 1960s respectively. Thousands of sharks were taken and the bycatch has been appalling with turtles, dugongs, dolphins, rays, non-targeted shark species and even whales killed.

The programs are seen as unconscionable to many and unsustainable to scientists, especially since there are far less harmful shark control methods than nets and/or drumlines. Nonetheless, the greatest threat to shark populations in Australia and worldwide is still, by far, overfishing.

The pressures on populations of sharks and fish worldwide are relentless. By all estimates including a multinational study by the world's leading shark researchers entitled "Global Catches, Exploitation Rates, and Rebuilding Options for Sharks", at least 90% of all large sharks and fish in the oceans are already gone yet still, approximately 100 million sharks are killed annually.

That translates to a kill rate of roughly one in 15 all the world's living sharks per year. Since sharks take many years to mature sexually, have a long gestation period and deliver usually only a handful of "pups", they could be wiped out completely in as little as a few decades if this trend continues.

As Mike Heithaus, one of the authors of the study notes, "In working with tiger sharks, we've seen that if we don't have enough of these predators around, it causes cascading changes in the ecosystem that trickle all the way down to marine plants." Or as Australia's Dr. Werry said about the results of his Coral Sea sat tag study showing tigers are now heavily overfished outside Australia borders, "…any impact on their populations isn't really seen until, in many cases, it is almost too late.

And obviously that is one thing we can't afford for this species if we are concerned about maintaining the health of our oceans and the health of our coral reef ecosystems."

It is no surprise then that anyone who researches or works with tiger sharks inevitably realizes the overwhelming need for their protection. Satellite data that shows tigers travel much farther than previously known, i.e., over many national borders, proves unequivocally that coordinated international conservation efforts are required for their protection.

The tiger's role not only as apex predator but keystone species for the tropical seas means its removal will compromise our oceans in unforeseen yet almost certainly catastrophic ways.

The best things individuals can do is vote, contribute to conservation efforts, protest when required, send letters and emails, make calls to legislators or take a trip to see some sharks.

And don't eat shark fin soup! Without sharks, we will lose a large part of the world's natural heritage, 400 million years and running. Without tiger sharks, we will no doubt lose the health of our already threatened tropical seas.

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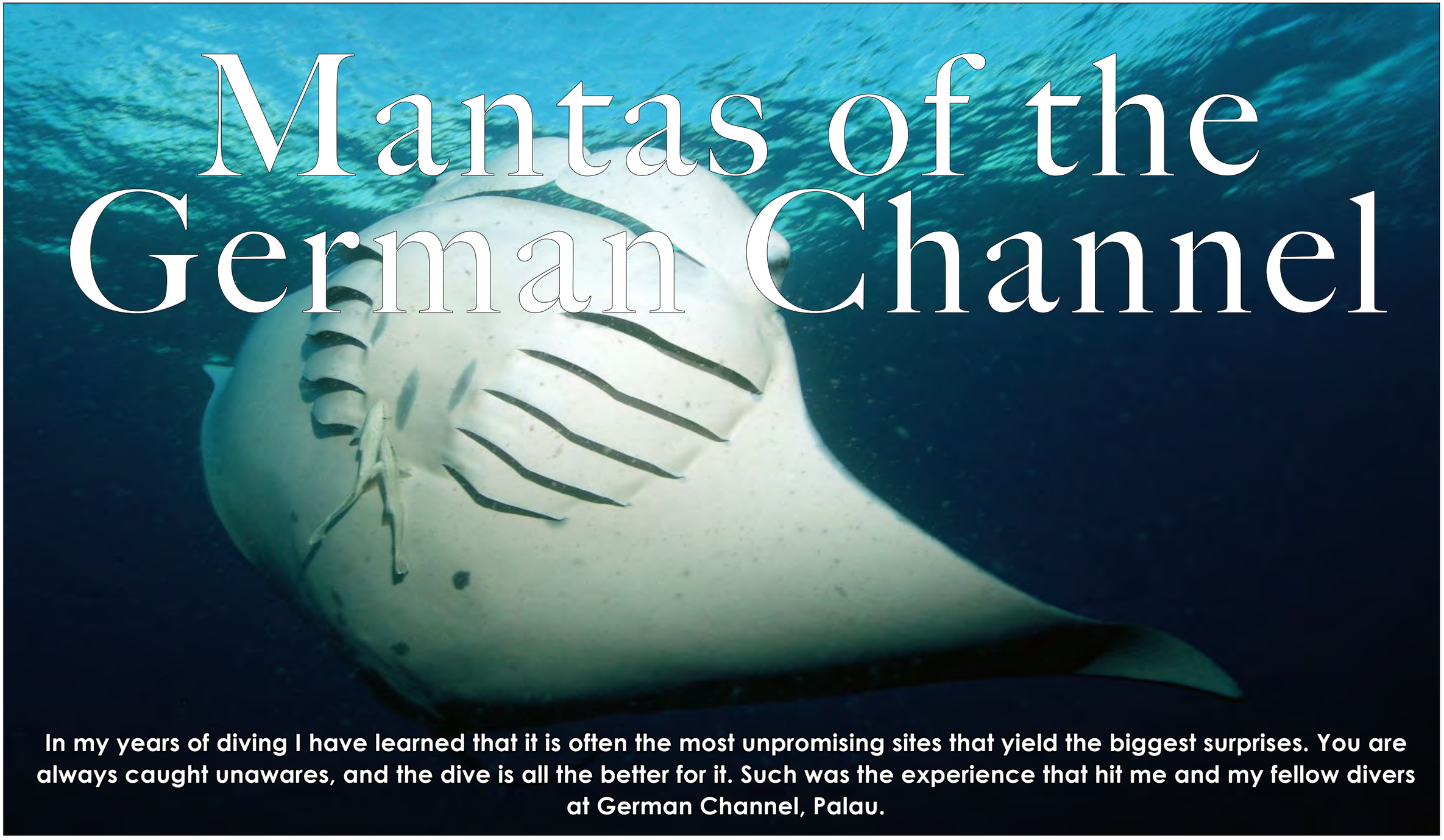
Giant Stride
German Channel

By: Linda van den Heever

# Mantas of the German Channel



In my years of diving I have learned that it is often the most unpromising sites that yield the biggest surprises. You are always caught unawares, and the dive is all the better for it. Such was the experience that hit me and my fellow divers at German Channel, Palau.

