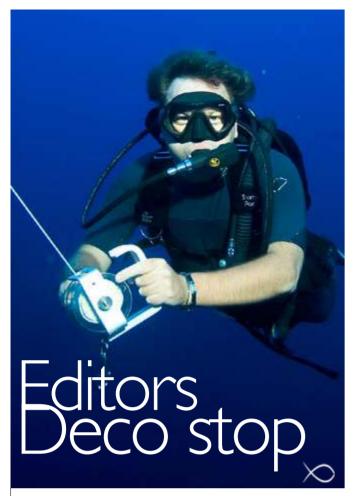


FREE Online Diving Magazine - www.ozdiver.com.au







The year 2015 has arrived and once again the New Year gives us the opportunity to plan a whole year of diving trips. Just think, another 365 days in which to go and dive somewhere in the world.

With regards to OZDiver magazine, I have to say, I thought I would start the magazine small and watching it grow over a couple of years, but boy was I wrong. In the first week I had more than 4000 downloads from divers all over the world and emails that came out of my ears. I had forgoten about all my readers that I had aquired over the last 10 years, it looks like they all moved with me.

Then it looked like the diving industry in Australia also saw the magazine and wanted to be part of it. I cannot complain, it is a blessing that the magazine's popularity grew so much in one month and now I can wait to put the next edition together for the readers.

This edition of OZDiver is full of interesting topics

and articles for the beginner to the technical diver, for the diver who wants to keep it local to the traveller who wants to dive the globe. Read all about what is happening in Australia as well all the latest News. There is a section on the weird and wonderful, where you can find out about the alien invasion as well as 50 interesting facts about our oceans.

We also travel to Bali and Komodo and have a very interesting interview with a diver that takes divers to dive with crocodiles in Africa. If you never know what to eat and what not to eat from the oceans then you will find the article on sustainable seafood interesting, so next time you will not have an excuse.

For the photographers, we will look at what shutter speed is and continue our photo editing part 2.

For the more experienced diver and the technical diver, we start off looking at World War II - part 1 wreck diving special, and then discuss the new world record deep dive in detail.

Like every other edition of OZDIVER this magazine is for the whole diving industry, from the novice to the advanced. You will find something in here to suit vour needs.

As we kick-off a new year, I want to leave you with an old Cree Indian saying that stuck in my mind from one of my trips: Only when the last tree has died, and the last river been poisoned, and the last fish has been caught, will we realise that we cannot eat money.

OZDiver.com.au will be THE gateway for the Australian diving community - the website and magazine will take you around the world with a click of a button.

The Editor & Publisher

Johan Boshoff

-it is all about the journey and not the destination

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

Editor-in-chief iohan@ozdiver.com.au

Marketing

+ 61 (00) 44 887 9903

Photographer

Contributing Editor Libby Straughan

Proof Readers Libby Straughan

Izak Nieuwoudt Shaun Terblanche Nikkie Mouton

Administration

amilda@ozdiver.com.au

Creative Director

Web Master

Publisher

TheDiveSpot-OZDive

Distribution

Contributers

Christopher Bartlett, Nuno Gomes, David Caravias, R Bester, |Beulah & Roland Mauz, Pieter Smith, Dr. Jean Vorster, Pieter Venter, Jil Holloway, David Holloway, Quintin de Boer Neil Wiltshire, Barry Colman, Pieter Herbs Barry Coleman, Don Shirley, A









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Primary Contributors

























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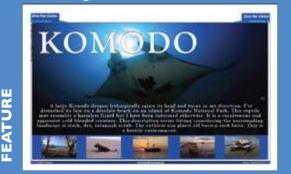
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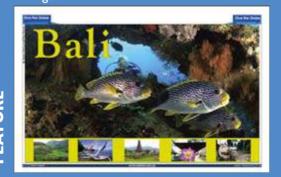
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Letters



It should have been a perfect dive.

We were swimming along the top of the reef when the dive master dropped down under a ledge about 2 m below the reef's top edge. He signalled to me that it was a swim-through. I dropped down alongside him and looked through the opening of the tunnel. It was about 10 m long and had a blowhole in the roof approximately halfway down the tunnel. Rock was at the top and sand at the bottom.

I thought I would be able to make it through the blowhole. Without turning to signal my intentions to my buddy, I entered the tunnel. I finned past a small shoal of dusky sweepers and prepared to exit through the blowhole, but upon reaching it I could not be confident that I would fit. So, instead of turning around and heading out, I decided to continue onwards – surely there was exit on the other end?

The roof of the tunnel appeared to be narrowing, however. I

cannot remember exactly how many times my tankstrap hit the roof, but it happened at least three times. Eventually, I was dragging myself along the sandy bottom to clear the roof atop. Then my tankstrap hit the roof once more, scraped a bit and I was stopped dead in my tracks.

I was stuck. I tried to move forward a bit more, thinking I could clear the obstacle, but it only served to jam me tighter. I tried to reverse, but it felt like my tank strap had now been hooked onto an outcrop on the roof, acting like a one-way ratchet.

Panic started to set in. I pushed and shoved the sandy floor to try to move backwards, but nothing was happening. I tried to turn around, snagging myself even more! I realised quickly that panic would kill me. I stopped struggling and I could see the sand particles I had stirred up as they dropped to the sandy bottom. All I could hear was my breathing.

I started wriggling my tank side to side to try to free it, but to no avail. I managed to twist to the side a bit, so that I could see back down the tunnel. Looking behind me I saw a friend approaching. He signalled OK to me – a very reassuring gesture – and I signalled back to let him know that I was as calm as could be expected. He then grabbed my tank and pushed it to one side, and my tank strap came free. I reverse-finned then turned around and exited the tunnel. I waited for him at the tunnel mouth and watched him doing what I could not do earlier – exit through the blowhole!

We joined the rest of the dive group and I continued the dive, very shaken. Gradually I brought my breathing back under control and started to enjoy the dive again. I was glad to have learned a lesson, as the alternative was too horrible to contemplate.



What's happened to diving protocol?

I've been diving for a number of years around the world. In fact, I was trained nearly ten years ago, but I still remember my instructor giving me hell if I didn't do my buddy checks.

My instructor was a wise man and he told me that your buddy is your life support and that if something goes wrong, it is that person and that person alone who you need to depend on.

Today, I find myself diving with different dive charters and different buddies all the time, and of course, we are continually upgrading our equipment. But in the last few years, rarely has a dive buddy approached me before a dive to ask me to check my equipment and find out how it works. More often, I will approach my buddy, and he or she will look at me as though I am some strange creature of the deep. Sometimes I don't even know my buddy's name or speak the same language ... but surely we should all speak the language of safety first?

So I ask myself what is happening to the training of today? Do the dive charters still care about safety? Can we, as qualified divers, entrust our lives to complete strangers, or are we, in fact, diving solo?

Concerned Buddy



Having a dream job

The island that I am staying on is known as Great Stirrup Cay and our neighbour, Little Stirrup Cay, is currently operated by Royal Carribean cruiseliner. GSC is only 4km long in length and around 1km long in width.

Loa Book

Anyway, this diver is enjoying the outdoors greatly, without the rush of traffic, screeching of tires or the constant nuisance of cell phones ringing. This is the metaphoric paradise and deserted island like in the Robinson Crusoe movie. I have my hammock outside suspended between two palm trees, overlooking the ocean.

Well, I came here to work... Everyday tasks include preparing the dive hut for ship days (days when Norwegian Cruisliner stops by to bring visitors), fixing up broken gear and "face-lifting" old buildings.

On ship days the divers (us) are responsible for snorkelling equipment, taking passengers out on snorkel excursions and life guarding.

Day after ship day is spent cleaning up and sorting out dive gear. Working hours seldom exceed 3pm and then the boys start drinking. The company made sure the fridge is always stocked with a keg of beer or lots to drink anyway. I enjoy the ample supply of spring water and fresh fruit.

Divers are also responsible for cooking supper and "Higgy" makes sure that no one is under nourished.

Late afternoon just as the sun evaporates behind the western horizon, I take my kayak and head out to "sisters", a few rocks that stand out of the water on the north-western side of the land mass. Watching the sun set from there awards me a sense of harmony and fulfilment.

Burd



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

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



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OZ News

Update on Drumlines

Baited drumlines will not be deployed in Western Australia this summer after the Environmental Protection Authority recommended that the state's controversial shark culling program not be extended, citing "a high degree of scientific uncertainty" about the impact of drumlines on the great white shark population.

Under the WA government's proposal - which followed a three-month trial earlier this year - more than 70 hooks would be strung about 1km off popular beaches in Perth and the state's south-west each summer for the next three years.

The state government's own environmental assessment estimated about 25 great whites, a protected species under state and commonwealth regulations, would be snared on the hooks.

But on Thursday the EPA chairman, Paul Vogel, said a CSIRO review of the government's estimates "stated there remained too much uncertainty in the available information and evidence about the south-western white shark population, population trends and the bycatch from commercial fisheries".

"In view of these uncertainties, the EPA has adopted a cautious approach by recommending against the proposal," he said. The EPA's recommendation is open to public appeal for two weeks, with a final decision on the shark cull to be made in October by the WA environment minister, Albert lacobs, The program also needs to be approved by the federal environment minister, Greg Hunt. Vogel said the EPA had only assessed the impact of the drumlines on the environment. "The minister, in making his final decision, may take other matters into consideration," he said.

The WA premier, Colin Barnett, told parliament he was disappointed by the decision, but it was "very unlikely" the government

"That means it will not be possible to have drum lines over this summer. If we were to do so there would clearly be court challenges and you would never get there," he said.

Barnett said Perth beaches were "pretty well safe" due to air patrols, but he could not say the same for beaches in the state's southwest, where the government would have to rethink how it could provide greater protection.

"I cannot look the people in the south-west in the face and say 'your beaches are safe, your diving [and] surfing conditions are safe' because I don't believe they are."

Hunt has previously said that he would approve the cull only if it underwent a full environmental assessment.

A spokeswoman for his office said on Thursday Hunt would "look very carefully at the Western Australian assessment report, the advice of the department, and the public submissions received during the public environmental review".

he EPA's study was the subject of unprecedented public interest. It received nearly 7,000 submissions and and two petitions with more than 25,000 signatories.

Both the WA and federal governments had to grant exemptions from their own environmental protection regulations in order to lay the drumlines, which enabled the capture of 172 sharks between January and April.

The policy allowing for the culling of any sharks longer than 3m was introduced after seven lethal shark attacks in three years off West Australian beaches.

Fifty of the sharks, none of them great whites, were larger than 3m and were shot by contractors. Twenty sharks, 14 of them under 3m, were found dead on the baited hooks before crews reached them. Ninety sharks were tagged and released.

The cull has been the subject of international condemnation, including from actor Ricky Gervais and billionaire businessman Richard Branson. Protests held on beaches around the world drew thousands and polls have consistently shown that Australians oppose the measure.

The EPA was criticised in March for declining to assess the three-month trial. Vogel told Perth radio that he believed its environmental impact would be "negligible".

A legal challenge to the bait-and-kill policy by marine activists Sea Shepherd was rejected by the WA supreme court in March. WA Greens MP Lynn MacLaren, a strident critic of the program, said the EPA's recommendation was "a cause for celebration". "It follows the enormous efforts of thousands of Western Australians from all backgrounds who have stood up to the Barnett government to protect our marine environment," she said.

"Both Labor and Liberal governments in WA have form in overriding EPA recommendations in WA so the battle is far from over - but the message to premier Barnett and federal minister Hunt is clear: culling is not the answer."

View the original article on www.theguardian.com

Swim with whales for the first time in Australia

The Sunreef Humpback Whale Swim Experience is the first of its kind in Australia, an idea conceived by the Mooloolaba dive company's manager Dan Hart.

"I went to Tonga two years ago and got to jump in the water with whales, and it was truly a life-changing experience," he says.

They're such big animals and so gentle at the same time...seeing them in their natural environment is breath-taking."

Hart and Sunreef worked with government agencies, including National Parks and Wildlife, plus the

University of the Sunshine Coast, to develop a safe and workable way of getting whale lovers into the water near the magnificent creatures.

Last year's reduction of the whale exclusion zone from 300 to 100 metres for vessels was a bonus, allowing a truly close encounter.

Up to 20 guests are kitted out with wetsuits, fins, masks and snorkels before Sunreef's dive boat heads out to the "Whale Highway", so-called because of the large

number of humpbacks using it a migration path north to Hervey Bay. "There'll be days where the whales will be hanging around for hours, and there will be days where they're just on the move," Hart says.

"Our goal is to get everybody to see them in the water... but they are wild creatures and it's on their terms."

It's not long before we start spotting the tell tale signs that whales are about. Sunreef crew members point out whale "footprints" - slicks of smooth, lighter-coloured water left after the mammals surface to breathe - and tell-tale sprays of water from their blowholes.

Then, hearts start pounding and involuntary cries of wonder ring out as grey-brown backs arc out of the water and glide back in on all sides of the boat, all within 300 metres. Being on a small diving boat rather than a large whale-watching vessel gives an extraordinary view of the creatures.

"They know we're here," Hart says.

When the first glorious tail flies up some 200 metres away, the captain - Hart's father Phil - cuts the boat's engines and Hart orders us all into the water "Slide in and look down," he commands, as I awkwardly manoeuvre my fins onto the back deck and squat down. Up to 10 swimmers at a time are allowed on the flotation line, and getting them out into the water has to be a guick operation. Whales can travel around 30 kilometres an hour, so there's no time to be worried about the "refreshing" winter waters. But I am still too slow - the whale dived deeper than the 10 to 15 metres we could see and swam around us. Hart calls us back in, and we clamber back onboard. Captain Phil starts the engines and we go in hot pursuit of another whale. This scrambling in and out of the water is repeated up to 10 times over two hours. On a couple of occasions, fellow snorkelers yelp with excitement and cry out "I see it! Look down here!" When they clamber back onboard, their joy is palpable.

I make eight trips into the water but never manage to spot a whale. But I'm far from frustrated. It's been an incredible experience just seeing the whales from the water's surface.

It's also heartening to hear that every whale swim trip will reserve two seats for University of the Sunshine Coast researchers so they can carry out their field work at no cost.

"We want these animals to flourish, we want them to keep coming back, and get a good understanding of them," Hart says.

"I want everyone to share this experience."

By Natalie Bochensk. - www.brisbanetimes.com.au

OZ News



THE OZTeK 2015 DIVING CONFERENCE

Saturday 14th March 2015: 09.00 - 18.00 Sunday 15th March 2015: 09.00 - 17.00

SPEAKER PROGRAM

All the latest developments in equipment technology and training coupled with gripping tales of underwater adventure and exploration. With more than 60 presentations, seminars and workshops focussed on the very best of diving 'info-tainment', the OZTeK2015 Conference offers an inspirational voyage of discovery into all of diving's future possibilities.

THE SPEAKERS

Be Inspired! Meet, talk with and learn from more than 40 of modern diving's most accomplished personalities at one of the world's largest gathering of diving celebrities.

CONFERENCE TICKETS

The complete passport to the world of diving excitement, Gold (two-day) and Silver (single-day) Conference Passes give full access to all the presentations, as well as exhibition entry. Session Passes give entry to the exhibition and two presentations. Entry tickets to the Exhibition on sale at the door. Details will be posted soon. Pre-purchase a Gold Pass and be automatically entered into the Opening Ceremony draw to win an overseas dive trip.

PHOTO COMPETITION & EXHIBITION

The OZTek2015 photo competition focusses on wrecks, caves and open categories - with the opportunity to win thousands of dollars in prizes - The Call for Entries is open - check the Photo Comp page to enter.

Winning images will be displayed in our Photographic Exhibition open during the weekend along with some of the impressive images from past competitions.

To see some of the awesome images from previous comps - take a peek at our website image galleries Bookings for this increasingly popular highlight event are essential.

THE VENI IE

One of Australia's premier event facilities, the Australian Technology Park.

An Inspirational diving event devoted to Information, Education, Exploration and Adventure, OZTeK2015 will again prove that:

Mark OZTek March 14/15th, 2015 in your diary today!



Australia International Dive Expo (AIDE) 2015

12 - 13 SEPTEMBER 2015 - SYDNEY

The first ever Australia International Dive Expo debuted at the Royal Hall of Industries in Moore Park, Sydney on 22-23 February 2014. It was successfully concluded with dive enthusiasts attending from eight different countries including Australia.

The show was a great the stepping-stone for the consumer market interested in recreational diving. At the Expo, exhibitors introduced new dive gear, dive destinations, tours and camera products to the visitors.

AIDE is back for 2nd year with exciting exhibition and activities for keen divers and to be divers.

Scheduled for 12 - 13 September 2015 at Royal Hall of Industries, Moore Park, Sydney, the show will

DIVE & DISCOVER

AIDE 2015

AUSTRALIA

INTERNATIONAL

DIVE EXPO

continue to promote the sport of scuba diving, snorkeling, free diving, dive equipment and gears and dive travel as well as ongoing conservation efforts and practices.

Approximately 5,000 visitors anticipated and a total of over 100 booths to be taken at the expo with floor space of 5,000 sqm. Sessions for presentation will be allocated on first come first serve basis.

AIDE 2015 will see even more experts from the diving community taking the stage to share their knowledge, vast experiences,

travel advice and valuable diving tips. Product demonstrations will also be held at the event for those interested in learning about the latest marine gadgets and diving technology.

A trade session will be included as parts of AIDE 2015 to better engage with industry suppliers and partners. The expo will be one stop center to promote and showcase your product and services.

Also, not to be missed is the Underwater Project, the world's first perpetual underwater shootout. Visitors are encouraged to join this project and be part of the exciting shootout competition at www. underwaterproject.org.

AIDE2015 is open for registration with the early bird package ending on 28 February 2015.

Information on Speakers, Activities and all details for the show will be updated from time to time. Kindly visit AIDE's website at www. australiadiveexpo.com and join our Facebook page to get the latest news

Dive Schools / Operators / Organisers / Instructors

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

Here's what we need:

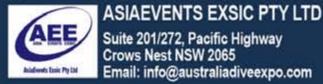
- Newsworthy stories (promotional material will not be accepted)
- Word limit: 100 words
- Text prepared in a Word document
- Accompanying high-resolution image(s) are welcome (please supply caption and image credit)

Please send to info@ozdiver.com.au 📧

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Dive OZ



It's our first evening in the south of Tasmania and we are surprised by all the different kinds of animals around our bungalow. We just cannot believe how many animals we see around here. Our bungalow is not located in the middle of in the bush, but nevertheless so many wallabies (small kangaroos) and wombats gather around our house. We have become one with nature immediately.













Besides the airport and our little bungalow we have not yet seen anything of Tasmania. If it already surprises us on the top side after such a short time, how will it be underwater? We cannot wait until tomorrow morning when we will start diving.

A long time ago, a Dutchman named Abbel Tasman was called to go on a discovery excursion to a distant ocean. By his employer, the United East India Company, he was well known for his sublime navigation techniques. In 1642/1643 the United East India Company was in search of new Eastern sailing routes to southern America. Departing from the former city of Batavia, Tasman was sent away for this reason. For his trip two possible routes had been considered - the first route would take them

along the north coast of Australia while the other route would take them a long way to the south of Australia. Since Tasman doubted the possible passage between Australia and New-Guinea with his ship, he chose the southern route. The planned route would take the ship almost along the coast to Antarctica.

Eventually, because of fog and storms, Tasman was not able to follow the planned route. He decided to try and make his way a bit more northerly than planned. During this attempt, on November 24, 1642, an unknown piece of land rose from the horizon. At first Tasman did not name the place after himself. He called the island Van Diemensland after the governor of India who had sent him on this discovery excursion. Later the name was modified at the request of the inhabitants of this island. A country with a special link with the Dutch people was 'born'.

For many people Australia has a considerable attraction. The charm of travelling around the 'mainland' of Australia brings us to this distant country. Because of its size it is impossible to visit the whole country in one trip. For this reason many people make the mistake of skipping Tasmania. We, on the other hand, have chosen to really follow the footsteps of Abel Tasman as Tasmania was the main destination of our trip.

Tasmania lies about 240 kilometres south of Melbourne. Once you have landed at the airport



of Hobart it almost seems like you are in Europe. Tassie, as the Tasmanian people call their island, is almost entirely dominated by nature. The island is not bigger than Ireland but has about 500 independently protected nature areas. And this you will notice when traveling around - nature is in the blood of the Tassies. Just like hospitality, not a single day will pass without a Tassie chatting with you.

We began our trip through Tasmania in the south west. The coast in the south is characterised by a rough coastline with several bays and lagoons. We settle in the little village of Eagle Hawk Neck. What we find here is no mass tourism. No huge hotels, large ports, boulevards etcetera. No, Eagle Hawk Neck is a small, picturesque fisherman's village that breathes a love for nature and the sea. We spend the night in the lodge of our dive school here and during our first evening we are already surprised by small kangaroo's in our garden. The small wallabies come up to our veranda and we enjoyed these sightings for the rest of the evening.

The next day we wake up with sheer blue sky and a bright shining sun. This promises much for our travel through the Tasman Sea. During our first dive mysterious kelp forests welcome us. Our dive guide has already told us much about the kelp. In the Tasman Sea a special kind of kelp lives - the giant

Kelp with a height of over 10m long stand in quiet bays along the coast. This giant kelp is only known



to live in California and Tasmania. Although the kelp is genus of brown algae, they resemble a big plant or tree. With organs that look like the roots of a plant the kelp gets a hold on the sea bed. Swimming between the kelp is just like you have entered a fairytale. The enormously long leaves of the kelp are kept floating thanks to the air cushions. As you venture into deeper water you really stand in the shade of the kelp.

Between the kelp all kinds of animals come in search of protection. Between the rocks on the bottom you can regularly find rays, draught board sharks and various kinds of bottom fish. On the leaves of the kelp, innumerable small snails live. Nearly under every leaf dozens of these snails appear. Swimming through the kelp forest is a real discovery trip where you can meet peculiar animals.

During one of our dives we saw something strange. On one of the kelp leafs we found a strange thing, just like an orange ball. We could not figure out what it was - perhaps it was the eggs of some animal? Back on board we discussed this 'thing' with our dive guide - we had to solve this mystery! According to our dive guide we had seen a 'wandering anemone' (Phlyctenactis tuberculosa). This wandering anemone generally establishes itself on the kelp leafs but it can move around. During the day the polyps of the anemone are completely closed so it doesn't look like an anemone at all. But at night this anemone reveals its true form by unfolding itself.



Dive OZ









Dive OZ



Something you just have to do each dive is search for sea horses. Particularly, the weedy sea dragon (Phyllopteryx taeniolatus) is unique in Tasmania. The first few dives we had to look really hard for this animal as it is an expert at hiding in the kelp. But almost on every dive you will get the chance to encounter a sea dragon. The splendid colors of the animal are more than impressive. Bright orange is varied with clear blue lines. With its long, pointed nose and a body varying from clear white to dotted, it pigheadedly looks into the blue. It really has a funny face. The weedy sea dragon is endemic to the southern Australian area and has been seen from Sydney on the east coast to Perth on the west coast. But the Tasmanian sea dragon seems to be a little larger than its family members in the south of Australia. For us one thing is clear: it is really a splendid animal. Perhaps less spectacular than the weedy sea dragon are the other seahorses you can find in the kelp, but nevertheless, these other seahorses are also great to see.

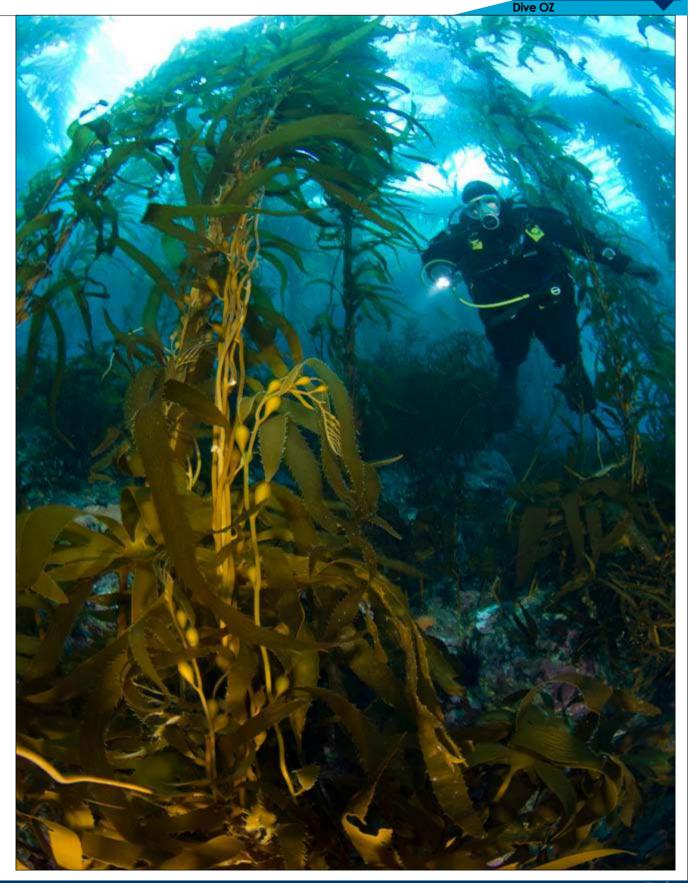
Besides diving the kelp, Tasmania has many more surprises. The rough coastline holds a large number of caves. At some places you can spot the caves from the boat, but at others you really cannot imagine that there is a cave system below. Under the guidance of the dive guide you can take your time to examine the cave systems. In a lot of the caves, and sometimes also between the stones outside the

caves, you find large shells. The Australians call the shells Abalones - these large shells have a spiral structure internally and on the outside they have a number of holes which look like small craters. For the Tasmanians the meat of these shell animals is a real delicacy.

Beside these shells the caves are home to a multiplicity to life. The inner surface of the caves are fully covered with anemones and sponges in bright yellow, orange or pink - colours you really do not expect to find in these cold waters. Between the yellow anemones some jewel anemones hide. This small anemone is called the jewel anemone because of the small white, almost silver, bulbs at the end of its tentacles which almost seem to give off light. The atmosphere of the caves in general is fantastic. One of the most famous caves here is called the Cathedral or Devil's Eye. From inside the cave it really seems like two angry eyes are looking at you. With a bit of luck you might encounter a beautiful sepia during one of your dives.

For the lovers of wreck diving, the wreck of MS Nord lies on the south coast of Tasmania. It is the wreck of a 7m long steam ship. In the beginning of November 1900 this ship was on its way from Melbourne to Hobart when it hit very bad weather at the Tasmanian peninsula. The captain of the ship tried to get to a safe place in one of the bays but this could not prevent its sinking. The ship sunk and now lies at a depth of 35-40m on the floor of the





Tasmanian Sea. The propeller and the lining of the 2ship have been overgrown with sponges, anemones and sea whips. It is a pity that the depth of this dive site will limit your time because it is really a Esplendid ship to dive. The rough sea which led to the ships sinking can also be an obstacle for diving. Sometimes you must wait a day or two for the wind to calm down and for more favourable current.

In the south of Tasmania, along the rough coastline, you will regularly find seals on the rocks. Between swimming and hunting in the water they lie in the sun to rest. With their brown bodies they don't stand out on the rocks and at times you will only discover them when they move. If the weather is calm you will also have a chance to swim with them.

"Tomorrow I have another surprise for you," our dive guide Blakev mentioned after a couple of days. Of course we wanted to know what it was but Blakev kept it a mystery. "The diving will be a little deeper and I would put the wide angle on your camera," was all that he said. After all the surprises which we had already experienced this week we really could not imagine what more we could expect. In the evening we almost crushed our brains trying to figure out what the surprise would be, but we had to trust Blakev on this one. Therefore the wide angle lens was placed on the camera, and full of expectation we went diving the next day.



As with every other morning when we sailed along the coast, we enjoyed the splendid rough coastline. This time Blakev stopped the boat close to a number of large rocks near the coast. He told us what we were going to see here - at a depth of 30-35m we would find a large sponge garden. Of course we had seen sponges at our tropical dives before, but we really could not imagine many sponges in the cold water of Tasmania. Full of expectation we prepared for the dive.

Underwater we quickly noticed that the promised surprise was real. We descended and on the bottom we saw a large quantity of sponges standing there in several forms and colours. Large, almost white, bulbous sponges were varied with enormous orange sponges. And in between the sponges we found dozens of sea whips. We would return several times to this spot to enjoy the scenery.

Later that week we also did a number of dives in the north east of Tasmania. The coastline on the east is less rough, therefore it is possible to do some shore dives. Yet boat diving in this area is more than worthwhile, as with the boat you can reach the sponge gardens which are also abundant. At the harbour of Bicheno we made our shore dives and we saw sea horses, sea dragons and, between the rocks, some crustaceans. On our second dive in the harbour we also found some sea spiders. We had not seen these animals before - small yellow spiders hardly recognisable in their environment. You tend to forget that you are underwater!

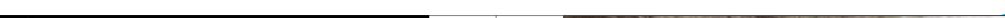
But we were still finished discovering Tasmania. Except diving, there are loads of other things to do on this island. Top side, Tasmania appears to be as beautiful as it is underwater. The different protected nature areas all have their own characteristics and Tasmania is known for its moderate climate rain forest. Such rain forests are different from the real tropical rain forest - you will not encounter palms or climbing plants – yet rather what you will find are enormous trees which stand close to each other. The bottom is covered with all kinds of moss, and between the trees it is actually nice and cool.

Our first choice was the nature park of Russel Falls. This park is world-famous for its splendid waterfalls. The most important water fall, the Russel Falls, feels already very mysteriously, but just a bit further down the track the Horse-shoe Waterfall exceeds its 'big brother'. The fabulous green surroundings are bewitching. The park accommodates enormous ferns which, on their high tribe, try to catch some daylight under the big trees.

During the Tahune Forest Air Walk you can enjoy the view from the top of the trees. As the trees in the park are enormous, they decided to make a bridge between the top of the trees. For hikers who want to take long walks, the nature park Craddle Mountain is a real must. At sunset the beauty of Craddle















multiple-day walks or short walks along the different blakes.

Other than nature parks Tasmania offers a multiplicity of wildlife parks. In fact, in almost every Evillage there is a small wildlife park. During our tour through Tasmania we were also told several times that there are small penguins on the island. During the day the penguins live in the sea, yet they come to shore at night to rest in their nests. We saw the first signs of these penguins a short time after we arrived as there are many traffic signs warning of crossing penguins. We undertook several attempts to spot the animals in the south west but unfortunately we were not lucky in our pursuits. In the north east we went to a special nature park which is only accessible through guided tours protect the penguins. Just after sunset the penguins climbed a tough road along the rocks. As it is dark when they make their way up you will hear the penguins first - with a weak pocket lamp the guide showed us these amazing creatures. The use of strobes or bright lights is not possible because the penguins have no protection against it on their eyes.

Possibly the most peculiar animals you can meet in the Tasmanian wildlife parks are the Tasmanian devils and the platypus. The platypus is found in several creeks and rivers and they are really bizarre animals – it is like several animals have been combined into one. Its mouth resembles a duck, the tail seems to come from a beaver and the legs

from an otter. It is the only mammal that doesn't give live birth to its pups. No, the platypus lays eggs in its nests along the banks of rivers. To protect themselves against attackers the platypus has a poison-tooth besides the back legs – enough poison to considerably wound an attacker. For many years the platypus has been hunted for its fleece, but fortunately at this time this animal is protected.

The Tasmanian devil has even less luck. In the wild there are not many Tasmanian devils left. The animal is threatened by a strange disease, a sort of contagious cancer. The moment the animals bite each other they transmit the sickness to one other. The first signs of the disease are wounds on the face. which become continually larger. It is impossible to treat and shortly after infection the animal will die. To prevent the animal from extinction, many initiatives have been developed. In wildlife parks groups of devils are brought together which have not yet been infected. By keeping them separated they hope to preserve the animal for the future. If you decide to visit these animals, be sure that you are there for the feeding time - then you can really see where the animal got its name from - the piece of prev is eaten skin and bones.

Looking back on our tour through Tasmania one word always comes up: enchanting. The splendid life in the sea, the fabulous nature parks and the unique animals ensure that you will always be fascinated with Tasmania.







27 OZDiver Magazine



S-SERIES

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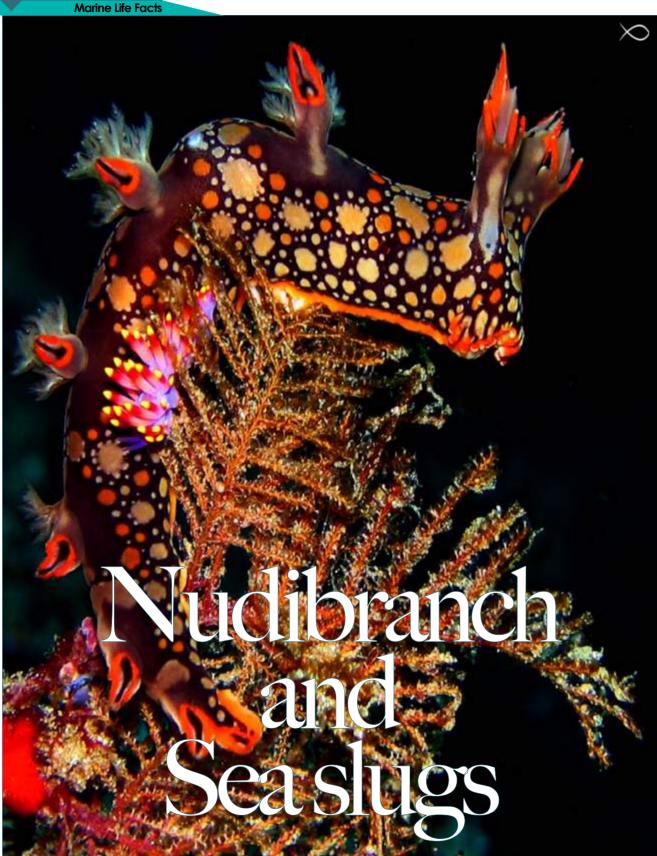


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DEEP DOWN YOU WANT THE BEST





Sea slugs are molluses that have been given the technical name of "Nudibranch". Nudus means naked in Latin and branchia meaning gills in Greek. When these two are combined, you are left with "naked gills", or Nudibranch. The gills of most marine animals are well protected and tucked away out of sight. This is not the case with nudibranch - they breathe through part of the exposed skin on their backs.

To increase this oxygen-absorbing surface area, some slugs have knobs, flaps or shaggy tentacle-like growths on the top of their bodies. Some species even have feathery gills growing in a ring around an opening along their back through which waste is expelled. Some families of nudibranch are able to retract their gills into a pouch when threatened or disturbed. In other families, the gills are positioned in a groove between the mantle edge and the foot along the sides of the animal. Some species have finger-like gills that project from the body and perform other functions besides respiration. On the head are two tentacles (rhinophores) that are used to taste and smell - these help the nudibranch to find



The sea slug walks around by using a flat, muscular foot in much the same way as a land slug does. However, the nudibranch can spread out its foot and use it to "swim" by undulating the muscle. Swimming along gracefully, one brightly coloured red and white species is called the Spanish Dancer, as it closely resembles a Spanish lady dancing and swirling her skirt.