By: Linda van den Heever

Palau is the dream destination of any diver, and if it's not, it should be. And as with any dream destination, it has its legends: Ngmelis Wall, Blue Corner, Jellyfish Lake. We dived them all, and it was magnificent.

So when Troy, our divemaster, announced that we would do our next dive at German Channel we were all slightly miffed. Built in the early 1900s, when the Germans blasted through the reef to create a direct passage between Koror and the southern islands, the channel is used extensively today by local dive operators as a convenient shortcut to the outer dive sites.

The channel itself is too shallow to dive, but at the outside mouth it slopes down to about 25m. We had heard that Mantas visit the local cleaning station there, and we imagined the occasional fly-by, but after the wonders of Blue Corner and Peleliu Cut, we were less than excited.

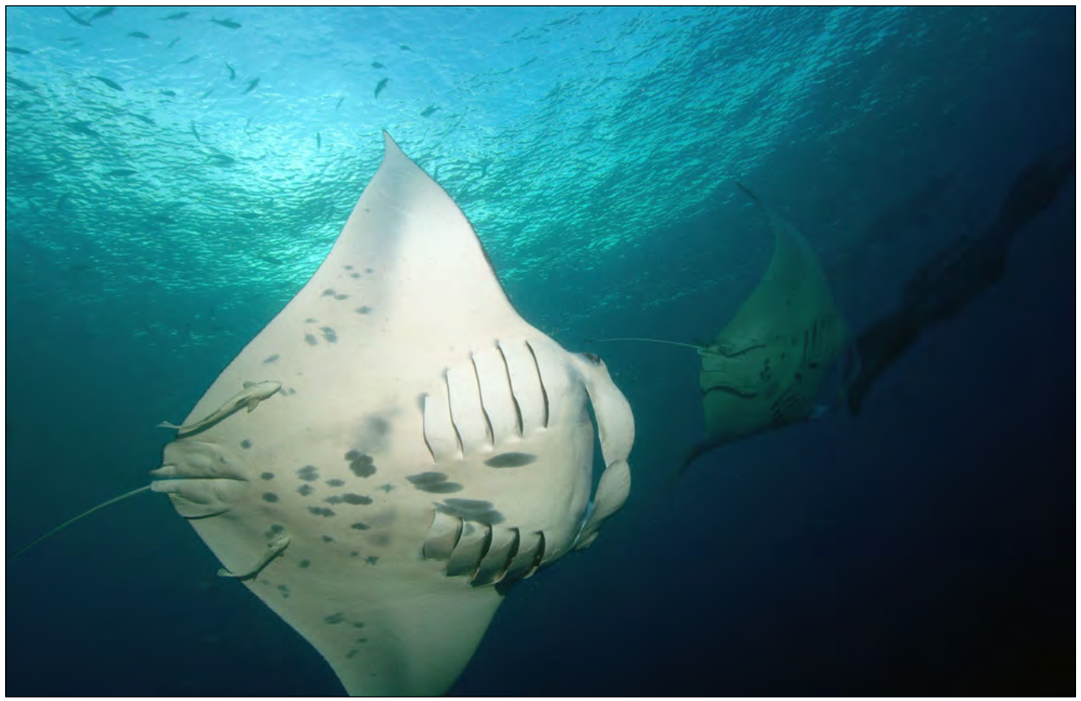
It was late afternoon, our fourth dive of the day and boats were everywhere. "We look for Mantas," said Troy. "Yeah right," I thought. "With all this traffic? Good luck." I was tired, my ears were nagging, and I wanted nothing more than to stay on board and dry out.

So it was with a sort of fatalistic acceptance that I kitted up, less than chipper but too afraid that I would miss something. That flaw served me well.

We hit the water and floated down on a sandy bottom near the cleaning station. No Mantas in sight. Resigned to my fate, I settled on my stomach and stirred up the sand for some local inhabitants.

I amused myself in this way for five minutes, when Troy all of a sudden headed off into open water, motioning furiously for us to follow.

We swam through milky water until we eventually joined a small group of



By: Linda van den Heever

divers who were staring intently at a massive column of snappers, spinning around in the distance. All of sudden the school parted and two Manta rays shot into view. Down and up they went, twirling around each other, as if they were dancing. They flew past us and disappeared.

I had a moment to turn around before they were back, but this time there were four of them.

They were above us, in perfect flight formation, before they dove down among us – tumbling and turning, swinging to the right, then the left – in perfect rollercoaster formation.

They disappeared from view again, but were soon back, and this time there were five. No… six. My heart pounded. My computer screamed.

I was shooting towards the surface, all experience flying out of my head as I gaped at the spectacle before me. I got swallowed by the school of snappers, who by this time had been joined by some larger, darker cousins, all feeding off the same surge of plankton that had attracted the Mantas.

I fought my way out and watched the Mantas shoot around the school, amazed at the speed they so effortlessly generated with a mere stroke of their wings.

Sometimes, as if acting on signal, the Manta train would disintegrate and each of them would tumble around on its own. At one point the leading female, over 4m from wingtip to wingtip, swam towards me, her mouth pulled wide. She was a metre from me,

I could see into her mouth and through her open gills. My eyes filled my mask. Just as she was about to hit me, she arched her back and shot towards the surface where she arched again and completed a perfect reverse dive back towards the bottom.

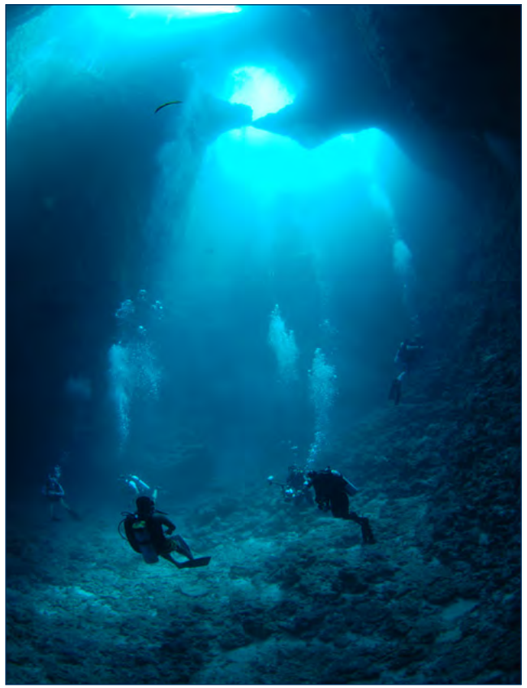


Here the group reformed the line and trailed up and around and through us in a never-ending dance. They were not just feeding, they were having fun.