Nudibranch are hermaphroditic - one animal acts as both male and female, making simultaneous fertilization possible. This self-fertilization means the animal is not forced to go out and locate a partner in order to reproduce. The reproduction organs are situated on the right side of the neck of the animal. When mating with another animal, the slugs line themselves up next to each other, facing opposite directions. The organs touch each other and sperm packets are exchanged. Nudibranch store the sperm until it's time to fertilize the eggs. The eggs are most commonly laid in a spawn ribbon, but vary in shape, size and colour.



Sea slugs are carnivorous and devour animals that can't flee from them. Some nudibranch are known to eat sponges, which are avoided by other animals because of their sharp little spikes. Soft corals, anemones and hydroids are also part of the diet of some nudibranch. Most nudibranch have a rasp-like tongue, called a radula, and a strong pair of jaws. Tiny teeth found on the tongue are arranged in a unique pattern – this structure is one of the factors taken into consideration when identifying and classifying these animals.

Nudibranch that feed on hydroids and sea anemones have the curious ability to use the stinging cells of these creatures for their own defence. These cells are little capsules that house a barb inside and are sealed with a lid. This lid must receive both a mechanical and a chemical stimulus before it will spring open. The barb then shoots out and injects poison into the victim. When eaten by a nudibranch, the stinging cells fail to discharge and do not sting the mouth or stomach of the nudibranch. The slug's digestive juices do not even break them down. Instead, the stinging cells pass through the intestinal wall and migrate through the body to the nudibranch's skin. If the nudibranch has knobs or flaps of skin to increase its breathing surface, the cells travel to the ends of these. Even more amazing is that these stinging cells orientate themselves so that their lids are facing outwards, ready to open and fire off into an attacker. The nudibranch replaces old stinging cells with new ones every three to twelve days. Not all nudibranch use this type of defence though - some can discharge poison potent enough to kill fish.



Ocean Facts

By www.savethesea.org - Interesting ocean facts

1. The ocean is about 140 million square miles (362) million km²), or nearly 71% of the earth's surface. 2. The average depth of the ocean is 12 200 feet (3 720m).

3. The deepest point is 36 198 feet (11 033m) in the Mariana Trench in the western Pacific.

4. More than 97% of all our planet's water is contained in the ocean.

5. The top ten feet of the ocean hold as much heat as our entire atmosphere.

6. The average depth of the ocean is more than 2,5

7. The oceans provide 99 percent of the earth's living space - the largest space in our universe known to be inhabited by living organisms.

8. More than 90% of this habitat exists in the deep sea known as the abyss.

9. Less than 10% of this living space has been explored by humans.

10. Mount Everest (the highest point on the earth's surface at 5,49 miles) is more than a mile shorter than the Challenger Deep (the deepest point in the ocean at 6.86 miles).

The longest continuous mountain chain known to exist in the universe resides in the ocean at more than 40 000 miles long.

The Monterey Bay Submarine Canyon is deeper and larger in volume than the Grand Canyon.

The Antarctic ice sheet that forms and melts over the ocean each year is nearly twice the size of the United States.

The average temperature of the ocean is 2°C,

Water pressure at the deepest point in the ocean is more than eight tons per square inch, the equivalent of one person trying to hold 50 jumbo

16. The Gulf Stream off the Atlantic seaboard of the United States flows at a rate nearly 300 times faster than the typical flow of the Amazon River, the world's largest river.

The world's oceans contain nearly 20 million tons of gold.

The color blue is least absorbed by seawater; the same shade of blue is most absorbed by microscopic plants, called phytoplankton, drifting in seawater.

19. A new form of life, based on chemical energy rather than light energy, resides in deep-sea hydrothermal vents along mid-ocean ridges.

A swallow of seawater may contain millions of bacterial cells, hundreds of thousands of phytoplankton and tens of thousands of zooplankton.

The Blue whale, the largest animal on our planet ever (exceeding the size of the greatest dinosaurs) still lives in the ocean. Its heart is the size of a Volkswagen.

The Gray whale migrates more than 10 000 miles each year, the longest migration of any mammal.

The Great Barrier Reef, measuring 1 243 miles, is the largest living structure on earth and it can be seen from the moon.

More than 90% of the trade between countries is carried by ships and about half the communications between nations use underwater

More oil reaches the oceans each year as a result of leaking automobiles and other non-point sources than was spilled in Prince William Sound by the Exxon Valdez.

Fish supply the greatest percentage of the

world's protein consumed by humans.

27. Most of the world's major fisheries are being fished at levels above their maximum sustainable yield; some regions are severely overfished.

The Grand Banks, the pride of New England fishing for centuries, are closed due to overfishing. Eighty percent of all pollution in seas and

oceans comes from land-based activities.

Three-quarters of the world's mega-cities are by the sea.

By 2010, 80 percent of people will live within 60 miles of the coast.

32. Death and disease caused by polluted coastal waters costs the global economy US\$12,8 billion a year. The annual economic impact of hepatitis from tainted seafood alone is US\$7,2 billion.

Plastic waste kills up to a million sea birds, 100 000 sea mammals and countless fish each year. Plastic remains in our ecosystem for years, harming

thousands of sea creatures everyday.

Over the past decade, an average of 600 000 barrels of oil a year have been accidentally spilled from ships, the equivalent of 12 disasters the size of the sinking of the oil tanker Prestige in 2002.

35. Tropical coral reefs border the shores of 109 countries, the majority of which are among the world's least developed. Significant reef degradation

has occurred in 93 countries.

Although coral reefs comprise less than 0,5 percent of the ocean floor, it is estimated that more than 90 percent of marine species are directly or indirectly dependent on them.

There are about 4 000 coral reef fish species worldwide, accounting for approximately a quarter

of all marine fish species.

Nearly 60 percent of the world's remaining reefs are at significant risk of being lost in the next three decades.

The major causes of coral reef decline are coastal development, sedimentation, destructive fishing practices, pollution, tourism and global

Less than one half a percent of marine habitats are protected – compared with 11,5 percent of global land area.

The High Seas - areas of the ocean beyond national jurisdiction - cover almost 50 percent of the earth's surface. They are the least protected part of the world.

Although there are some treaties that protect ocean-going species such as whales, as well as some fisheries agreements, there are no protected areas in the High Seas.

Studies show that protecting critical marine habitats - such as warm and cold-water coral reefs, seagrass beds and mangroves - can dramatically increase fish size and quantity.

More than 3,5 billion people depend on the

Ocean Facts ocean for their primary source of food. In 20 years, this number could double to seven billion.

Populations of commercially attractive large fish, such as tuna, cod, swordfish and marlin have declined by as much as 90 percent in the past

46. Each year, illegal longline fishing, which involves lines up to 80 miles long with thousands of baited hooks, kills over 300 000 seabirds, including

100 000 albatrosses.

As many as 100 million sharks are killed each year for their meat and fins which are used for shark fin soup. Hunters typically catch the sharks, de-fin them while alive and throw them back into the ocean where they either drown or bleed to death.

Global by-catch - unintended destruction caused by the use of non-selective fishing gear, such as trawl nets, longlines and gillnets - amounts to 20

million tons a year.

The annual global by-catch mortality of small whales, dolphins and porpoises alone is estimated to be more than 300 000 individuals.

Fishing for wild shrimp represents two percent of global seafood but one-third of total by-catch. The ratio of by-catch from shrimp fishing ranges from 5:1 in temperate zones to 10:1 and more in the tropics.



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NEW SMART

THE QUINTESSENTIAL DIVE COMPUTER

Environmental Affairs By Annatjie Rademeyer Alien 111Was1011 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.

The 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.

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 grev 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.



Med Tal



Let's start with a few basic principles we as divers should understand, and then we will see how these principles can be used in Hyperbaric Oxygen Therapy to treat a whole range of medical conditions.

One of the first things student divers learn about diving is the diving tables. They show us how long we can stay at a certain depth without having to do decompression stops. The deeper we go, the shorter the stay. Lets look at the "Air non decompression Tables" There are many varieties of this table, but the look at the same thing – Nitrogen.

We work with the partial pressures of a gas to understand what the gas is doing. At sea level we have 1 Atmosphere of air (1ATA) absolute. Air consist mainly of Oxygen(20.95%) Argon (0.93) Nitrogen(78%) and then some trace gasses. For simplicity we will work on 20% Oxygen and 80% Nitrogen. So using Daltons law of partial pressures we can say that we have).2ATA O2 and 0.8ATAN2. 0.2 + 0.8 = 1 Down at 10m sea water we have a extra atmosphere, so the total pressure will be 2 ATA. We still have 20% O2 and 80% N2 but they are 0.4ATA O2 and 1.6ATA N2. We can now clearly see that by increasing the total pressure, we are increasing the individual partial pressure of each gas. We did not change the percentage of that gas.

The next thing we must understand is that all gasses want to be in equilibrium. Basically they want to be at the same pressures everywhere. When you buy a new bottle of fizzy drink you will note that the liquid is not fizzing, until you open it. The liquid is filled with Co2, and the pressure of the gas in solution is the same as the pressure in the little space between the cap and solution. As soon as you open it, the pressure of the Co2 drops in the little space between cap and solution and it starts to fizz. The gas is now escaping from the drink. This is Henry's law.

OUR BODY

We use haemoglobin (Red Blood Cells) in our blood to carry the oxygen in our bodies, we use about 250ml per min wile were in rest. Haemoglobin is a good oxygen carrier, as it enables us to carry about 21ml of oxygen per 100ml of blood, 100ml of water would carry only about 0.0024ml of O2 and olive oil 0.134ml per 100ml if not bound to haemoglobin.

As we can see, we are very dependant on oxygen for our cells to function. If the delivery of oxygen to our cells is reduced to a critical level it will cease to function and will eventually die. We are very dependent on oxygen for metabolism to take place.

HYPER BARIC OXYGEN THERAPY

If a person breaths pure oxygen between 5m and 20m seawater (1.5 – 3ATA) it is considered as hyperbaric oxygen therapy.

Yes the Nitrox divers would be right, it is way beyond the safe diving limits, but the patient breathes the oxygen in a resting state and in a dry environment. US Navy treatment table 6 (mostly used for Bends) takes you down to 2.8ATA oxygen.

By letting a patient breath oxygen at pressures up to 3ATA enough oxygen dissolves into the body to sustain life. In 1960 Professor Boerema wrote a paper called "Life without Blood" were he described his experiment, replacing the blood of piglets with Ringers lactate(normal iv. drip) and kept them alive with the dissolved oxygen. We can quickly see the benefits with carbon monoxide poisoning and blood loss anaemia. Another benefit of oxygen is its ability to help fight anaerobic infections and supporting our immune system. The distance that oxygen travels from the capillary wall into the tissue also increases from about 64microns to about 240microns. So by "saturating" a patient with oxygen you can deliver oxygen to parts of the body were blood is cut off, help fight and prevent infections and reduce swelling due to injury.

There are 13 main indications that are covered by most medical aids. These indications are accepted by the UHMS (Undersea Hyperbaric Medical Association) and SAUHMA (South African Undersea and Hyperbaric Medical Association)

- 1. Air or Gas Embolism
- 2. Carbon Monoxide Poisoning
- 3. Crush Injury, Compartment Syndrome
- 4. Decompression Sickness
- 5. Enhancement of Healing in Selected Problem Wounds
- 6. Exceptional Blood Loss (Acute)
- 7. Gas Gangrene (Clostridial)
- 8. Necrotizing Soft Tissue Infections
- 9. Osteomyelitis (Refractory)
- 10. Radiation Necrosis
- 11. Skin Grafts or Flaps
- 12. Thermal Burns
- 13. Cerebral Abscess

The indications listed below are currently being researched. These are just a few that carry reasonable merit. In some cases Hyperbaric oxygen

speeds up the healing process that would have healed over normal time. Athletes, plastic surgery patients, and people who can't afford sick leave find hyperbaric oxygen therapy attractive. This therapy is not well understood by many doctors as it not part of standard training. Over time with a new generation of monitoring equipment more accurate studies will be able to bring more of the indications listed below on the accepted list.

1.Fracture Healing and Bone Grafting 2.Multiple Sclerosis

3. Selected Refractory Anaerobic Infections

4. Spider Bite (violin)

5.Spinal Cord Injury

6.Cerebrovascular Accident (Stroke)

7.Sepsis

8. Cerebal Palsy

This is just a very brief description of the "unknown" application of hyperbaric chambers.





Global News

Global New

Global News

ARCHAEOLOGISTS DISCOVER REMAINS OF EGYPTIAN ARMY FROM THE BIBLICAL EXODUS

Suez Egypt's Antiquities Ministry announced this morning that a team of underwater archaeologists had discovered the remains of a large Egyptian army from the 14th century BC, at the bottom of the Gulf of Suez, 1.5 kilometers offshore from the modern city of Ras Gharib. The team was searching for the remains of ancient ships and artefacts related to Stone Age and Bronze Age trade in the Red Sea area, when they stumbled upon a gigantic mass of human bones darkened by age.

The scientists lead by Professor Abdel Muhammad Gader and associated with Cairo University's Faculty of Archaeology, have already recovered a total of more than 400 different skeletons, as well as hundreds of weapons and pieces of armor, also the remains of two war chariots, scattered over an area of approximately 200 square meters. They estimate that more than 5000 other bodies could be dispersed over a wider area, suggesting that an army of large size perished on the site.

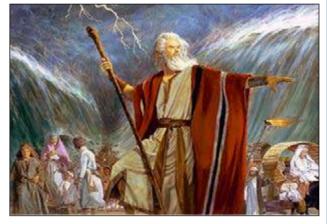
Many clues on the site have brought Professor Gader and his team to conclude that the bodies could be linked to the famous episode of the Exodus. First of all, the ancient soldiers seem to have died on dry ground, since no traces of boats or ships have been found in the area. The positions of the bodies and the fact that they were stuck in a vast quantity of clay and rock, implie that they could have died in a mudslide or a tidal wave.

The shear number of bodies suggests that a large ancient army perished on the site and the dramatic way by which they were killed, both seem to corroborate the biblical version of the Red Sea Crossing, when the army of the Egyptian Pharaoh was destroyed by the returning waters that Moses had parted. This new find certainly proves that there was indeed an Egyptian army of large size that was destroyed by the waters of the Red Sea during the reign of King Akhenaten.

This astounding discovery brings undeniable scientific proof that one the most famous episodes of the Old Testament was indeed, based on an historical event. It brings a brand new perspective on a story that many historians have been considering for years as a work of fiction, and suggesting that other themes like the "Plagues of Egypt" could indeed have an historical base.

A lot more research and many more recovery operations are to be expected on the site over the next few years, as Professor Gader and his team have already announced their desire to retrieve the rest of the bodies and artefacts from what has turned out to be one of the richest archaeological underwater sites ever discove





Decompression Sickness in Sea Turtles

- A team of international scientists including experts from the Zoological Society of London (ZSL) made the discovery
- They diagnosed 29 sea turtles caught in fishing nets with the bends
- Sea turtles are often caught accidentally and while they may seem active when they are released from nets, they could die if they have the bends
- Two of the creatures studied were nursed back to health and released
- Study may have consequences for conservation projects
- Six out of seven sea turtle species are endangered worldwide

They are already at risk from oil spills, hunting and habitat destruction.

Now scientists say that decompression sickness, also known as the bends, can be a killer for endangered sea turtles. The sickness has been diagnosed for the first time in loggerhead sea turtles and creatures that are accidentally caught in fishing nets are most likely to suffer, experts say.

The bends is caused by the formation of nitrogen bubbles in the blood and tissues following a sudden drop in surrounding pressure, such as when a diver rapidly ascends from a deep dive, or a turtle is pulled quickly from the depths. In humans, it can produce many symptoms from joint pain to paralysis and death, but it is not known what animals feel.

A team of international scientists including experts from the Zoological Society of London (ZSL) diagnosed the sickness, which was previously thought to only occur in humans and some whale and dolphin species that have ascended too quickly from diving.

Sea turtles are often caught accidentally in commercial fishing nets and those that appear to be active are usually released immediately back to sea.

Loggerhead turtles are the most abundant of all marine species.

But their population is declining due to pollution, shrimp trawling and the development of their nesting areas.

The species has been on the threatened species list since 1978.

They can be found in colder waters around the world but prefer costal habitats.

Loggerheads have large heads, strong jaws and a reddish-brown shell.

Adults can reach three feet long (one metre) and weigh 250lbs (113kg).

They feed on jellyfish, crabs and fish as well as seaweed.

Adult females swim thousands of miles to the beach where they were born to lay their eggs.

They have an average lifespan of 50 years and have a top speed of 15mp (24kph).

This study, published in the journal Diseases of Aquatic Organisms, suggests that some live turtles, while appearing initially active, possibly have the bends and may die following release. 'This is the first time that the bends has been confirmed in a marine reptile,' Dr Paul Jepson, co-author of the study and marine vet at ZSL said.

It's also shows that endangered sea turtles accidentally caught in fishing nets are at risk of dying, even if they initially appear to be still alive when brought up to the sea surface.

'Ideally we want to avoid sea turtles being caught in commercial fishing activities but, if they are, I hope that this research will make fisheries more vigilant about unintentionally catching sea turtles and the risks of decompression sickness from rapid ascent.' In the study, 29 sea turtles accidentally caught in commercial fishing nets off the coast of Spain were found to suffer from the bends.

Two of the creatures were treated with human recompression protocols carried out at Oceanographic in Valencia, and responded well. They were subsequently released back into the Mediterranean Sea.

The findings have direct implications for the conservation of sea turtles, because many more may die as a result of commercial fishing activities than previously thought!

Marine turtle populations are declining in the Mediterranean Sea, and six out of seven sea turtle species are endangered worldwide.

View original article at www.dailymail.co.uk

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Global News

RAID Launches Dive Consumer Targeted Marketing Device at DEMA

For the third day in a row the dive industry is talking about RAID as this vibrant, relatively new training agency coming out with all these new ideas one after the other and taking the industry by storm as it releases yet another great product at the DEMA Show 2014. Today RAID officially launched "LearnToScuba.com" – a web based consumer friendly marketing tool designed especially to assist new divers find the most consumer responsive, technology rich and ecofriendly diver training facilities on the planet – RAID Dive Centres.

"Attracting new divers should not be all about promoting a training agency's brand to new divers and retain existing ones when the modern consumer is no longer about brand, but rather is just looking to find information about becoming a diver or staying a diver" says RAID International CEO, Jim Holliday. Holliday continues: "we are all drawn to the ocean by a force of nature, while most will be left to stare with fascination at the surface wondering what lies beneath. As a diver you are able to plunge into a whole new world of adventure, beauty, and wonder. This drive is not related to this brand or that, but initially the desire to simply learn to scuba. So Learn ToScuba.com is specifically designed to allow potential divers to easily find what they are really looking for – to learn to scuba".

"LearnToScuba is linked directly to the RAID website where potential and existing divers will find a multitude of online theory courses and the diver's choice of a RAID Dive Centre. It is our stores that get the full benefit of LearnToScuba rather than a site to strengthen our brand. At RAID all of our executives have run both dive stores and training agencies in the past, so we know what it is about and that is supporting our stores in their business endeavours rather than blowing our own trumpet. LearnToScuba is an absolutely unique marketing approach to what should be the dive industry's major goals – acquisition and retention and this is not something any of us can just pay lip service to. It is as simple as this, with all these brand based promotions either in print or on the net, we could be missing a whole lot of people out there who know nothing about the alphabet soup we take for granted in the dive industry" says RAID International Marketing and Business Director Terry Cummins.

Holliday summaries this unique way of promoting scuba this way; "RAID will continue to challenge the norm and break the mould. I encourage us all to realise that change is essential if we want to grow this industry. In doing so, we first need to acknowledge that it is insane to think we should keep doing things the same old way and expect a different and especially a better result. LearnToScuba.com is just one of ways we at RAID are exploring new concepts that can benefit the entire industry in the long run".

A 100-meter-long cable was installed in South Africa to help sharks.

A great white shark encountered off the coast of Massachusetts. A NOAA report released June 2014 says great white abundance in the area has climbed since about 2000. The scientists report the shark's growing numbers are due to conservation efforts and greater availability of prey.

South Africa has started testing a shark repellent electronic cable in Cape Town, in a hi-tech experiment aimed at protecting swimmers without harming the deadly sea predators. Researchers at KwaZulu-Natal Sharks Board installed a 100-meter-long cable on Friday in a small bay in Cape Town that seeks to exploit the sharks' super-sensitive nose. The cable, fixed to the sea floor, with vertical 'risers' supporting electrodes, which emit a low-frequency, low-power electronic field that has been proven to repel sharks.

The technology has been developed by experts who invented a portable device called a "shark pod" that generates an electromagnetic field to protect scuba divers and surfers. Research around the device shows that sharks turn away when they come across an electrical current. Sharks are sensitive around the eyes, gills and nose and some divers who routinely swim with them use small batons if they get too close.

If successful, the technology could be used around the world and also mark a major shift away from the shark nets used on the South African coastline for the past 50 years, which have been criticized as environmentally unfriendly. "Everybody is 100 percent behind this project from the government to environmentalists, because this means we will have fewer sharks ending up dead from being trapped and tangled in the shark nets," said Paul Von Blerk, KwaZulu-Natal Sharks Board's technology specialist.

The cable, which does not provide a physical barrier to sharks or other marine animals, will remain at the Glencairn beach for five months of testing. Researchers chose the bay because sharks appear there frequently during the summer months.

Clear waters in the area will also make it easier for monitors to see whether the barrier does prove a deterrent. Researchers said the technology would not harm humans because the cable on the seabed would be covered, while the electrodes would only produce a tingling sensation if touched.

An Austrian tourist was attacked and killed by a shark while swimming at a beach in South Africa's Eastern Cape province in March this year, while the University of Florida says sharks killed 13 people off South Africa's coastline from 2004-2013.

World's Deepest Swimming Pool

The world's deepest swimming pool, completed earlier this year, is located in the small Italian town of Montegrotto Terme — and simply calling it deep might be an understatement.

The pool, which measures 21 X 18 meters (69 X 59 feet) and has a maximum depth of 40 meters (131 feet), contains 4,300 cubic meters of spa water and is kept at the constant temperature of 32 to 34 Celsius (about 90 degrees fabrenheit)

Y40 is unique in its field thanks to the spa water, which cannot be outsourced. We want to open up new medium and long term work prospects to try and gurantee prosperity, not only for my company but also for the surrounding land and society," archiect Emanuele Boaretto previously said.

The pool is located inside the 4-star Hotel Terme Millepini and was made with the goal of creating "the best swimming pool in the world," according to its official website.

Activities at the pool include scuba diving, free diving, aqua fitness, watsu, hydro-kinesi therapy and special activities for pregnant women.

The world's largest swimming pool, completed in 2006, is located at the San Alfonso del Mar resort in Algarrobo, Chile. It is estimated to have cost more than \$1 billion to construct and covers nearly 20 acres.



Send us your news.

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

Here's what we need:

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

Please send to info@ozdiver.com.au



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Komodo

A large Komodo dragon lethargically raises its head and turns in my direction. I've disturbed its laze on a desolate beach on an island of Komodo National Park. This reptile may resemble a harmless lizard but I have been informed otherwise. It is a carnivorous and aggressive cold blooded creature. This description seems fitting considering the surrounding landscape is stark, dry, savannah scrub. The ruthless sun glares off barren rock faces. This is a hostile environment.











The dragon lunges towards me and a park guide threatens the dragon with a long stick. The dragon slouches back on its hind legs. It drools as it stares at me. Another dragon emerges from the shrub. It lopes slowly along the beach, tail dragging behind. It stops a short distance away and it too, assumes a fixed stare.

Komodo National Park consists of the islands of 🙎 Komodo, Rinca, Padar, Gili Moto, Nusa Kode and some smaller islands. There is very little habitation in the park and transport infrastructure is nonexistent. It is best visited by a liveaboard boat Such as the comfortable and luxurious traditional bugis boat, MV Seven Seas. Komodo is situated in the heart of Wallacea, a region resulting from the collision of Australia and the Asian continents forming a set of volcanic islands with a mix of animals from both continents. Contrasting temperatures on land vary from 17 to 43°C while underwater there are also large variations from 20-28°C. In the north of the park the Pacific Ocean pushes in warm water with excellent visibility while in the south the Indian Ocean brings a cold

plankton enriched soup of nutrients. The islands of Komodo and Rinca form a bottleneck passage between the Indian and Pacific Ocean currents. During tidal changes vast amounts of water move from south to north during rising tide and vice versa at falling tide. Limited numbers of passages exist resulting in peculiar currents with whirlpools, downwellings and upwellings and absolute calmness between tides. All types of currents can be experienced here, some all in one dive.

Dive sites, such as Cannibal Rock, in the nutrient enriched south are covered with lavish marine life. Hard and soft corals compete with anemones, squirts, sponges and tunicates for a foothold on the reef. It is an explosion of riotous colour; hundreds of sea apples sport psychedelic colours from the 60s – crimson and purples mixed with oranges and greens, brightly coloured crinoids cling to the pink and purple seafans, orange and yellow seawhips corkscrew into the current and white, green and yellow bushy hard corals sway gently in the underwater breeze. Even the fire urchins are vivid colours of lilacs, cerise, magenta and cobalt



blues. A pair of resident Zebra striped urchin crabs contrast yet blend with their jazzy host. Sunshine yellow tubastrea cup corals cover the reef walls and a yellow Rhinopias scorpionfish is so confident of its camouflage within the yellow fields that it sits out on an open slope. Many of the thousands of crinoids are host to tiny crinoid shrimps, each matching the colouration of their hosts. Frogfish are aplenty, ranging from the funky coloured Clown frogfish to the drab grey Giant frogfish. Then there are the goldies, glassies, wrasse and other colourful reef fish, all feasting off the reef. Cannibal Rock is certainly the richest reef for miles around.

Also in the south is Manta Alley, a Manta cleaning station run by hundreds of Butterflyfish. Three small rocky islands funnel turning tides through narrow gaps forming currents with sufficient strength to provide the Manta rays with the lift they require to be stationary yet still have water flowing over their gills. As the gentle giants hover at the cleaning station, Butterflyfish dart into action preening their expansive wings and bodies. Mantas with white bellies, black bellies and dotted bellies materialise as if from nowhere, and are preened and cleaned, then tilt their vast wings and melt into the distance.

Further north, at the dive site Fish Bowl, we see large schools of Giant kingfish, jacks, surgeons and snappers congregating at a V-section in the reef. As the current rushes into the gap it is pushed over the top of the reef and forced into a narrow channel before bursting like an exploding champagne cork into the open sea. A few Grey reef sharks patrol the wide entrance. The walls on either side of the gap are festooned with soft corals all vying for nourishment. Schools of purple and orange goldies swim in synchronisation among the soft corals. The current pulls hard and we are forced to leave the gap. As we pelt over the top into the channel we are met by Manta rays filter feeding the large volumes of water. Unlike us these graceful creatures exert no effort in opposing and riding the current. The minute we let go of the reef we are shot cannonlike into blue water. The vigilant skiff drivers are expecting us in this turbulent water.

The volcano Gunung Sangean last erupted in 1996 giving birth to black sandy beaches. Streams of bubbles trickle from beneath the sands which is hot in patches, indicating that the volcano hasn't finished its business yet. The marine life is





Komodo









Dive the Globe

Komodo





oblivious to any impending doom from another eruption. Hundreds of seapens stick out of the sand like old fashioned writers quills. I find one with a reddish goby fish looking distinctive on its green stem. Flat sea anemones resembling dinner plates provide sanctity for a mixed population of critters, Porcelain crabs lurk under the folds of the anemone, see-through glass shrimps roam boldly amongst the tentacles revealing only their internal organs and diminutive polka dotted squat shrimps dance on the sands near the rim of the anemone. Goatfish rummage in the black sand for titbits and the occasional seahorse twirls its tail around seagrass blades in the shallows. On some extremely long whip corals I find extended families of gobies. Usually only found in pairs, these whip corals host up to five gobies each.

Often night dive sites are dived on the underwater extension of island beaches, sometimes on pure white sand, sometimes on black volcanic sand. On a white sandy slope I spot a globular shaped stargazer rapidly reversing tail first into the sands. Within seconds only bulbous eyes and an arc of menacing teeth are exposed with a worm-like appendage used to attract prey. My roving torch light strikes mobile glowing pinpoints. These turn out to be pea sized Bob-tail squid that simply blend in with the sand. Some have dark marbled colouring and others resemble white sand grains. An octopus skittishly jet propels away from my torch light. It stops momentarily splaying its tentacles, then shoots away into the distance and dives deep into the sand.

On a black sand dive we find bushy black corals. Perfectly camouflaged within the branches are rare Tozeuma armatum Commensal shrimps whose Pinocchio-type nose is one third their total length. An ugly Caledonian devilfish resembling drifting debris crawls across the sand in front of one of the bushes. I avoid the Caledonian devilfish as it has the potential of inflicting a painful sting. A Blue ribbon eel peeks out from a sandy tunnel but retreats quickly as a cold thermocline pushes up the slope. At the entrance to another tunnel a day-glo orange spearing-mantis shrimp rotates its stalk-like eyes independently periscoping the surroundings. The mantis has the most powerful legs underwater. With one kick this mantis can spear fish or prawns from below with an incredible speed of less than three

milliseconds. Luckily I don't fall into its food chain.

Before the days of GPS one dive site was found, lost and found again. For this reason it is called 'Hard to find rock'! This huge submerged rock is located a little off shore. Underwater it is the noisiest site in Komodo - the noise being generated by fish swimming at an almighty speed to kill other fish and those fish swimming even faster to try and get away. A huge school of Giant kingfish and hundreds of Bluefin kingfish use the rock as a garrison from which to launch their attack on thousands of snappers, fusiliers and surgeons. A distinctive crunching sound is heard as a fish is caught. This sends the harmless plankton feeders fleeing in blind panic. Similar conditions exist on Crystal Rock, which is so named because it is crystal clear to find! These are hunting grounds for the big pelagics, including the formidable looking Dogtooth tuna. At the precise point where the current hits the rock face, schools of Oriental sweetlips congregate in small huddles. These nocturnal fish are not oblivious to the surrounding activity but luckily their larger size is not preferred by the pelagics.

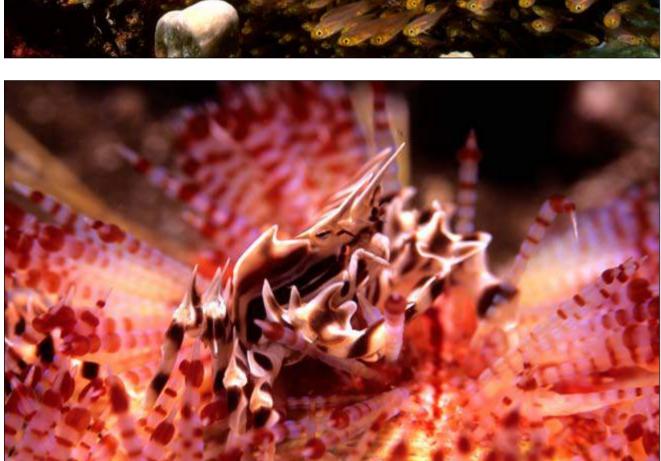


We continue to experience the contrasts in Komodo



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Dive the Globe

 ■ on Batu Balong, an island looming up from the depths and appearing as a small, uninhabitable rocky outcrop on the surface. On the lee side of the island the reef is calm and quiet - too quiet, almost dead. We head against the current until we reach the other side of the island. The current is a consommé of plankton causing all the small fish to feed frenetically. Thousands of goldies swoop en masse into the current grabbing food particles before dashing back to the sanctity of the reef. Constant waves of fish pulsate in the current. As the current gains strength the small fish venture shorter distances. All the hard coral polyps are out feeding and the soft corals are pumped with water. The action is mesmerising but all good things must come to an end. As we head to the surface we are swept over the top of the island in a wild current. I feel like superwoman soaring over the reef. Then suddenly the reef is gone and the current is no longer obstructed, forcing downwellings, whirlpools and major turbulence, taking us along with it. Komodo throws all its peculiar currents into one dive for us.

Back on the beach the Komodo dragons are inching their way closer. Apparently one bite has sufficient toxins to cause a slow death. It is incredulous to see these hostile carnivores on a barren landscape knowing that a few metres away is paradise underwater. This is the Yin and Yang of Komodo - contrasts of nature living in harmony.

How to get there:

Fly to Singapore and then on to Bali. There are daily flights to Komodo.

Because of the strong currents, Komodo is considered an advanced diving destination. Average depth 10-25m

Travel advice:

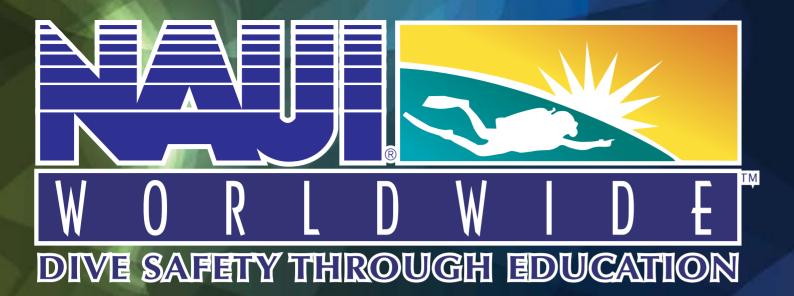
The remote areas of Komodo are best explored from a liveaboard.

Travel contact details: www.thesevenseas.net

For more underwater images and stories visit http://peterpinnock.com









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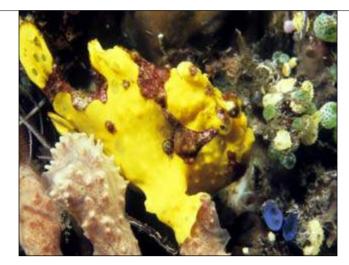




Bali

Many villagers living on the northern coast of Bali give daily offerings of fruit and flowers to Baruna, Hindu God of the Sea. Baruna in turn must protect the sea, its inhabitants and ensure that there is sufficient fish to feed his worshippers. Not a simple task with a large population to feed and Mother Nature's temperament to placate in Bali, an Indonesian island located within the Pacific Ring of Fire.

Menjangan, on the north-west coast, is approximately a 4-hour taxi ride from Dempassar Airport. The route passes through fascinating villages steeped with culture and Balinese Hinduism. Each family home has an ornately constructed Hindu temple where craft woven baskets filled with fruit, flowers and incense pay respect to good spirits – those discreetly left on the ground are to pacify the bad spirits. The properties are walled with impressively carved wooden door entrances guarded by stone statues that prevent evil spirits from entering. Even shops, police stations, petrol garages and road intersections have a Hindu statue of worship.