This went on for an hour. I was at 6m then three. Eventually my air ran out, but still I couldn't get myself to go, so I bobbed around on the surface, unable to stop staring at the acrobatic Mantas below me.

But the zodiac was hovering, and before I left I executed a reverse flip in honour of the leading female, albeit a bit less elegantly. I floated back towards the boat – a school of tiny Needlefish floating with me. We eyed each other quietly.

Below us the Mantas were still spinning and curling, and I remember thinking, "this is heaven."



By: Kurt Storms

# Denée

## Belgian black marble mine

In the past, a lot of black marble was mined in Belgium, especially on the Namur side. The mining industry was an important pillar in the past. The black marble was spread worldwide. One of these mining sites was the black marble mine Denée.

Denée is a Belgian village, which since 1977 is part of the municipality of Anhée in the province of Namur. The abbey of Maredsous is nearby.

The Carriere is a well-known mine among Belgian/Dutch cave divers.
Once I also took my first steps in cave diving here. This mine is an hour's drive from my house, so I regularly spend some time here with my buddy Willem Verrycken.

However, the mine is closed off with a fence. To get access you have to be a member of the VVS or UBS, I am a member of the VVS (Flemish Association of Speleologists) through my speleoclub Sience Explorers.
Today it is time to take my wife Caroline and former student Nico into this beautiful underwater world. Both have recently become members of the VVS, but have never dived here before. And at their request, we went for a day trip today. I agree with Nico that he will pick up a key so that we can go in. The key will be in a locker at the VVS office. I used to be the key manager, but due to changes in the regulations this was no longer possible.

We arrive at 10 o'clock, and as usual Nico is right on time and eager to get to the car park. We drive into the narrow corridor so that we can park close by. Before I give the briefing on what we might encounter, I laughingly show them the descent we must take to access the mine. I can already hear sighing voices, do we have to go down here, and up again later? That is going to be a struggle.

After the briefing, we load everything, with speleo bags to make transport easier. Access to the mine is via a steep descent, for which we use a rope to keep us stable, it is sporty, especially later when we have to go back up. There is a lot of rubbish down there, even though two years ago they removed two containers with rubbish, but you can still see the remains, car tyres, fridges that were dumped here in the past.

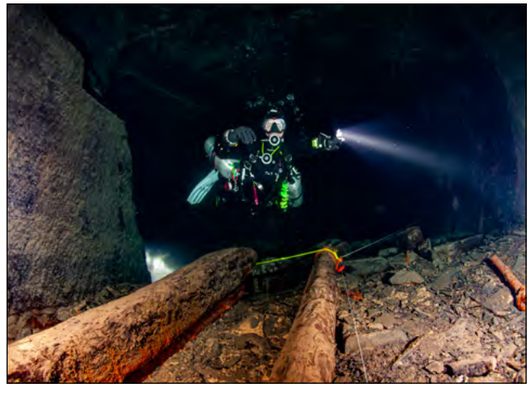
Even a small car wreck was once brought down here. After a few trips up and down the hill, we are ready to change and put on our dry-suits.

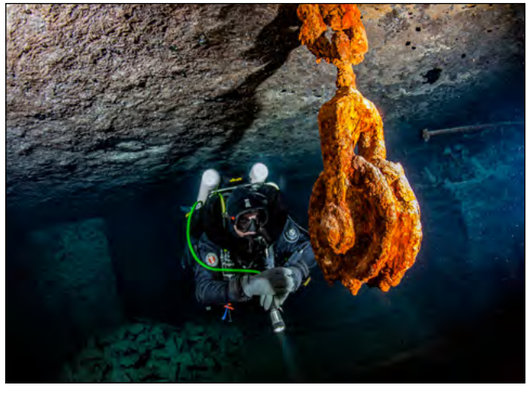
Once ready and at the water's edge, we get ready. S-drill, go over our dive, and our heads disappear underwater for the bubble check. We dive in 1 team of 3 divers.

The corridors are large and the water is very clear, so visibility is enormous.
After about 50 metres we come to a fork, here I take the right side.

We pass some remains such as a large wheel. I sign to pose here for a moment so that I can take some photos. Then we continue down the corridor and here and there I turn around to take a photo and check that everything is OK with the team, especially since they are here for the first time. We stop at a familiar pulley hanging from the ceiling. It's unimaginable how people used to get the slate up here.
After about 30 minutes, we return to the exit. Here I am overwhelmed by the beautiful words and wonder. After a short break of about 5 minutes, we leave again and take the left passage, which leads to a large room, from where you can go up a ladder through a chasm and out into another part of the mine.
We don't take the choke today because Nico is with the rebreather. I let them look around the room and make a sign to them, showing them a bubble in which we can put our heads a bit. I can see from their eyes that both of them love it.
After a minute or so, we disappear completely underwater again and I give the sign to go to the exit. After the dive, everyone is satisfied, and we start the journey up. We pull ourselves up via the rope, blow out briefly on the way up and then, panting, we reach the cars. We have to do this several times. But the satisfaction of our dive eases the pain.

Denee is a very beautiful mine, but very sporty when it comes to the transponder to and from the water's edge. It is also the ideal place to train all your skills and moods. Because you don't do cave diving in one day. This is a process of years, and a lot of training. But for me, diving under a ceiling remains the most beautiful thing there is.



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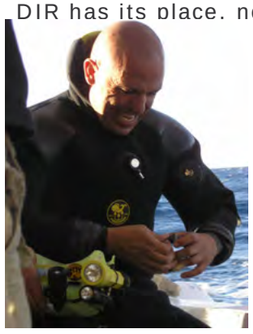
**Nuno Gomes**

I have to say that I have very strong reservations on a number of points!
DIR has its place, no doubt. The system is certainly useful and it has reduced the number of fatalities in the caves in Florida (USA), from where it originates. It standardizes equipment configuration and techniques for cave diving in the Florida and Mexico caves (both caves are quite similar in nature), it is therefore good, specially for the beginner cave diver, in those areas. It is a very good starting point for a technical diver.