The centre of Bali is mountainous with narrow winding roads that are bustling with scooters, the Balinese preferred mode of transport. Scooters carry everything from families to market crops or building materials. Some are transformed into mobile food stalls selling Indonesian delicacies such as nasi goreng or gado gado. The scenic route is inspiring – tailored terraced paddy fields, colourful flower



farms and neat fruit and vegetable plantations. Every inch of space is wisely put to use.

High in the mountains is one of Bali's most holy temples, Pura Ulun Danu Bratan. Visitors pay a nominal donation to enter and walk through the immaculate gardens to the picturesque shrines built on the edge of a lake. The lake is the crater of an extinct volcano 1 400m above sea level. It's a peaceful environment despite the crowds of visitors. Not too far away is Belugal market where a wide variety of Balinese crafts such as wooden masks, bamboo mats, bowls and trays, elaborate kites and handmade paper are sold along with vividly coloured sarongs and the obligatory souvenir T-shirts. The market is famous for plants, flowers, fruits and exotic spices - including saffron and vanilla pods. Bargaining is a must.

The journey finally ends in Banyuwedang Bay. Mimpi Menjangan Resort is a green oasis on this dry side of Mount Agung. All the Balinese-style rooms have thermal water from a natural hot spring piped into an outdoor hot spring tub. There is also



a large communal hot spring on the premises. The 45 degree water is said to promote cleansing, be both relaxing and rejuvenating, assist healing and have a soothing effect on psychosomatic and chronic disorders.

The diving

Menjangan Island, part of Bali Barat National Park, is a short boat ride from the resort. Here a park



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Bali

ranger assists Baruna in protecting the sea. Together they have done well to protect the reefs which are rich with hard corals in the shallows and filled with exquisitely coloured tropical fish.

The short wall leading to the dive site known as Garden Eel Point is covered with small seafans, soft corals and colourful squirts. Some large barrel sponges are home to funky looking hairy squat lobsters. On the edge of the reef a coral overhang provides protection for a school of glassfish. Hungry jackfish torpedo into the swarming fish who instantly take refuge within the reef's configuration. Laying below, a few gluttonous coral rockcods cunningly wait for this opportunity of food being driven into their general direction.

The sandy slope above the drop off is pitted with holes occupied by Garden eels. Stretching out of, yet never leaving their holes, the eels feed on drifting plankton. On approach the eels nervously sink beneath the sand. Shrimp gobies and their Blind shrimp companions are unperturbed by the activity as they continually work at excavating the sands

drifting into their subway homes. Nearby a coral bommie supports a community of Harlequin ghost-pipefish. At least five can be seen on one bommie – each with different colouration and hosts. A black and white couple clash against a pink seafan, a cameo dressed female is fashionably coordinated within the fronds of a leather coral and a rusty brown male is camouflaged by a matching crinoid.

The Anker Wreck is not far from the guardhouse on the island. This wreck lies in 45m with the anchor firmly wedged in the shallow water. It is believed she sank over a century ago after her chain broke, her cargo of metal sheets now plastered with coral growth. The adjacent slope is frequented by Green turtles, schools of butterflyfish, wrasses and surgeonfish. The shallow water is pristine with hard corals proving that the park is a worthwhile place to visit.

On the other side of the park is the not so secret, Secret Bay. Living below colourful, traditional fishing craft moored to the black sand shore are weird and wonderful creatures. Secret Bay



was so named by Takamasa Tonuzuka who first photographed its unusual and rare inhabitants, but kept their location a secret. The water can be five degrees colder that other areas of Bali due to nutrient rich upwellings from the deep trench beyond the bay.

In the shallow waters Long-spined black urchins play host to the beautiful Banggai cardinal fish. These rare fish are only found in Indonesian waters. Their unusual fin markings which resemble aboriginal art make them wanted specimens for aquarists. Other critters have found homes in broken chairs, old tyres, scrap metal and other arbitrary trash. More recently artificial reef structures have been erected. Numerous species of anglerfish balance perfectly on the cross bars of these metal frames. A huge school of Striped catfish fills one cage structure densely packed together, the tight ball of catfish shimmy in a confusion of stripes, whiskers and poisonous fins. Though most critters take advantage of the protective homes, the Caledonian stinger scorpionfish, flounders and numerous lionfish are brave enough to roam the open sands. Filefish, pipefish and sedentary seahorses hide amongst the seagrasses. Expect the unexpected.

On the north-east side of Bali another Mimpi resort is literally a stones throw from the sea. Gunung Api erupted in 1963 throwing fist size black rocks on Tulamben beaches - many lives were lost. Baruna must have been angry with Mother Nature. The Liberty Ship that had been laying on the beach since 1942 was pushed 50m into the sea. During WWII the ship was torpedoed by a Japanese submarine and suffered huge damage. Attempts to tow her to port for repairs were abandoned when she took on too much water. She was deliberately run aground in order to salvage her cargo of rubber and railway parts. These days she is the most popular dive site in Bali and considering it is a shore entry dive, she is arguably the most accessible wreck in the world. Even though she was salvaged and broken in two by the volcanic eruption, she is beautifully draped with soft corals, fans and sponges.

The Dropoff is accessed by swimming across the black sands in front of the outrigger fishing craft launch site. White sandperches stand out visibly against the volcanic sand, and on the reef itself, a sunshine yellow Warty frogfish waves his modified dorsal fin lure frantically trying to lure fish for his dinner. Hundreds of damsels flit up and down the





∡ wall. The funnel of barrel sponges forms a good resting place for groupers while Longnose hawkfish prefer the bushy hard corals or small sea fans and

prefer the bushy hard corals or small sea fans and goggle-eyed gobies peek out of reef holes. It is a busy reef with oodles of interesting critters waiting to be found.

But perhaps the Liberty Wreck is Baruna's temple.

It certainly could resemble a place of worship for marine inhabitants. A sizeable Giant barracuda with menacing teeth guards the boiler room; a group of Oriental sweetlips gather in a corner, their plump lips moving as if rehearsing hymns, and a congregation of big-eye jacks forge towards the foredeck as if in a religious procession. A ritual is performed as the jacks circle above the deck. Some of the followers rub their bodies on the rusting surface - is this an act of respect for Baruna - will he continue to bless Bali's reefs?

Travel advice: Commuting around Bali can take time, so to save time try and stay close to the dive sites.

For more underwater images and stories visit www. PeterPinnock.com



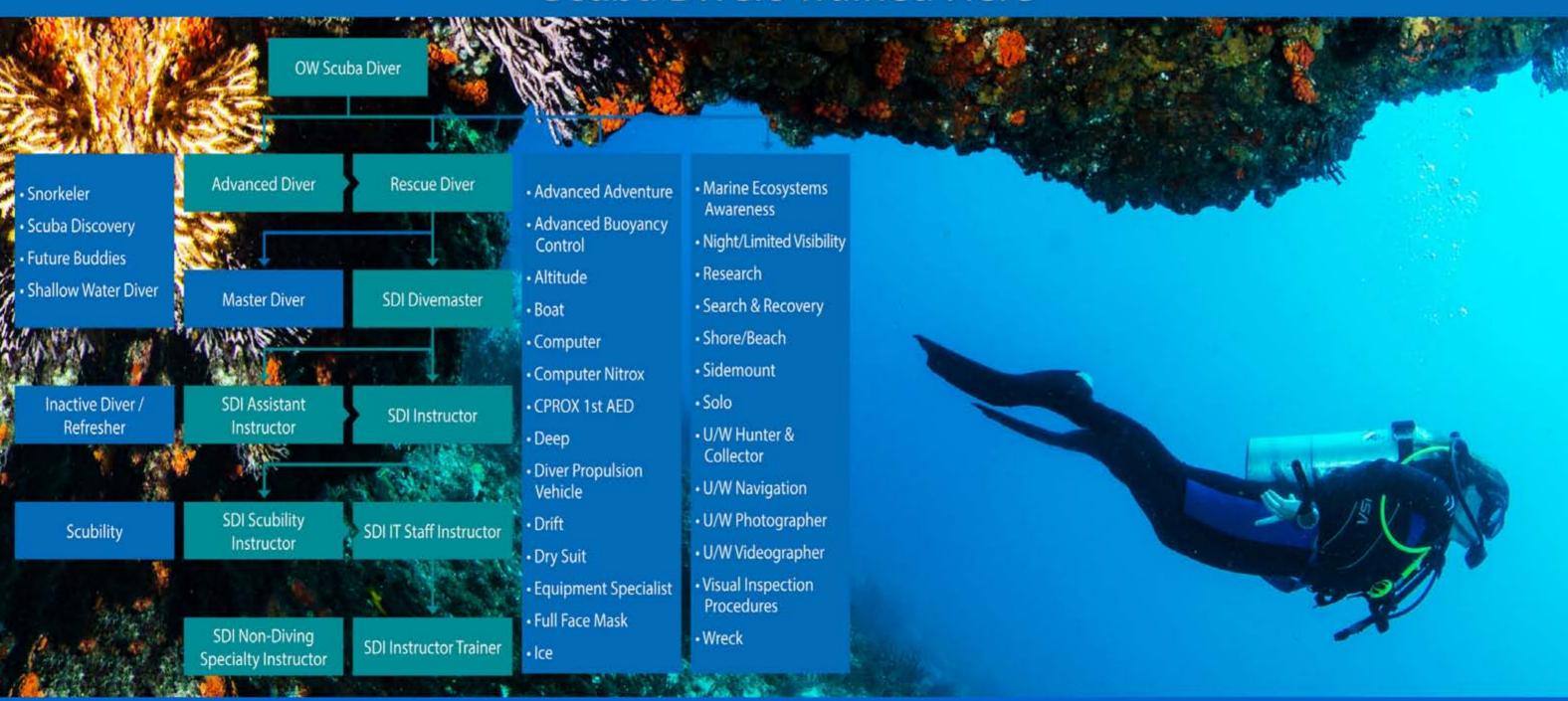








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Dive the Globe

Villa Alba





Ever wanted to go to Bali? Ever wanted to dive the better dive spots of Bali? Then do not look further. Just outside of a little town called Tulamben lies a diamond in the rough know as Villa Alba.

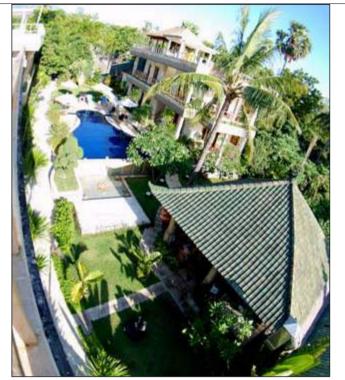
Tulamben is a small fishing village on the northeast coast of Bali, about 3 hours drive from the airport. It is among the most popular dive sites on Bali as the wreck of the Liberty, a US Army Transport ship torpedoed by a Japanese submarine in 1942, lies just off shore. Villa Alba is nestled below the slopes of Mount



Agung in the small idyllic village of Rubaya. It is located on the shore within 10 meters of its own house reef and only 5 minutes away from the Liberty wreck, drop off and coral gardens. The lodge is split into two sections. You have the option of 14 rooms located in the main section of the lodge, close to the beach. These are fully furnished with A/C, hot and cold water, ceiling/free standing fans, tea and coffee making facilities, fridge, safety deposit box and TV with DVD player.

The other option is at Villa Alba II where there









Dive the Globe

are 5 rooms at a walking distance from the beach and the main lodge.

Facilities include, 2 swimming pools: 1 is a 11m x 5m x 3m infinity pool with beautiful views and the other pool is 12m x 6m x 3.5m deep, both can be used for training if required. A Roof top bar, roof top massage tables,

observatory, restaurant, laundry room, dive store, classroom are also avalable.

The restaurant can serve anything from Chinese to Western and Balinese food at reasonable prices.

They have one of the best diving setups that I have ever seen in the world and defiantly the best technical dive set up in Bali. They are both a IANTD / PADI 5 star resort and a BSAC Dive Center, and they cater to both open circuit recreational and CCR divers. If Bali is your destination and diving is your passion then this is the place to be.

For more information about Villa Alba visit http://www.alba-dive-tulamben.com or contact them on (+62) 081-339 683 618











Exploration

World War II Wreck Dives

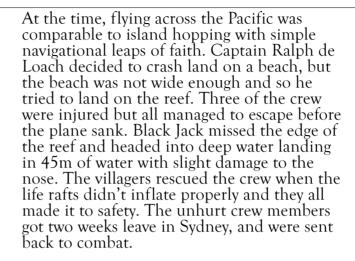
World War II Wreck Dives

 The The Pacific was the biggest ž battleground in the Second World War. .≣ Naval battles raged from Pearl Harbour down to the Solomon Islands up through E the Philippines and ultimately culminated 🖴 at Iwo Jima in Japan. Distances covered were immense. Thousands of tons of ships and aircraft were lost in the Pacific by both 🗄 the Americans and Japanese.

Today, very few remnants of the War 2 remain on land where six decades of Ecorrosion and human expansion has taken it toll. Yet underwater the Pacific is littered with wrecks. Most of them are in deep water out of view, but a few of them lie within reach of the sport diver. Knowing the story behind the wreck brings the wreck to life. It's like touching the face of history. Here are the stories behind a few classic wreck dives in the Pacific.

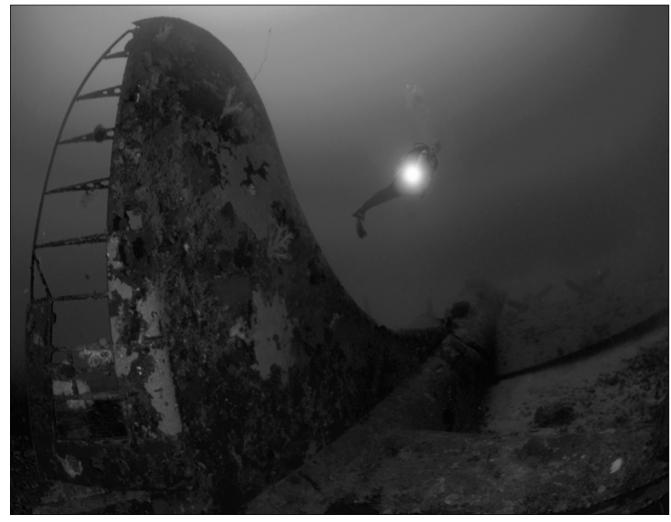
Black Jack B17 Bomber - Milne Bay, Papua New Guinea

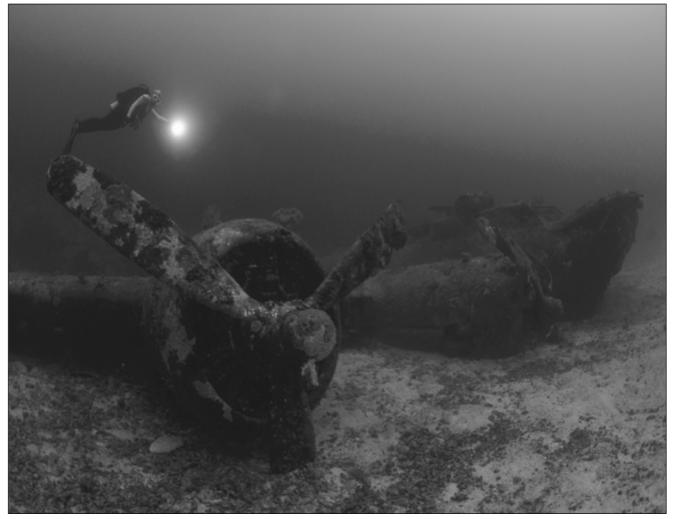
North of Milne Bay next to the village of Boga Boga is what many refer to as the best plane wreck in the world. On July 11, 1943 a B17 bomber with 10 men aboard took off from Henderson Airfield, Port Moresby, and headed towards Rabaul to bomb the Japanese. As the serial number of the plane ended in 21 she was fondly known as Black lack. The right side of the nose had the images of two playing cards: Jack and Ace making 21 in poker. On route to Rabaul she developed engine trouble but the crew still managed to offload the bombs on the target. Heading back to Port Moresby they were caught in a violent storm. Without decent instrumentation they were soon lost off course and by now, running low on fuel.



Today Black Jack sits upright, her nose pointing away from the reef wall, as if revving up for her final journey home. Her four props are intact and the tail machine guns still rotate in their housing.







World War II Wreck Dives

Wreck Exploration:

World War II Wreck Dives

USS Saratoga (CV3) Aircraft Carrier -Bikini Atoll, Marshall Islands

Saratoga, the first fast carrier in the United States Navy, was launched in 1925. With a length of 270m she was larger than the Titanic and with a crew of 1 600 and an armament of 90 aircraft, she could cruise 🖺 at 32 knots. Landing on a moving deck had e never been done before and it was a skill that the Navy pilots had to quickly acquire 107 pilots died in crash landings on the deck before a single shot was fired against the enemy. During the war she saw action in ĞGuadalcanal, Papua New Guinea, Marshall Islands and Indonesia. During this time she was torpedoed twice and on February 21, 1945, was hit by five kamikaze fighters off Iwo Jima. At the end of the war, Saratoga held the record for the greatest number of aircraft landed on a carrier, with a lifetime total of 98 549 landings in 17 years. She was awarded seven battle stars for her World War II service.

Saratoga was assigned to Operation Crossroads at Bikini Atoll to test the effect of the atomic bomb on naval vessels. She survived the first blast (Test Able), an air burst on July 1, 1946, with only minor damage, but was damaged beyond repair by the second blast (Test Baker) on July 25, an underwater blast which was detonated 500m from the carrier. Salvage efforts were prevented by radioactivity, and seven and a half hours after the blast, with her funnel collapsed across her deck, Saratoga slipped beneath the surface of the lagoon.