Organisations use some of the Hogarthian principles (DIR), specially in the Advanced Nitrox course which is basically a Beginner Technical Diver Course.
Caves throughout the world are very different in nature (depth, cross-section, visibility, silt, water flow and accessibility). So, "one size" does not "fit all"!!!! Just like a Mountain Bike can not be used in a Racing Track one can NOT use the same equipment configuration and swimming techniques for "All Occasions".
For example some caves have a small cross section, independent side mounts are the ONLY option.
When it comes to diving in the Sea, it is completely crazy to dive in the Sea like you were diving in a Florida cave. What about Ice Diving? The same applies, the configuration and techniques MUST be different. The final problem is that the DIR system relies totally on the buddy system for survival, we all know that specially in Technical Diving your buddy is there for you but it is really up to you to self rescue (even with the very best of buddies). I know about it from experience and I am very careful in selecting buddies.
In closing "Do it Safely" rather than "Do it Right", use your Brain do not just flow blindly like a Sheep!!!

**Barry Coleman**

Once upon time, there was a quest to keep an open mind and look for improvements to make diving safer. The quest included a proper attitude, always consider people's opinions and how they have come to their conclusion, and if there are points that make sense and it applies to your circumstance then include them. The goal was to reach perfection, which we all know is impossible, as there is one constant in life, which is change.

To express this quest the apophthegm "Doing It Right" (D.I.R.) was born. To this day we aim for this.Like all good things they get collected and distorted to "Doing It Ridged". Perhaps after time it will become "Doing It Relaxed."
Whatever the changes, if the opinions relate to you and it applies to your circumstance, then include them.
Although always keep to original goal, of keeping an open mind!

**Pieter Smith**

No I don't!
The concept of a standardized, prescribed method/ action/configuration has its place in the world, and that is for specific reason(s). Military is a good example, where you train same way, react on same command and uses the same equipment. It's a highly intense team effort.
Applying that to diving is in my opinion wrong. Diving, although done in groups and buddy pairs, is in essence an individual action / sport. DIR may work for certain individuals – who may feel inferior in his/her own ability / competency to dive; especially in technical diving.

I belief in my own ability and competency to dive; especially technical diving …… & more so cave diving. I want to configure my equipment that suits me best / I want to feel as competent and easy with my configuration as possible – that means that it may differ from person to person as we are not the same. When I dive I want to feel fully in control and confident with my equipment.

I also respect fellow tech divers configuration & I still learn regularly from other divers on their configurations – that is development & new technology! Good pre-dive planning and proper buddy checks will address potential incidents in water. Although divers may configure their kit differently, it is still to a degree the same & enough so to react effectively in stress situations.
Dive the way you feel best!

**Pieter Venter**

In my opinion the DIR system have some good aspects but is fundamentally flawed for technical and cave diving.
The good aspects are standardised equipment and procedures. This is especially good if you dive in a team. However, for certain life threatening situations, it relies on a buddy system.
Its equipment configuration prescribes an isolation manifold which has failed and will fail again catastrophically.

Also, any gas loss, not detected, will all be lost because the cylinders are in communication, leaving you with no gas to breath. Deep in a narrow dark cave, wreck or even open water with a buddy filming or task loaded (all technical dives are task loaded) it is easy to miss a gas loss failure or poor gas management. If a gas leak is detected a contortionist manoeuvre isolates the gas cylinder. Even if regularly practiced, this manoeuvre can be impossible or time consuming to perform under certain circumstances.

Then, it is up to the buddy to provide sufficient gas and manage a no doubt stressful and often life threatening situation back to the surface. Relying on a buddy for more than companionship is irresponsible on technical dives. Not only do you endanger yourself but your buddy as well. Technical diving is inherently dangerous and personally, I prefer not to endanger myself or my buddy unnecessarily and dive, from a critical equipment point of view, as if I have no one watching me. Self reliance first then buddy reliance.

This does not excuse a diver from not being a vigilant buddy. This can only be achieved with two completely independent sets of equipment. Think for yourself about your equipment configuration and don't just sheepishly follow the loud, often foul mouthed, charismatic preaching's of the irresponsible founders of the DIR cult.

80% of Balinese work in tourism so even if you don't book with us but want to support the Balinese. Plan a trip now and you'll be helping

*Menjangan Island, Bali*

**As "The Rise of Omicron" puts a dampener on everyones lives and we strive to survive, awaiting on international tourism returning. We'd like to take this opportunity to again say thank you. Thank you to all the Sea Rovers Brethren who have helped and continue to help us in our efforts to support our crew through these difficult times.**

**If you wish to join our global fraternity of Sea Rovers Brethren then please consider booking your Bali Adventure today. Big discounts, no fixed arrival date required. And your deposit will go towards supporting the crew and their families. Or purchase an open-ended activity voucher, credit towards your next dive holiday. For every $50 purchased we'll throw in an bonus $10 in credit.**

**Again from The Captain, Commodore and Crew, we thank you.**

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By: Bryan Hart

# Being a better Dive Master

Unfortunately, after the completion of a Dive Master course, the opportunity to lead dives on a regular basis becomes few and far between. The reason for this, is that it is very difficult to get a dive operator/dive school to appoint you as a DM for a dive, without knowing who you are. Sure, you are a DM, but is that dive operator/school prepared to risk upsetting their client base for the sake of you getting a free dive?

Here are some tips on how to increase your bottom time as a DM:

**Empathy**
Put yourself in the dive operator's shoes. Whereas you may not rely on the dive industry to generate an income, the dive operator does! He has worked hard to get a client base and even harder to retain this relationship with his customers. As a Dive Master, you are effectively working for the dive operator and receiving a free dive in payment for your services. Therefore, conduct yourself in such a way, both above and below the water, so as to ensure the dive operator's customers have a good experience.

**Briefing**
Before giving a briefing, talk to the dive operator about the divers in your group. The dive operator will more than likely know the level of competency of each of the divers, and give you valuable insight on how to present yourself to the group in your briefing.

Ask the dive operator about the current sea conditions – visibility, surge, current, water temperature. Finally, get confirmation from the dive operator as to where the dive is going to take place – a wreck or reef – and if there are any specific things you are required to do on the boat.

With this information in mind, you can give a briefing that will suit the needs of the divers you are going to lead. You can then communicate this information to the group, thereby ensuring that the divers are aware of the conditions, and how the dive is going to be conducted. Remember – never make assumptions.

**Don't get lost**
One of the worst things that can happen to a DM under water is losing a diver, or even worse, the whole group! On popular dive sites, it is not uncommon to cross over groups whilst on a dive site.

Bearing in mind that most of the people you are leading underwater are probably diving with you for the first time, it is a good idea to differentiate yourself underwater.

**Some methods include:**
•White paint on the underside of your fins in a particular pattern.
•Your name in white paint on the underside of your fins.
•A personalised rash vest that you wear over your wetsuit.

It is important for you as a DM to point these identification features out to your group so they know what you look like underwater.

**Additional gear and configuration**
As a dive master, you are effectively a solo diver. Although the rest of the group is effectively your buddy, it is important that you are self sufficient. Some important pieces of equipment that will assist you include:

* A reel: It is advisable to have your own reel that has at least 50m of line on it. The reel should have a ratchet system that allows you to descend and ascend without any risk of line entanglement.

It is advisable to have a brass or stainless steel dog clip in order to attach the reel to a D-ring on your BC. This allows you to free up your hands during the dive and not lose the marker buoy should you need to assist any member of the group during the dive.

A bungee cord is an effective way of reducing the jerking that can take place as a result of the Surface Marker Buoy being pulled through a swell – just make sure that it is strong enough not to snap under pressure.

* Back-up reel: A back-up reel or spool can be used to deploy a Surface Marker Buoy. In a strong current you will be forced to peel off most of your line in order to get to the bottom and keep with your group.

A back-up reel can be attached to the primary reel in order to take a bit of tension generated from the Surface

By: Bryan Hart

Marker Buoy. (In a strong surface current, the rest of the group will be able to swim with ease, whereas you as a DM pulling the marker buoy could be dragged in the opposite direction to where you want to be going on the reef).

* Compass: If you are new to a particular section of reef, the skipper can give you a bearing to swim on which will enable you as the DM to hit all the highlights of a reef

* Dog clip for your BC and weight belt: In order to get back into the boat, a skipper or fellow diver needs to take your weight belt and pull your rig out of the water. Clipping your BC and weight belt onto the grab rail of the boat, whilst on the surface, will allow you as a DM to get onto the boat and retrieve your own gear – thereby assisting the skipper and also being in a prime position to monitor any potential emergencies.

* Fin bag: A fin bag allows a DM to carry fins, mask, gloves, snorkel, Japanese spit (anti-fog), O-rings, cable ties, a spare mask and a bottle of water. As a DM you may not always have time to ponder over where your gear is – it is therefore best practice to have a bag that has everything inside.

* DV configuration: Technical divers and DIR divers are trained to offer the primary DV in the event of an out-of-air situation. An extended LP hose on the Octo or your Primary Regulator will allow you to comfortably and safely assist a diver in an out-of-air situation. Configure your gear in such a way that either you or a diver in an out-of-air situation can easily access your Octo.

* SPG: Position your SPG so that it is visible at a glance. By attaching a dog clip to the SPG console, you can position the gauge on your BC using one of the D-rings.

* Torch: Below 15m everything appears as blue. A dive light will allow a DM to first find interesting things during the dive, but also signal the other divers and highlight the true colours of the fish and underwater topography.

**Additional training**
As a DM, you may be asked to take a second dive. You may not have the privilege of three hour SIT time as well as being able to dive a shallower profile on the second dive. Diving on Nitrox can increase your personal safety and is highly recommended.

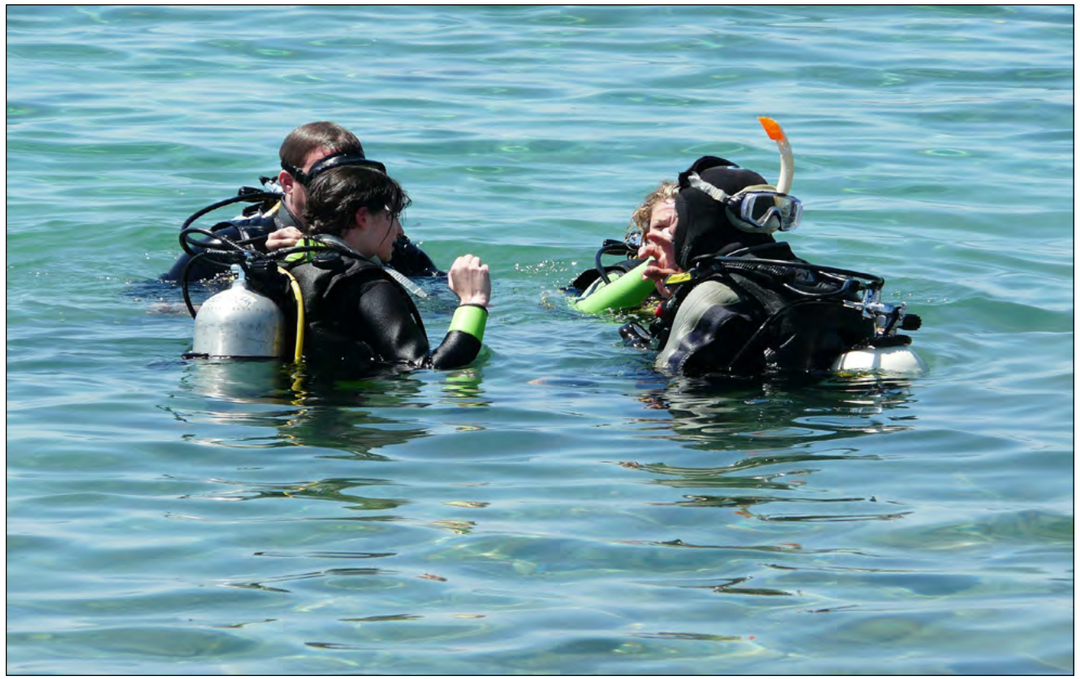
**Fish identification courses**
Educating yourself on identifying fish and corals, as well as relationships that occur underwater, can really make diving more interesting for both yourself and the group.
By knowing where to look and what to look for, you can point out certain things underwater and discuss them afterwards. Books with photographs are useful in assisting you identify fish and other sea life, while any fish identification or naturalist course will be of great use to you as a DM.

Being a dive master is not just about getting a free dive – only experience and further training will make you a better and more confident dive leader.

By taking both the dive operator's needs as well as his diver's needs into account, you can secure yourself more bottom time with the marker buoy in hand.







# Tech Training

By: Christopher Chellapermal

Taking a new Tek course is always exciting, you have new piece of equipment to play with and a challenge to look forward to, but sometimes we live in a location where the water can be just little bit refreshing and while, yes, you can gear up and sign up for another course and use a dry suit, despite going in full body armor, you still brace yourself as your about to jump (I know that feeling all too well!).