Everything on the Saratoga is big. A dive on the bow gives a sense of the size of this wreck. Highlights of diving Saratoga are Curtis SV2c Helldivers in the hangar deck, TBF Avenger torpedo bombers and Twin housed five inch 38 calibre canons on the flight deck. Saratoga is the only diveable aircraft carrier in the Pacific.









underway.

∡ HIJMS Nagato Battleship - Bikini Atoll, Marshall Islands

The Nagato could well be the most infamous wreck in the Pacific. At the outbreak of World War II, Nagato was the flagship of the Combined Japanese Fleet, flying the flag of Admiral Yamamoto. On December 2, 1941 Nagato sent the signal "Niitakayama nobore 1208" - Climb Mount Niitaka. On December 8, the Japanese Carrier Strike

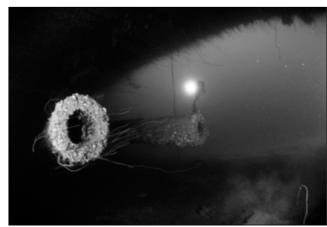
Force attacked Pearl Harbour and dragged America into the war. The Nagato was the very ship, Admiral Yamamoto's flagship, from which he heard the final code signal, "Tora! Tora! Tora!", informing him that the attack he engineered on Pearl Harbour was

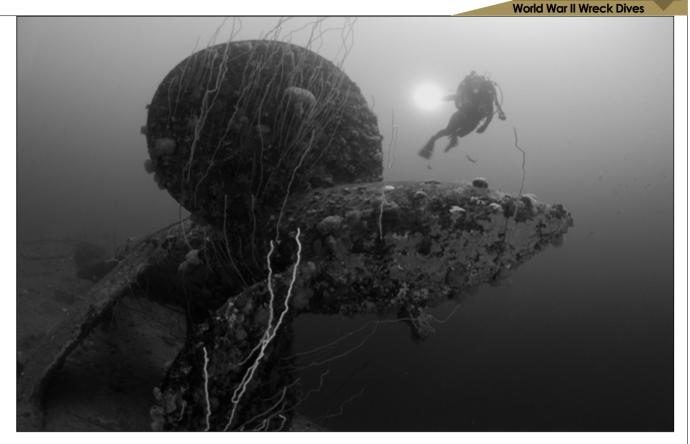
The Nagato was the first battleship in the world to mount 16 inch (410mm) guns, and her armour protection and speed made her one of the most powerful capital ships at the time of her commissioning. Her massive 16 inch guns could project a missile over 30 kilometres. These are the biggest guns ever used in naval warfare. It was a modified 16 inch shell from the Nagato that sunk the USS Arizona in Pearl Harbour. It's not surprising then that America bore a huge grudge against this battleship. At the end of the war the Nagato was the only remaining battleship left in the Imperial fleet. As a final nail in the coffin it was raised from Tokyo Bay where it had sunk, and sailed to Bikini Atoll. Here it was subjected to two nuclear test blasts during Operation Crossroads and finally sunk on July 26, 1946.



Battleships are top-heavy causing them to flip over when submerged. The Nagato rests inverted with her four huge screws pointing toward the surface. It's a sombre dive on the bridge - this is where the war started for America, but it's the massive 16 inch guns that attract the most attention.









World War II Wreck Dives

Exploration

World War II Wreck Dives

San Francisco Maru - Chuuk Lagoon, Micronesia

During World War II, Chuuk Lagoon (then known as Truk) served as the forward anchorage for the Japanese Imperial Fleet. Chuuk was considered the most formidable of all Japanese strongholds in the Pacific. On the various islands, the Japanese Civil Engineering Department and Naval Construction Department had built roads, # trenches, bunkers and caves. Five airstrips, seaplane bases, a torpedo boat station, submarine repair shops, a communications centre and a radar station were constructed. Protecting these various facilities were coastal defence guns and mortar emplacements. At anchor in the lagoon were the Japanese Navy's giant battleships, aircraft carriers, cruisers, destroyers, tankers, cargo ships, tugboats, gunboats, minesweepers, landing craft and submarines. Some have described it as Japan's equivalent of the Americans' Pearl Harbour.

Once the American forces captured the Marshall Islands, they used it as a base from which they launched an aircraft carrier attack on February 17, 1944 against Truk Lagoon. Operation Hailstone lasted for three days, with an American bombardment of the Japanese wiping out almost anything destroyed.

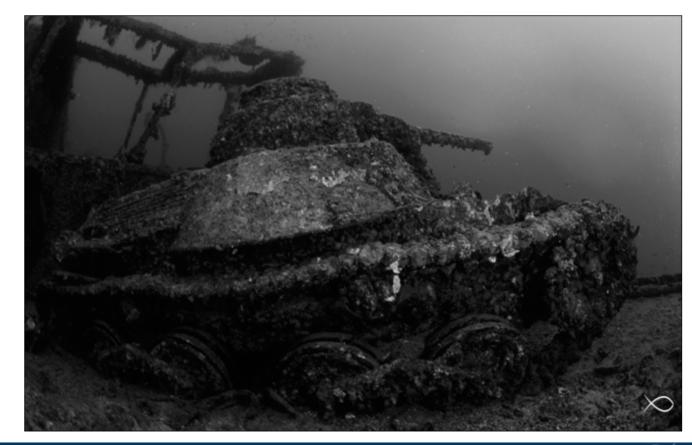


Built in 1919, the San Francisco Maru served as a cargo ship during the war bringing raw materials to Japan from Palau, and later for transport between Japan and the supply bases in the Pacific. While at the Eten Anchorage at Chuuk Lagoon, she was attacked during the first day of the Operation Hailstorm air strikes. She sunk the following day when a 500 lbs bomb dropped by a TBF Ávenger launched from the aircraft carrier USS Essex hit amidships. Five crew were killed as a result of the bombing.

Today the San Francisco Maru is often referred to as the "million dollar wreck" - a reference to the value of the cargo of war supplies. She rests on the sandy bottom of the lagoon with the bottom of the bow at 63m. The foreship presents a fascinating and unique sight - there are three Japanese Type-95 "Ha-Go" light tanks parked on the main deck forward of the bridge. These were built by Mitsubishi and carried a crew of three. They had ½ inch armour and weighed 7,5 tons. Armament was one 10mm main gun and two 7mm machine guns. In the hold two there are two trucks and between the trucks there are two small tractors. There are more tractors underneath these tankers and tractors. Towards the bow in the forward hold one, you find hundreds of hemispherical anti-boat mines together with the detonator horns packed separately.







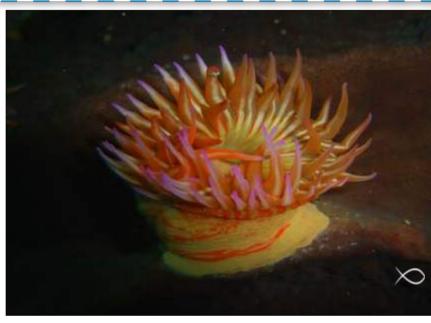
Photographic Competition



Charl Prince took this photograph of a turtle with a Canon A510.



This photograph of a Speckled hawkfish was taken by Tiffany de Klerk with a Sea & Sea 750-G and YS15 Auto Strobe.



Marthinus van der Westhuizen



Ken Croly took this photograph using a Sony P100 digital camera.

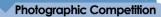


Niell Aarsen took this photograph with a Sony DSC-W35.



This photograph was taken by Darren Ninham with a Sony DSCP10.

Photographic Competition





This photo was submitted by Ryan Palmer.



Andrew Kemp took this photograph of a pair of Longnose hawkfish with a Canon EOS 20D.



Kim Maxted took this photograph with a Canon Powershot A95.

How to enter your photograph Whether you're an amateur or professional photographer, this

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

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- Photographs may be taken above or below the water, as long as diving remains the theme.
- The Name of the photograph must be the photographer's name.
- Photographs must not be bigger than 5 MB per photo.
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Visit www.ozdiver.com.au, click on the "photographic competition" link and follow the steps.



Photo School

Photo School

Photo School

Expose it right underwater

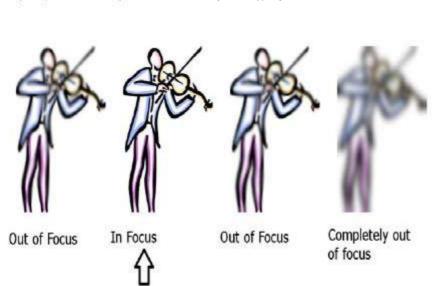
I said we would look at 'lens aperture'. The word aperture simply means 'opening'. The lens aperture is situated inside of the lens and is a mechanical diaphragm. This diaphragm consists of a number of petals or blades that act like an adjustable iris.

Just like your own eye's iris that changes size as light conditions change, so can the aperture of a lens be adjusted. The size of the aperture will then determine how much light it will allow through the lens to the light sensor. These changes in the aperture have been calibrated into precise steps known as f-stops. These are the makings you will find on your lenses aperture ring: f32, f22, f16, f11, f8, f5.6, f4 and f2.8

On more modern cameras, the aperture ring is controlled electronically. Either way, somewhere on your camera you are going to have to set your aperture to obtain the correct exposure. What is very important here is that you realise that f2.8 is a much bigger opening that f32.

There are two terms that I want to bring to vour attention:

- Stopping down This is when you reduce the size of the aperture by one stop. By doing this you are halving the amount of light passing through the lens. For example: f16 to f11 is 1 stop, f11 to f8 is another stop and so on.
- Opening up This is now the reverse



FOCUS

and means that you will be doubling the amount of light passing through the lens. For example: f8 to f11 is 1stop, f11 to f16 is 1 stop and so on.

In some cases there are fractional stops and this will come in handy when we want to bracket the photograph. Bracketing is when you are not really sure of the correct exposure, so to play it safe you use the fractional stops and make small adjustments. The end result will be three photographs with slight differences in exposure. One will be slightly over exposed, one slightly under exposed and one correctly exposed. This is a very handy function to have on a camera and it often produces very pleasing results. So basically we use apertures to control the intensity of light through the lens. Another topic that often comes up when we talk about aperture on a lens is depth of field.

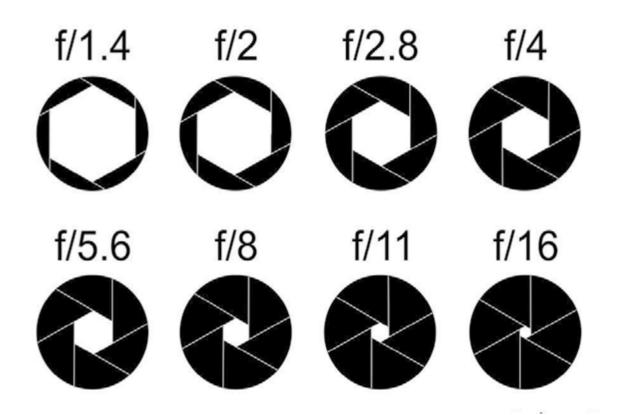
Here we are going to have a brief look at the effects on depth of field and get a better understanding of how this affects your results. Often you will notice that a part of

your photograph is in focus and part is out of focus. This is a result of a couple of factors that are affected by making changes to the aperture setting on your camera.

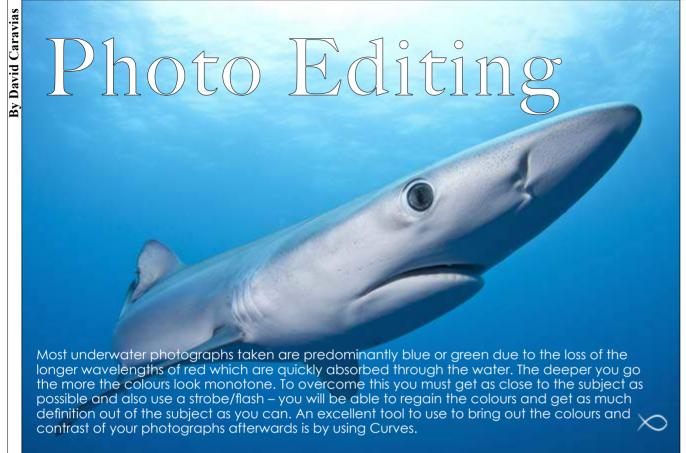
With the same focal length lens focused at the same distance, this diagram shows how simply adjusting the aperture size can alter the depth of field. Depth of field usually extends in front of the subject by one third and by two thirds behind. The smaller the aperture the greater the depth of field. An aperture of f2 gives a much smaller depth of field than one of f16.

So remember this next time you are setting up your camera to take that winning shot. How much detail do you want in focus? There are other factors that affect depth of field and we will cover them in greater detail later in the series.

In the next edition I am going to be talking about 'shutter speed' and how this plays a role in getting the correct exposure.



Editing School



We will show you an excellent way to enhance the contrast and colours of your photographs using Curves. This tool basically allows you to control the tonal balance within your photograph and adjust the contrast and colours dynamically and visually when manipulating the curve. Once you have tried and played around with the Curves function then you will not look back. In the last edition we covered how to use Levels to enhance your photographs and this has a similar purpose to the Curves function. The 'Curves' function uses the same principal and then so much more to adjust the fine detail in your photograph. It does look complicated to work but it is actually simple and you just need to take time and have patience to get the most out of your underwater photographs using this tool.

In Gimp go to the top menu select:

Colors - Curves.

The Curves box will pop up and you will have the following options to play with:

Channel:

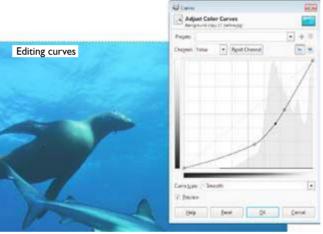
Value - This is to adjust the brightness of pixels as you can see them in the composite image. This option allows you to adjust the image as a whole with all of the colours.

Red; Green; Blue channels - This allows you to adjust the quantity of colour in each of the three RGB channels independently. Here, dark means less colour and light means more of the colour.

This is quite temperamental to use with and the Hue Saturation function is much more accurate to work with if you want to adjust colours in your photograph.

Reset: It does what it says and resets the changes to the default values in each individual channel.





The main Curves working space

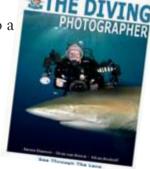
The graph represents the brightness of the pixels through the photograph. The horizontal gradient represents the input tonal scale from 0 (Black/Shadows) to 255 (White/ Highlights). The vertical scale represents the output tonal scale from 0 (Black/Shadows) to 255 (White/Highlights). When you open the curves you will see a straight line running from the bottom left (0) to the top right (255). The line is straight because at that moment the output has not been altered to the input. To adjust the tone of your image you simply click anywhere on the diagonal line and a dot (anchor) will appear. Now you can drag this anchor around, mostly up and down, to adjust the tone of your image. You may find it easier not to drag the anchor but to use the up and down arrows to move the anchor in fine increments. When you move the anchor you will see that a curve is created between the two points (hence its name).



You can add as many anchors as you wish along the curve and play at adjusting all areas of the photograph. Should you want to delete an anchor then simply click on it and then drag it to the right and overlap the next point to the right and the anchor will disappear. The default curve type is 'Smooth' but you can also select 'Freehand' and draw where you want the curve to go but most of the time this is not necessary as working with smooth curves is easy to work with and manipulate. After you have drawn your freehand, if you

change the curve type back to 'smooth', your freehand will turn into a curve.

Play around with this tool and vou will find that editing and enhancing your photographs will be a breeze once you get used to it.





Download Gimp - www.gimp.org



underwater snapshot of australasia underwaterproject.org



Croc Diver

Croc Dive



Croc Diver

The first thing that always strikes Walter Bernardis about Botswana is how flat and dry it is. Until you reach the actual Okavango River you would say that there is no water anywhere for miles, yet there is an abundance of water just behind massive banks of papyrus banks.

Only once a year, after the water has been filtered by the papyrus heads, you can have visibility of up to 15m. The water has come from the Angola heights and is 14°C. These are both components that we need for safe Nile croc diving and the only time these factors come together in this way is in June and July, and only in the Okavango Delta in Botswana, Africa.

Walter Bernardis from African Waters Sports is one of the few people in the world who takes people to dive with Nile crocodiles in their natural habitat.



Q: What were your thoughts and expectations of the trip, before you first went?"

A: Man, it was an unknown quantity for me, and I tried to phone as many people as I knew who worked with crocodiles, including some guys from Mexico and an old croc farmer friend of mine, Ruben, to try to find out the danger signs – are they like sharks? Can you see from its behaviour if it's irritated? Noone could tell me anything... These things apparently have no signals. They are cold blooded lizards, and big ones at that.

The danger areas are if you're in the water with it, to either side of it, and straight head on. So, approach with caution and be careful on its sides as it has a turn and strike like a snake. It's a fast animal, it'll get you.

The biggest challenge was actually finding the crocs.

Q: How does croc diving work?

A: You go down or up the river on a boat and look for crocs; normally as soon as the croc sees the boat, it jumps in – they're quite scared of boats. Once it jumps in the water, because it's a river and thus current, the croc will find a spot it knows right next to a sunny area, just slightly out of the current, a little hollow or a log maybe to hide behind. Sometimes they like to sit with their bodies hanging out of a cave, their head inside. A certain croc, Fat Albert, has a whole area he likes to cruise and chill in

The most difficult thing, besides actually seeing the croc, is working out where you are in relation to where it hit the water. Basically, it hits the water 10m away, the river is flowing and by the time you hit the bottom, you've covered another 5m, now you know in another 5m is where the croc hit the water. Now

you're looking all the time, the bottom, the area ahead of you, the bank, trying to slow yourself down, trying to keep yourself feet first into the current and your head facing with the current downstream so that you can see what's coming up ahead of you and not the other way round.