I was fortunate enough to have Antoine Martin from Bali Dive Trek in Bali invite me for a training on the Triton CCR (closed-circuit rebreathers). For many reasons, this was an MCCR (manual controlled closed circuit ) that had caught my attention for a while and one I really wanted to get my hands on. I did not have to be asked twice, and was quickly en route to his resort in, ready to give the Triton CCR a go!

While recent events have reduced the accessibility to activities in Indonesia, with the right paperwork, it is normally easily accessible and no matter what, Bali, remains a superb location. With stunning landscapes from the surf to the mountains, incredible culture, fantastic food,

there really is something for everyone in Bali.

Bali Dive Trek. The resort is located right outside a small city called Amed. This charming touristic town is a hot spot for divers with many bars and restaurants illuminating the beach in the evening. Despite being a diver's heaven, it is not as popular as Tulamben and it is a little more relaxed than the Gili islands. Amed also boasts one of the few sand beaches in the area, which is always a good thing to know!

The resort is well-equipped, and the facilities are comfortable with a big swimming pool in the middle, a restaurant with really great food, where I for one ate very well. The daily special is regularly alternated, and the menu has a nice diversity. A chill out terrace is right above, with a bar to relax before or after the meals. The facilities of the resort are well thought out, rooms are comfortable, the ac's are working nicely, and the finishing's are quite good for Indonesia – you can tell that Antoine has tastefully decorated the resort.

The dive center is, of course, entirely equipped with recreational diving gear, but also has a wide selection of sidemount, twin tanks and a selection of ccr's available. All that you could need for rental is available – including DPV's (Diver Propulsion Vehicles)!

Most of the dives leave from the dive center - small trucks carry the divers and the equipment and head straight to the dive sites. BDT will take you to the Liberty Wreck, but it will not only limit itself to regular dive sites as Antoine knows all the local reefs like the back of his hand. This is particularly true when it comes to Amed. For the most experienced divers, he can take them on dive sites with strong currents - on these sites, if you are lucky, you could have a chance to come face to face with mantas. Of course, while not infrequent this is still a matter of chance (as always with wildlife)!

This area is totally unexplored by other operators and is an open aquarium with schools of Trevallies, Barracudas and Dog Toothed Tuna. This is till now the best dive I have done in Bali, completely off the beaten path and away from the common Crystal Bay and Liberty dive site, which while are great locations, they aren't a place I enjoy diving every day given the popularity of the locations and how busy they can get with other divers.

The dive center is an IANTD and SSI facility, offering the entire curriculum from recreational to the pro courses and also offers most of the SSI XR curriculum. They also offer the entire IANTD Curriculum. If Antoine has acquired extensive knowledge on diving in this area, he has also, through time, gained a vast experience in teaching. This can only be the case when you train with incredible trainers like Marc Crane or Christian Heylen, both of them very well known for their CCR expertise and in their respective fields.

During my course with Antoine I was so impressed by his availability, he had no issue taking extra time if required so that I would feel comfortable on the machine. I came to BDT with a new wing and Antoine helped me out to customize the wing so that it would fit perfectly with the CCR.
The courses are not rushed, and Antoine purposely takes small groups of students to ensure that he can really focus. Antoine is rigorous and has expectations from his students, but we still managed to have a good laugh throughout the course and overall it was a really fun experience.

There are quite few CCR you can train with at Bali Dive Trek; you can choose to train on an Ap, on a Kiss Sidewinder or on the Triton. These three machines are all excellent, and I will give you a detailed review on the Triton below.

In addition to CCR, Antoine is an incredibly knowledgeable Side Mount trainer - he has the ability to tune your harness and wing for you during your training, and of course there is also the typical Tek Twin Tank: Training or DPV, which can be quite useful if you desire to explore for mola-molas I have had the chance to try a few different CCR's over the years including Megalodon, Ap, Dolphin and Submatix.

The machine turned out to not only be reliable on paper, but in fact, to be the most reliable MCCR I have ever seen and potentially a « bullet proof » system.

It's best-selling point is its ultralight portability - it is by far the ultimate travelling ccr that permits you to travel easily, taking the ccr with you in the cabin. There is no more stressful feeling than those frightful minutes waiting for your CCR suitcase to appear on the conveyor belt!

In terms of performance the light weight is not at all a handicap, as a matter of fact the super simple and streamlined system is why I call this system a bulletproof CCR. It has very few electronic components and can adapt to all kinds of diving - deep, cave or expedition. Its configuration is polyvalent, and it can be fit to a wing with a single tan, a twin set or with a small diluent tank on the side, of course, the config you adopt will limit your way of diving. Safety first!

With its frontal position, the rebreather offers optimum breathing quality. If there was one possible concern that I would have with the machine, this would be it. As a frontal CCR, you are very comfortable when horizontal but if you stand vertical, you may find it uncomfortable like I did. I believe it's' not the right machine for you if you are an into photography, but then again, perhaps this was a personal feeling!

To conclude, if you are looking for a new CCR this is definitely a machine to consider. Its polyvalence of configuration and light weight makes it a great unit and if you have the chance, why not go do the training in a lovely place - Bali Dive Trek is waiting for you!

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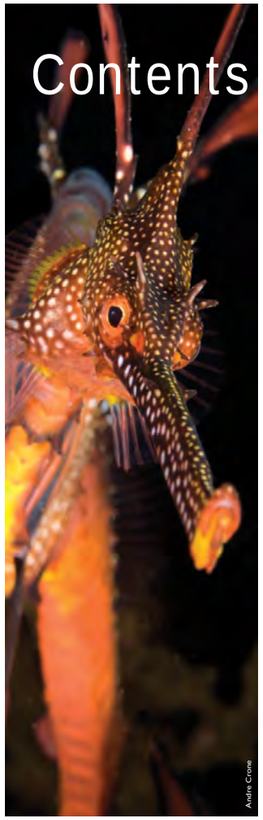



## GENERAL



## NORTH COAST







## CENTRAL COAST



## SYDNEY & SURROUNDINGS



### Northern Beaches






### Sydney Harbour



### Southern Beaches



## SOUTH COAST

# Marine Species Guide

This book can be used by scuba divers and snorkelers as a quick reference guide to help them identify and learn about the fish species they might encounter underwater.