So that's basically what we do... Once we've found the croc, we try and get ourself out of the current as low as possible; the higher profile you are, the more the currents going to hit you, so stay low and out of the current, and let the animal get used to you, and then get closer, closer, closer... until you're right in its face. Normally they can be quite obliging, you just have to be patient with them. A lot of people rush in there, stick the camera straight in its face, snap away, and expect it to stick around. That's not going to happen. But if you wait, and slowly work into it, it will

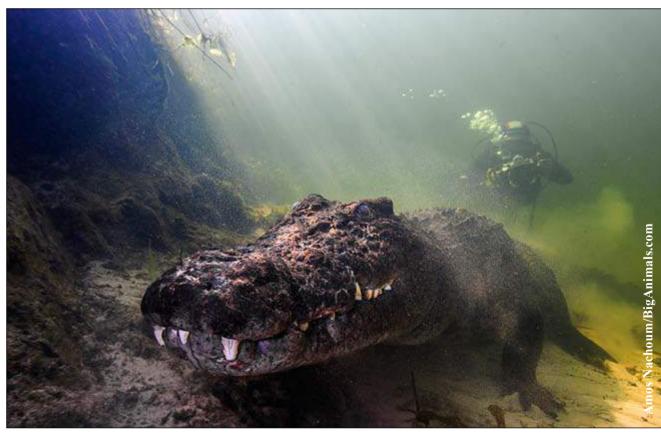
get used to you and give you some good photographic opportunities.

The things you maybe want to watch out for is getting in and getting out – the surface is where the danger is. That's the disturbance. As soon as they hear a disturbance on the surface, their attention is attracted. You want to minimise your time on the surface. You always, as soon as you hit the water, go straight down to the bottom, with no hesitation.

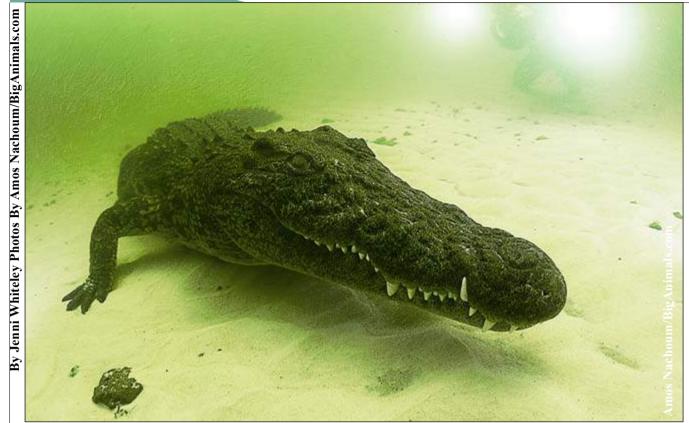
Q: Have you ever had any incidents occur?

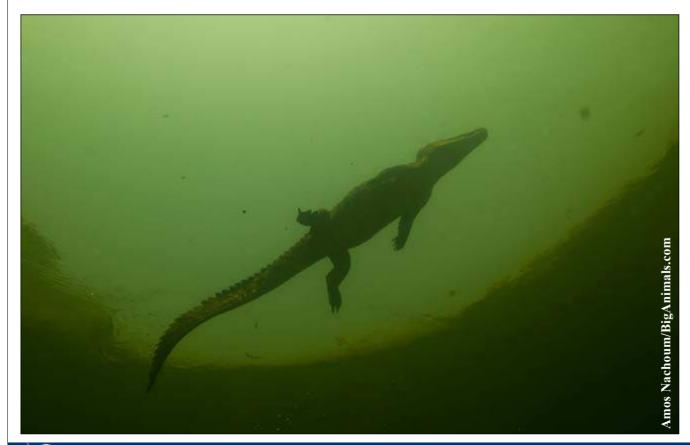
A: Personally, I've only had one where the crocodile was up a channel, and we were down the main stream. When we got to the channel opening, we were going to sit on the left hand side facing into the current and wait for the croc to come out, hoping it would sit outside somewhere, or sit just inside the channel, where we could photograph and film it. One guy was a little bit impatient though. He decided to go up the channel, and the





Croc Diver









Giant Stride

Croc Diver

croc was coming out the channel. The croc saw him, he didn't see the croc immediately, and the croc went for him, maybe because it felt that he was blocking its exit. Luckily at the last possible second he saw the croc and managed to get his legs out of the way - the croc grabbed the papyrus instead - then it went for him again and luckily the guy stuck his GoPro in its mouth; the croc claimed the GoPro and he was happy. That's the only real incident I've had with the crocs, besides my first experience

when we both near,

Q You were part of the documentary "Dragons a with the Foster brothers. There's a clip of you riding a wille down the river, can you tell us about that? Q You were part of the documentary "Dragons Feast"

A: Well, the real story behind that is that I was extremely tired. And this damn crocodile was swimming into the current, and across the river. It was the third crocodile we had seen in the day, and I thought that if it's going to swim across the river, I'm just going to hold onto its tail and it can do the work. So when I first held on, it stopped, and it turned around and looked at 🖀 me. Then it turned and went again, and this time I held on a lot more gently, and I finned with it, and I slowly relaxed with the finning, until it had my weight (which was a lot, in those days maybe like 115kg), and it just kept on going, not seeming to mind at all.

It was amazing. For the croc to let me hold on to it like that, and cruising along with it, past old Horrocks who was filming, and he's peddling like mad trying to catch up and film. I didn't know what was going on, whether he was going to be angry about it or how he was going to react as he was pretty serious about the movie.

I'm there, filming a bit and trying to have a good time at the same time. At the end of it they were all quite happy about it.

With the previous crocodile that day, we were all underwater together, and this crocodile had its head in the reeds. Horrocks was motioning away with his thumb - I thought he was telling me to pull the crocodile out, but I think now he was actually telling me that they'd filmed enough and it was time for us to get out. So I shook it - it was quite a big crocodile in the 4m range - by its tail a little bit to see what it would do, and it didn't do anything. I pulled the tail a bit harder. Still nothing. So I grabbed its tail, put it under my arm and pulled it properly and the thing took off like a rocket. If that thing had turned around and tried to go for me, there is no chance I would have been able to do anything. In your mind you're thinking, "if this thing turns round. I'm going to stick this camera in its mouth."

One second it was there, the next second, there was just a cloud of dust like in the comics. So we came out of all that, and everyone was asking about the footage... as I was coming up, I looked at the camera, and the camera was off... I hadn't filmed

And these guys went ballistic. "But I told you check the red light, you said you knew how easy it was. What's wrong with you?" So they weren't happy at all. That was a funny story from the Dragons Feast.

Another funny story was when we decided to go to the river at night. Because they feed at night, we tried all kinds of things to get those crocodiles feeding. We tried parking the boat up the river from the bait - a cow in the water. We parked the boat upstream, about 100 metres because we didn't want to scare them while dropping off the bait... We switched the engines off. drifted down about 20-30 metres from the bait and got in.

Every time we went down during previous attempts early in the morning, we couldn't get crocs that were actually feeding. So then we decided to go at night, and of course you can't see anything at night. The crocodile can be right next to you, and you're shining your light, and you can see maybe a metre in diameter where you're looking. And that's it. Anyways, I put my cylinder on, threw the thing over my head onto my back... lost my balance, and fell in the water. Well, I tell you what, I've never been so scared in my entire life. I hit the water, and jumped back out of the water so fast, I'm surprised I was even wet!

We had great fun, and the biggest thrill is finding the croc - it's the whole search. Then when you're sitting next to this thing, this ancient lizard, with a tail that is half a metre wide and its body going on forever. It's a feeling that's hard to describe. Its adrenaline, pure adrenaline, getting in the water to go look for that croc. The adrenaline squirts out of your pores.

Q: Are there any pre-requisites for people who want to dive there?

A: You need to be able to take instructions, be a competent diver and be able to work in current. Although it's not 100% necessary, being able to work in conditions where you may get tangled, with branches and things, is also good. It can be very disconcerting; you are going along and the next thing you know, something has caught you. A log sticking out trying that's snagged vou.

You have to be able to work with the current. Normally you would have it where you have your head into the current, but with this type of diving it's the other way round; you have your feet into the current. You have to try and have the perfect streamlined position in the water.

What I do is I drag one fin, so that keeps me centred, and slows me down, and it keeps my orientation right in the water. That's important: you also have to be able to get down to the bottom quickly - no problems with your ears and be able to equalise in 3-7m of water. You can't come up and when you're at the surface waste time taking off weight belts and undoing

When we finish the dive, we're on the bottom and swim to the middle of the river, and either put up a stick, or the boat sees the bubbles and comes over. As soon as you see the silhouette of the boat, you go up, one at a time, and the guide will watch you as you're going up to make sure there's nothing else around vou. Before vou go up, vou unclip vour BCD, loosen it, having it hanging on just one shoulder strap, regulator in your mouth. They then grab your BCD, and you climb into the boat as quickly as possible. As quick as that. You can't afford to have any

time at all on the surface where you're splashing around, and attracting all sorts of biting beasts!

Q: There is talk of a trip for next year?

A: We dive there at a certain time of year where there's a window of about eight weeks maximum, June and July basically, where you've got cold, clean water. Maybe into August you can still dive with them, but by early September it's getting dirtier and warmer. As soon as it gets warmer, they are much more active, and a little bit more dangerous to dive with. You've got to get them while the weather's cold and while the water's cold, while they're more sluggish, At these times you stand more of a chance of having good interactions with them.

Next year looks like it could actually be quite busy, I've got quite a few people that are interested in doing the croc dives next year, but unfortunately it is a very expensive exercise. You're taking all your equipment from South Africa, all the way up there, and you can only take three clients at a time. But it's well worth it when you are in the water with a croc!

For those who want the experience, it's out there. Visit www.africanwatersports.com or mail to watersports@icon.co.za



Crock Diver



Colour me beautiful



Giant Stride

Colour me beautiful

Fish make full use of the colour spectrum, be it for avoidance or attraction, using patterns E or plain brilliance or dullness, iridescence or monochromes and transparency or vividness.

The ocean is an incredible place of colour and darkness. As sunlight passes through water it is defracted or bent. The brilliant 🛱 rainbow of colours as we see it changes. Colours with a shorter wavelength, such as red, are 'lost' first, while blues with the longer wavelengths continue to be seen at greater depths. Coincidentally, the deeper one goes in the ocean, the less colourful fish are. But fish see things differently - they have more red-detecting eye pigments than humans. Many fish are red but appear brown to the human eye, likewise the brownish reef is in fact often encrusted with red sponges and algae. Red coloured fish are often those that are nocturnal hunters where under the cover of darkness these fish are unnoticeable, vet during the day their redness enables them to blend in with the reef where they rest. It's a perfect deception.

Nocturnal fish are not the only ones to use colour as a deceptive tool. Diamond filefish and ghost pipefish adopt the colouration of the seaweeds and sea-grasses in amongst which they live with astonishing similarity. The idle crocodilefish and stargazers are mottled creams and browns - a great guise when hiding in a sandy terrain to avoid detection while purveying the passing waters for naïve fish. Scorpionfish and lizardfish live a little higher off the sand and thus have added streaks of rust and maroons in their bid to ambush unsuspecting fish.

Other avoidance techniques incorporate patterns into the colouring. The dappled markings on the weedy scorpionfish, another ambush predator, have an uncanny resemblance to seaweed. The exquisite checkerboard patterns on longnose hawkfish enable them to hide within the fronds of segmented branches of black coral bushes. Pygmy seahorses have taken patterns a step further by adding bumps and lumps akin to their seafan domain.



Many fish utilise colours to attract others but not all for the same reason - some need the attraction in order to feed while others need it is as a deterrent. Brightly coloured in primary yellow and blue, cleaner wrasse need to make a statement; 'pick me, pick me', thus beckoning fish to visit their cleaning station where the wrasse can nibble on parasites and rotting flesh. Meanwhile mimic cleaner wrasse have the same colouring but these cheeky blighters don't nibble on the naive visitor's parasites, they grab whole chunks of raw flesh.

Yum-yum yellow is not necessarily yummy underwater. It is often indicative of something that is bitter, poisonous or foul tasting. The feeble swimming efforts of a boxfish could easily cause its demise, but being yumyum yellow is a strong deterrent to wouldbe predators. Likewise nudibranchs and flatworms are boldly painted with yellow or orange as a warning to others not to even try tasting them. Then there are those that mimic these creatures in order to avoid being snacked upon. Juvenile batfish not only resemble flatworms with their day-glo orange trimmings but their erratic swimming style is very confusing to other fish.

Colourful confusion is the order of the day for many reef fish. Colour markings can confuse prey as to which is the head (more edible part) or the tail as is the case of twinspot blennies and some butterflyfish, who have false eyes painted on their bodies. Streaks of black or colour running through the eve can be perplexing. The black eye line of the beautiful emperor angelfish absorbs the eyeball entirely







Colour me beautiful









Colour me beautiful

Colour me beautiful

∠ while the vertical streaks on dascyllus cause apparent areas of non-existence – is it a fish or not?

Then there are those that are just attention seekers. Flashing gold, male anthias attract harems of female followers. Competition between males is tough with the most beautiful winning the hearts of the females.
These males need to look resplendent.
Strangely the most colourful fish in the ocean is seldom seen. Scrabbling amid coral rubble a patches the vivacious mandarinfish only emerge briefly at sunrise and sunset to mate. Their beautiful colours kept to the secret of the ocean.

Turbulence in the ever-moving ocean casts shimmers of light in shallow waters. These silver flashes of light are often the colour decoy used by open ocean swimmers. Most pelagic fish are silvery thus blending in with the ocean sparkles. Fish that frequent mid water above the reef are often bluish in colour. Large schools of fusiliers scour the shallow waters during the day in search of food while



trying to avoid detection. Moonlight reflects off the ocean's unsettled surface. This light combined with bioluminescent plankton and phosphorescence is a perfect sanctuary for squid and cuttlefish. Using chemical reactions these creatures are capable of creating their own light flashes thus merging with the ocean.

Another simple yet effective use of colour is that of counter shading where the belly of fish is white or light. If seen from below it is indistinguishable against a sun-filled ocean. Similarly, the upper body is dark and not easily seen from above. Sharks and rays have this typical colouring.

And finally for those fish wishing for a peaceful night's sleep, what better excuse than to change from bold colours to pajama colours for the night? Many fish adopt soft muted tones of pastels that blend into the reef facilitating an undisturbed night from predators.

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











Giant Stride

You can make a difference.

Be informed. Choose your seafood wiselv.

Consider its sustainability and always go for green where you can.

Refer to the full guide for more information.

Things to do...

Whether you are at a supermarket, fish merchant, dining out at a restaurant or simply getting takeaway, always ask...

- Is the species overfished?
- How was it caught or farmed?
- Is it a deep-sea, slow-growing or long-lived species?

Tell your friends! Spread the word about how good it feels to eat sustainably.

Consult the website and get your hands on the full version of Australia's Sustainable Seafood Guide or you can download the free Android or iPhone app for more information on each species.

Freecall 1800 066 299 www.**sustainableseafood**.org.au

Why do your choices matter?

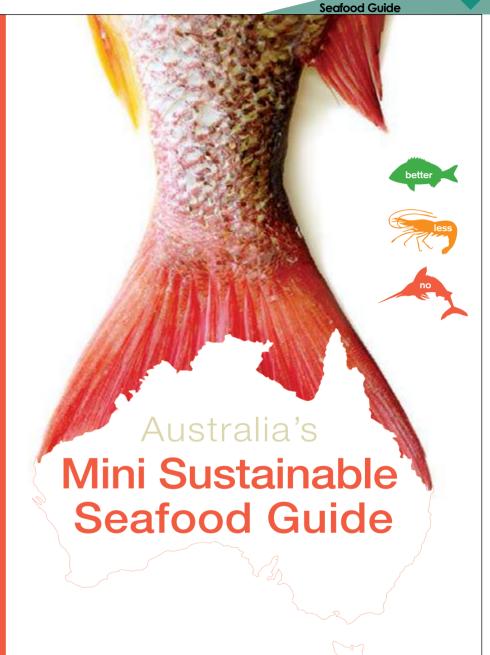
The fish we choose directly affects the health of our oceans.

Worldwide demand for seafood is increasing, yet many populations of the fish we enjoy are overfished.

Overfishing, destructive fishing gear and poor aquaculture practices impact significantly on our seas. Once considered inexhaustible, our oceans are now in a state of global crisis and they need our help.

Be part of the solution. Become a Sea Guardian today!





Your guide to choosing seafood wisely



www.sustainableseafood.org.au

Seafood Guide

Better Choice

Seafood Guide



These species represent a **BETTER CHOICE**. Species in this group are not currently overfished. They are generally resilient to fishing pressure, have a history of stable catches and are caught or farmed using techniques that have low environmental impacts. Some of these species may still have minor conservation concerns, but have been assessed to be a better seafood choice.

Austral	lian	Wild
Caught Fish		

Australian Salmon

Crabs

Goldband Snapper

(WA & NT)

Flathead (NSW & VIC)

Bav Prawns

Southern Calamari

Whiting

Australian Farmed

Barramundi Blue Mussel

Prawns

Oysters

Marketed as/species considered

Australian Salmon

Mud Crabs, Spanner Crabs

Tropical Snapper Dusky Flathead

Prawns Calamari

King George & Stout Whiting

Marketed as/species considered Barra

Mussel

Black Tiger, Kuruma & Banana Prawns Sydney Rock, Native

& Pacific Oysters

Eat Less



EAT LESS of these species. Wild caught species in this group may be caught using fishing methods that cause some damage to marine habitats or are associated with significant levels of bycatch. There may be scientific uncertainty about the status of wild caught stocks and careful management will be needed to protect stock health. If farmed, the aquaculture methods used have some environmental impacts on our seas.