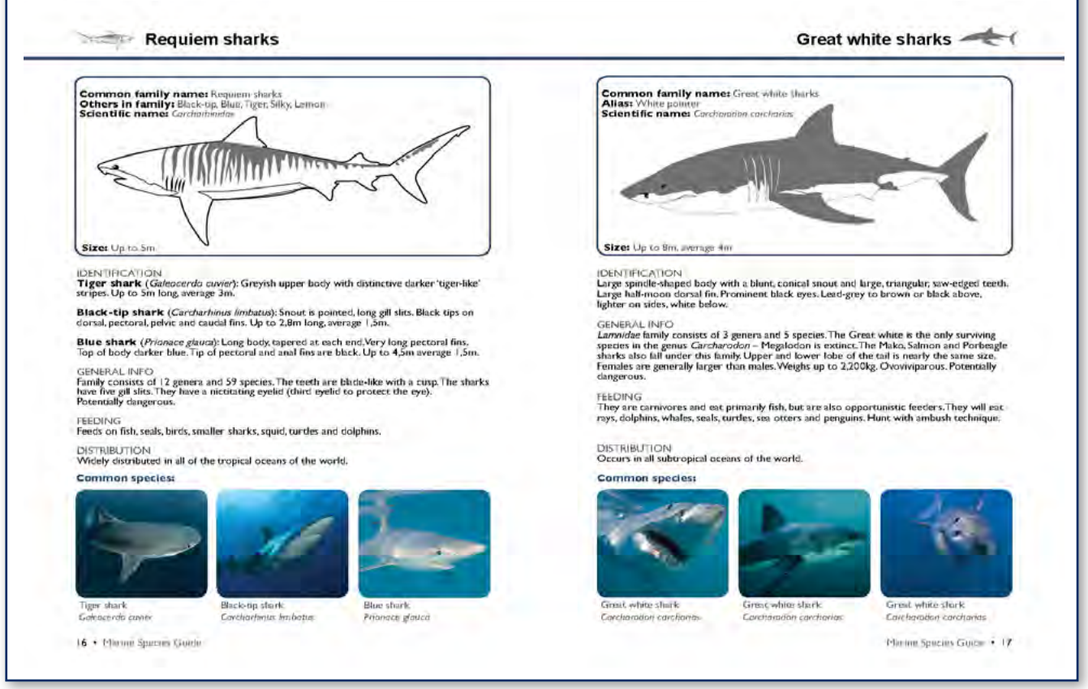
The book covers many of the marine species found on the reefs around the world. Illustrations of fish families simplify identification underwater, while general behaviour of the family and interesting facts are also listed.

This information includes the common family names, biological family names, aliases, size, identification, general information, feeding preferences and where the families occur around the world.

Photographs of the most common of the species found, when scuba diving or snorkeling, are included and the fish families are categorised for easy reference.

To buy your copy for $ 25, visit www.ozdiver.com.au or email info@ozdiver.com.au






# Scubapro A2 Dive Computer

**There is a saying "big things come in small packages" and that is what the Scubapro A2 Dive Computer is: a big computer in a small housing. I always fancied small dive computers and when it was time for an upgrade, I found exactly what I needed.**

**By Johan Boshoff**

I needed a watch type computer that did everything I wanted it to do. I was looking for a dive computer for recreational scuba diving but that could also be used for my technical diving and the Scubapro A2 Dive Computer offered everything. From recreational diving to full technical diving and it even works for my rebreather.

The Scubapro A2 Dive Computer is a fully functional wristwatch-style dive computer with a high-resolution, hybrid matrix display with large numbers, making it easy to read underwater, even in adverse conditions, and even easier to use and navigate.

You can choose from six dive modes: Scuba, Gauge, Freediving, Trimix, Sidemount and CCR. Its Predictive Multi-Gas algorithm can accommodate up to eight gases (21-100% O2) plus two in CCR mode. The digital tilt-compensated compass provides easy navigation underwater or on the surface. And when the diving is done, cord-free connectivity using a Bluetooth LE interface lets you easily sync with a PC, Mac, Android or iPhone, for data downloading and more.
The A2 has wireless air integration which can handle multiple transmitters while monitoring tank pressure and providing true remaining bottom time based on a diver's workload from breathing. An optional heart-rate monitor belt allows the A2 to record heartbeat and skin temperature, providing even more vital, individualized information that can be factored into your decompression calculation.

**Features**
- Wireless air-integration can handle multiple transmitters, monitor tank pressure and provide true remaining bottom time (RBT) calculations based on the workload from breathing
- Digital tilt-compensated 3D compass allows for easy navigation
- Predictive Multi-Gas ZH-L16 ADT MB algorithm accommodates eight gases (21-100% O2) plus two in CCR mode
- PDIS (Profile Dependent Intermediate Stops) calculates an intermediate stop based on N2 loading, current and previous dives and breathing mixes for better diving
- Microbubble levels let you adjust the level of conservatism in the algorithm to match your experience level, age and physical conditioning
- Heart rate monitor records heartbeat and skin temperature (with SCUBAPRO HRM Belt only) that can be factored into the decompression calculation along with workload
- Multiple Dive modes: Scuba, Gauge, Apnea, Trimix, Sidemount, CCR
- Sport mode offers sport-related functions like a swim stroke counter, activity counter (pedometer) and stopwatch
- High-resolution hybrid matrix display with large numbers is easy to read under water, even in adverse conditions
- Intuitive menu and four button controls make it easy to navigate through the system
- Lightweight design is so comfortable on the wrist you won't want to take it off
- Modern design with full watch functions is perfect for topside time-keeping as well as underwater data tracking
- Max Operating Depth: 394ft/120m
- Bluetooth Low Energy interface lets you download dives to any iOS or Android device or PC/Mac
- Firmware can be user-updated by going to scubapro.com
- CR2450 battery is rated for up to two years/300 dives
- Included: Protection foil, Quick Card, Arm Strap Extension, Read First (user manual is available online). Optional equipment: Transmitter and heart rate belt


If watch type dive computers is your thing, then this one is for you.

# The Eloquence of the Sardine

Humans have identified just a fraction of the 2.2 million species living in the sea. Roughly 91% of all marine species remain unknown: myths still to be written, discoveries still to be made, blank pages with room to dream . . .

In the book The Eloquence of the Sardine, already translated in 17 languages and released in August in Australia, french biophysicist and diver Bill François takes us on a global underwater tour to discover the secret life of fish, with a host of fun facts and amazing discoveries.

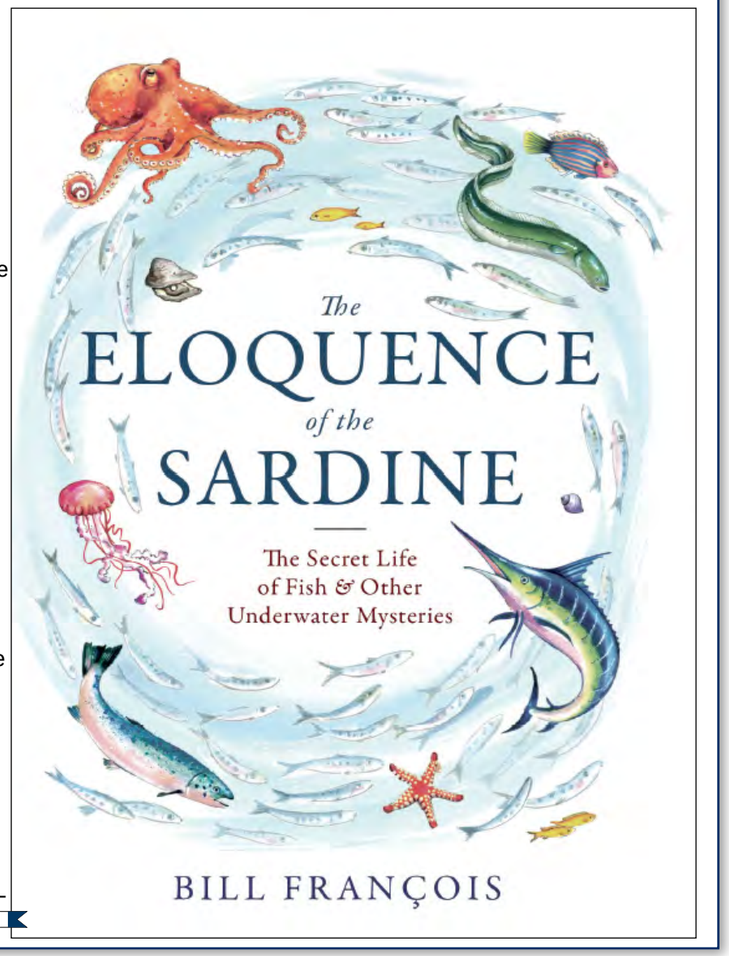
As a small boy, Bill François was frightened of deep water. Until a chance encounter with the elusive sardine set him on course for a life in marine science: a mission to better understand and preserve the underwater world, to find his place in that ecosystem and learn how to converse harmoniously with the ocean.
This is the beginning of a journey full of life and discoveries, vibrantly told in this small book of narrative nonfiction.

François unpicks the sound of the sea – an underwater symphony orchestra voiced by a choir of fish – and deciphers the latest scientific discoveries on the immunity of coral and the changing gender of wrasses. We visit the depths of underwater Paris as François delves into the mysterious world of the eel, and explore an extraordinary three-generational friendship between humans and killer whales, and the role a shoal of herrings played in Cold War tensions.

Drawing on history, myth and legend, but always grounded in science, The Eloquence of the Sardine will change the way you think about the sea in a poetic way.This book is aimed for all the ones who love the ocean and are curious about it : divers, sailors, fishos... Even experts in marine biology should find some original facts in it.

But it will also open the eyes of those who don't know this universe yet. It can thus be a nice present to introduce your friends and relatives to your passion for the underwater world.

The Eloquence of the Sardine – Bill François
Release date : Aug. 31st 2021
Editor : Little, Brown
https://www.hachette.com.au/bill-francois/the-eloquence-of-the-sardine-the-secret-life-of-fish-and-other-underwater-mysteries








"It's just a hunch, but you're not a certified diver, are you?"


"It's just a hunch, but I don't think your wet suit shrunk. I think you grew."

Send your funnies to info@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**
**Web: www.thedivespot.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.
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**Mail: info@perthscuba.com**
**Web: 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**
**Web: www.perthdiving.com.au**

### Diving Frontiers - Perth

For ALL your Scuba, Spearfishing and Freediving needs! Our SSI Instructor Training Centre teaches courses from Scuba Diver, right through to Instructor. Let our friendly and knowledgeable staff ensure you get the best quality service, at the best possible price!
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**Mail: info@westernbluedive.com.au**
**Web: www.westernbluedive.com.au**

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**Web: www.bluedestiny.com.au**

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Dive Operators
Australia

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Albatroz Scuba 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!
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**Web: www.divealbany.com.au**

# South Australia


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**Web: www.sharkcagediving.com.au**

### ND Scuba - McLaren Vale

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**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

### Downunderpix

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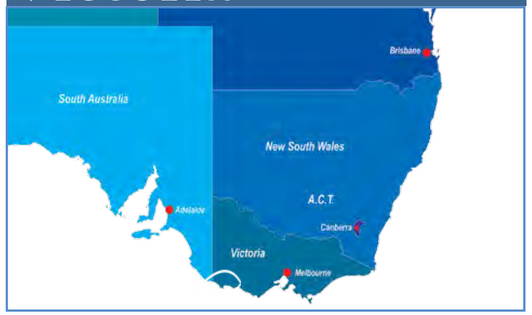
**Mail:info@downunderpix.com**
**Web: www.downunderpix.com**

# Victoria




### ausdivinginstruction- Geelong

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**Phone: 0408365216 or 0352722181**
**Mail: steve@ausdivinginstruction.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.
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**Mail: info@baycityscuba.com**
**Web: www.baycityscuba.com**

### 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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**Web: www.scubadoctor.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
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**Web: www.divevictoria.com.au**

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# New South Wales


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**Mail: john@frogdive.com.au**
**Web: www.frogdive.com.au**

### Southern Cross Divers

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.
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**Web: www.southerncrossdivers.com.au**

## Killarney Vale

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**Mail: enquiries@feetfirstdive.com.au**
**Web: www.feetfirstdive.com.au**

## South West Rocks

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**Web: www.southwestrocksdive.com.au**



# Queensland


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**Mail: rob@scubaworld.com.au**
**Web: www.scubaworld.com.au**

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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.
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**Mail: admin@ozaquatec.com**
**Web: www.ozaquatec.com**

## Gold Coast

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**Web: www.devoceandive.com**

# Tasmania


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