Australian Wild

Basa

Nile perch

Freshwater fillet, Royal Basa & Mekong Catfish Lake Victoria Perch

Say No



SAY NO to these species. Wild caught species in this group, whether Australian or imported, may be overfished or their capture heavily impacts our seas, eg: killing threatened or protected species as bycatch or damaging sensitive habitats. Farmed species include those produced by methods that place significant stress on our oceans.

Australian Wild Caught Fish

Marketed as/species considered

Blue Warehou Sea Bream

Gemfish Hake Mulloway Jewfish

Orange Roughy Deep Sea Perch

Shark Flake

Snapper Pink Snapper, Tropical Snapper

Australian Farmed Marketed as/species considered

Yellowtail Kingfish, Yellowtail

& Tasmanian Yellowtail

Imported Marketed as/species considered

Farmed Prawns Pacific White, Whiteleg & Black Tiger Prawn

Hoki Blue Grenadier Hake Cod

Tuna Albacore, Yellowfin, Bigeye Tuna

Note: Canned tuna sustainability is brand-dependent. Check our website, or smartphone apps for details.

Caught Fish Marketed as/species considered Barramundi (WA & NT) Barra Blue-eye Trevalla Blue-Eye Cod Balmain & Moreton Bay Bugs Bugs **Flathead** Tiger Flathead Mahi Mahi Dolphinfish Western & Eastern King, **Prawns** Banana, Tiger, School & Endeavour Prawns Albacore & Yellowfin Tuna Tuna **Australian Farmed** Marketed as/species considered **Atlantic Salmon** Tasmanian/Smoked Salmon **Rainbow Trout** Ocean Trout **Imported** Marketed as/species considered

and physical symptoms that could lead to fatal

lapses in judgment.

Gabr was supposed to reach maximum depth in about 12 minutes. The rest of the nearly 14 hours he spent underwater were for his ascent. In the end, Gabr himself used nine tanks, while combined, he and his dive team went through 92.

The first ten or so minutes of Gabr's dive went perfectly according to plan. He was dropping at a rate of almost 30 meters per minute, or half a meter per second.

Before him hung a rope, underwater tested and measured by a university in Cairo and then re-measured and verified by Guinness World Record Official Adjudicator Talal Omar who came to Egypt from Dubai just for this dive.

Attached to the rope were tags marked with depth measurements and at the end, an anchor designed, built and tested especially for this record-breaking attempt.

And below that, some 300 meters of oceanic blackness until the sea floor. What lies there and in between – our eyes will never have the privy of beholding.

So at 290 meters deep, Gabr felt a quiver – he felt the first symptoms of HPNS, a deep diving disorder caused by rapid descent and the helium in his Trimix tanks.

Gabr, who is ex-Special Forces, did what his years of training taught him to do: remain calm and focus on the task at hand. In addition to his multiple training deep dives, Gabr was among only four people in his class who successfully passed the U.S. Marine Corps's Combatant Diver course – a terrifying program that begins with a zero week of grueling qualifying tests.

One of them is "drown-proofing", which includes a punishing back-to-back series of breath-control and swimming challenges – all with your hands and feet bound by Velcro. You cannot touch the sides of the pool, you cannot break your restraints, at one point you must secure a face mask with your teeth and if at any point you fail, you are given only one more chance before getting kicked out of the qualifying round.







At 290 meters below the windy surface of the Red Sea in Dahab, just minutes after his bobbing head disappeared into the depths and just 28.25 meters away from the world record he had been training for four years to break, 40-year-old Egyptian Ahmed Gabr felt himself quiver.

Gabr has about 9,000 dives under his belt, all leading up to this one – an attempt to reach 350 meters below sea level, a well-rounded goal to beat the previous Guinness World Record for Deep Dive (Male) at 318.25 meters.

Strapped on his back and filling his lungs were five tanks filled mostly with Trimix, a blend of oxygen, nitrogen and helium gases used for dives beyond 30 meters.

The percentages of Gabr's Trimix remain a proprietary secret, as does his exact dive plan – two major technical components that were developed and refined by Gabr's expert team over months. One miscalculation, a single clinical error, the smallest margin of uncertainty could mean Gabr's life.

"And at the end of the day, it's all just theory, isn't it?" Oliver Watkins, one of Gabr's

support team members, told us after the dive. Only a handful of people have reached depths over 300 meters and getting there doesn't only take physical acumen and endurance, it also takes a whole lot of math, chemistry and physics.

The mix of breathing gases and precise timings of ascent stops are designed to prevent and minimize a range of potential risks, from narcosis (which can cause hallucinations, unconsciousness and death) to decompression sickness (which can cause joint pain, paralysis and death) and High-Pressure Nervous Syndrome (HPNS), which causes neurological



At 290 meters, at least Gabr had his hands and feet free. So he pushed through and kept

As the meters passed, the HPNS intensified. Symptoms include tremors, jerking, intense sleepiness, nausea, dizziness, disturbance in vision and decreased mental performance - all potential causes for a fatal error. And symptoms remain until pressure is stabilized. Gabr's training and years of experience has bolstered his control and confidence underwater. But one of the most vital skills for a deep diver is knowing when to turn back. At 332.35 meters, his body shaking, aware that his goal was just over 15 meters away, aware of the almost 14 hours still ahead of him, Gabr grabbed the depth tag on the rope and turned back.

"You cannot focus with any emotions. One thought of emotion, that could mean your life. So you can't think. You just do what you need to do first, follow the procedure first. Once you get to the safe depth, then you can think of emotion. That was at zero meters," Gabr

On his way up, Gabr had to make over 50 stops, ranging from one minute per meter at the lowest depths - a relatively rapid ascent - to over 100 minutes just below the surface patience is key.

And all you can do is "just wait," Gabr said. What did he think about in all that time? "How to get out," he laughed. "The rest of the dive, I think of the dive. That's it. My life and members of my team. That's it," Gabr explained later.



about 16 support divers with him, the first waiting for him at 110 meters and around five others at various stops along the decompression ladder to assist with extra air, equipment exchanges, tank retrieval and to accompany him on his journey to the surface.

Back on the surface, where winds were stronger than expected, members of his support team – "a dysfunctional family", as support diver Catherine Wilson lovingly refers to them - and the entire town of Dahab were anxiously counting the seconds. Originally scheduled to take place in Safaga in June, Gabr decided to complete the dive in Dahab instead for its solid technical logistics and reliable currents. "It has perfect conditions," Gabr told us.



"We're so proud that he's doing this in Dahab," Wilson told us. "We are all Dahabians in one way or another and we want to put Dahab on the map." "Nine years ago in the same town, Dahab, this world record was broken," Event Manager and support diver Daniel Goodman wrote to us. "We have just witnessed this record being smashed by Ahmed, I do not believe that it will be broken again."

Gabr's team comprise a lively mix, from tech divers to freedivers, from dreadlocks to exmilitary, from underwater videographers to logistical specialists, from instructor trainers to drivers who were specially trained to handle the sensitive equipment used for this dive. These people are the best in town," Gabr told us of his support team. "We became friends. We became family... They support me from the heart... I only have them and they have

At his request, Gabr's son and his wife, who is a few months pregnant with their second child, were nowhere around the dive site until he surfaced. A feat like this, with all of its risks and physical demands, also requires intense mental strength.

"I didn't want any kind of emotional pressure," Gabr said. "I'm here for one job, let me get the job done first and then let me focus on the emotions after."

"As my mentor [Dr. Ahmed Kamal] said, you are from bubble to bubble - and that's it. This is what I actually applied and that helped me a lot," Gabr said. As part of his preparations, Gabr did breathing exercises, visualization of all possible scenarios and meditation. "You need peace... just let things go," Gabr said. "Don't bother with any other bubbles

Gabr was scheduled to start his dive at 8:00am but didn't drop until around 10:30am, pushing the rest of the dive plan back. He emerged - hungry, tired and in high spirits at approximately 12:20am on Sept. 19 received by three boats and one jetty overflowing with

that come up around you... Focus on the

bubbles that happen."

love, support and pride.

To everyone's surprise, Gabr exited the water and walked unsupported onto the boat deck, where he stood and saluted - a gesture of respect, he said later, for the overwhelming

support he's received.
"This event [is] a lifetime changer for all of us," Goodman wrote to us. "God knows we all need a bright light these days, this bright light is firmly over Egypt, a place that I love and cherish, a place that is not seen as it should

I believe in Ahmed, it is why I supported him, why the whole of @worldrecord350 Team supported him, without hesitation, without financial remuneration, each and every one of us" Goodman continued. "The team did it because we know it to be right." After the dive, Omar told Gabr that he broke two records - first, the Guinness record for deepest dive and second, for the love of everyone supporting him. "I'm not a hero," Gabr declared the next day,

sitting in front of his support team. "These people behind me are heroes. I just execute the plan.

WE SAID THIS: A heartfelt congratulations to Ahmed and his entire team!







Nuno Gomes



Redundancy is the key to survival underwater. All divers have redundancy to a certain degree. The one star diver (Open Water 1) during a dive to 18m has it. For example, he/she has a buddy and an

octo regulator.

As we go deeper we need more and more equipment; we need twin cylinders, two computers, stage cylinders, two BCs, even a spare mask. Technical divers may use even more than two of the same items, for example, most technical divers use three or even four torches. Up to three torches can fail in a single dive.

Other important pieces of safety equipment would be a surface marker buoy with a reel, a compass, a knife (many divers do not have one), and a torch even for day dives.

Basically, if a diver cannot get to the surface directly at any time during a dive, either because of depth and the mandatory decompression stops (we are not talking about the safety stop at 3m), or because he/she is in an overhead environment, then extra equipment is required to cater for possible equipment failures. Essentially, redundancy is the duplication of critical equipment. If one piece of equipment fails, you have a spare.

Barry Coleman

Redundancy equipment is immediate life supporting equipment, for example, a second regulator attached to an alternative air source carried on the diver, or a second buoyancy device to provide enough lift so a diver may swim to the surface without sinking. Safety equipment includes items/ articles that will help in the event of an emergency, such as SMB, light stick, flares, hang tank with air at 5m or a second torch. Both require thought and



application to the project, from the recreational dive in a bay to the expedition dive 20km out to sea.

Today the terms used to consider these are referred to as risk assessment or risk management. Pieter Venter

They have been used for many years in many other applications and to some extent in diving, although with less thought and application which may be due to the reasoning that diving is known as a leisure activity (with sometimes fatal consequences). I have no fixed items that a diver should carry on every dive other then what is necessary to complete a safe dive. Each diver should take into account all the risks of a dive site and its specific conditions.

Pieter Smith

Scuba diving is a sport of gadgets and the manufacturers and suppliers stimulate the market with new 'toys' all the time. But what do you really need in the form of redundancy or safety equipment? What you need is as wide as the specific dive you about to undertake.

In principle you need to weigh extra equipment up against necessity -extra drag/extra potential failure points/extra workload etc., in order to find out if it is justifiable. Be careful not to add extra

equipment or gadgets just because you bought it and therefore feel vou need to take it along on the dive.

Redundancy and/ or safety equipment must have a specific purpose and must add to your and/

or your buddy or the group's safety, in and underwater. It must not become an item that may add further risk or danger to you, your buddy or the group.

What you have to have is a question you need to answer considering the type of dive vou about to undertake. But be sure to also make your decisions in conjunction with your buddy and the group you are about to dive with.



In sport diving, the blue sky can theoretically be safely reached from the bottom alone without breathing air. However, this is an uncomfortable, never practised and dangerous manoeuvre which is to be avoided.

The first piece of safety equipment is the buddy, who provides a complete set of shareable, 'redundant' safety equipment to assist during the ascent, the least of which should be an octo. Many dive buddies would gladly allow you to suck their octos (some even wear a T-shirt making this clear), which can solve many problems underwater or make for a safe ascent. A razor sharp Rambo knife is not safety equipment. A dive computer is also essential. For technical or cave dives, although cheap, there should not be any reliance on a buddy to provide redundancy for equipment. Each diver should carry redundancy on all equipment related to breathing gas, computers, ability to see, navigate, cut tangled lines or webbing, and to control buoyancy and the ascent. Redundant equipment should not be a seized up reel or untrustworthy equipment, it should be as good as the primary equipment. A simple rule is to double up on all equipment related to supporting life. It is not cheap.

NITROX IT'S A GAS

© 2014 Institution of Invisible Gas Photographers

PICTURE OF NITROX IN ACTION. TAKEN WITH WIDE ANGLE LENS

START YOUR COURSE ONLINE TODAY!

There was a time when the use of NITROX was viewed as extreme by many in the recreational dive world. Now it is fast becoming the gas of choice for mainstream diving and is available for all divers. Like so many changes to the industry it is driven by the top echelon of the technical diving community. That's one of the things that makes RAID different, the owners are real divers and in fact two of the directors are considered among the best technical divers in the world (see their profiles below). That means RAID training programs are at the cutting edge and in a class all of their own.

So what is NITROX and how does it work? It is essentially oxygen enriched air, it has many benefits over the use of traditional air, including potentially longer bottom times, less risk of decompression sickness and many people report increased energy levels. That's why all RAID dive centres actively promote the use of NITROX.



Paul is a force of nature in the diving world and his unique approach to training is legendary. Paul has reached the pinnacle of the world's leading diver training agencies writing the technical programs for a major training agency before becoming a partner in RAID. He is a sort after speaker at technical events and dive shows around the world and an expert in all facets of technical and rebreather diving. Paul is the International Training Director for RAID.



Barry Coleman

Barry is a pioneer in technical diving. Barry conceptualised the design of the world's first recreational rebreather and working closely with the design team at Poseidon, the Mk VI Discovery Rebreather was born. To support the diver training required for Mk VI, Barry wrote the initial training program which ultimately became RAID dive training, clearly demonstrating the power of adapting traditional technical products and training to the recreational market.

An Introduction to Diving with NITROX Want to Dive on NITROX? - This may

So what exactly is NITROX and how may it be of benefit to me diving?

be a familiar question

Contrary to what many people believe, NITROX is not a deep-diving gas mixture.

In the SCUBA diving community NITROX refers to any SCUBA diving gas mixture composed of nitrogen less than 78% and oxygen greater than 22% and less than 40%. The trace gases are ignored. As you can see from the picture above. NITROX is a colourless and odourless gas and is available for all divers.

NITROX will extend your allowable no decompression limits or bottom time. It does this simply by reducing the amount of Nitrogen gas you are exposed to under pressure.

These benefits do of course have conditions associated with them and like everything can be abused. You will learn about these conditions and how to safely dive whilst breathing NITROX in RAID's NITROX course.

NITROX is known by many names: Enriched Air NITROX, Oxygen Enriched Air, NITROX, EANx or Safe Air.

If you see "NITROX32" or "NITROX36", the number is referring to the percentage of oxygen content in the gas mixture and in turn the diving cylinder you are using.

So "NITROX32" or "EANx32" or "Oxygen Enriched Air 32" contains 68% nitrogen and 32% oxygen. "EANx36" contains 64% nitrogen and 36% oxygen etc...

The two most popular blends are EANx32 and EANx36, developed by NOAA for scientific diving, and also named NITROX I and NITROX II, respectively.

It is very important that you check the gas mixture in your cylinder before each dive, because you need to know what mixture you have for calculating your dive times and to find out the maximum depth you can dive. You will learn how to do this in your RAID NITROX course.

Oxygen is toxic at depth for us humans! Yes the increased pressure at depth will increase the partial pressure of oxygen (PpO2) and this increased pressure can become toxic. With NITROX diving we have to stay within two limits, the NDL limit which as a diver you already know about and the other is the oxygen toxicity limits. Staying within these

two limits will allow you to dive underwater longer than an equivalent AIR diver at the same depth and more often than an AIR diver to the same depths.

It is all about balance!

find how NITROX will be of benefit to you. You will use it as a means to help you diving. not as a macho status!

For example if you are planning 3 or 4 dives a day whilst on holiday then use NITROX, because of the benefits, but if you are doing one dive in the day to a shallow depth, there is little need for NITROX. This is a generalisation, and there are always reasons for and against. The important issue is to understand it and plan for using NITROX if it will be of benefit which you will learn more about on your course.

History

NITROX gas mixture is nothing new and has been in use under differing names since before the Second World War.

The history and development is well known and risks associated with well documented. NOAA is perhaps the best known authority and has developed tables and working parameters that are still in use and followed today.



- NITROX does not remove the risk of decompression sickness.
- NITROX does not remove the risk of pressure related injuries.
- NITROX does not reduce Nitrogen Narcosis

The RAID NITROX Diver course is designed to introduce you to the procedures and skills to safely dive NITROX. There are many benefits of diving NITROX and the course will give you a good grounding in the use of gas mixtures other than pure air.

This course is also a grounding set of theory and skills that will help you through the rest of your RAID journey. All other levels above the RAID Open Water and NITROX courses have gas analysing and calculations embedded. This means the information and When you complete your NITROX course you skills you learn in your RAID NITROX course are valuable through all your RAID training

> Sign up for RAID's NITROX course today in just 3 easy steps.



STEP 1 head to www.diveRAID.com and click the button REGISTER at the top right. Then complete the form and wait for an email from RAID. STEP 2 on receipt of your registration confirmation email, open and follow the instructions. Step 3 complete the forms. You are now registered! Once you have completed your online training successfully you will have a great understanding of diving with Nitrox. Your RAID Dive Centre can then complete your training and issue your certification, this may include diving on Nitrox. For more information contact RAID at admin@ diveRAID.com or call 02 4088 0560.



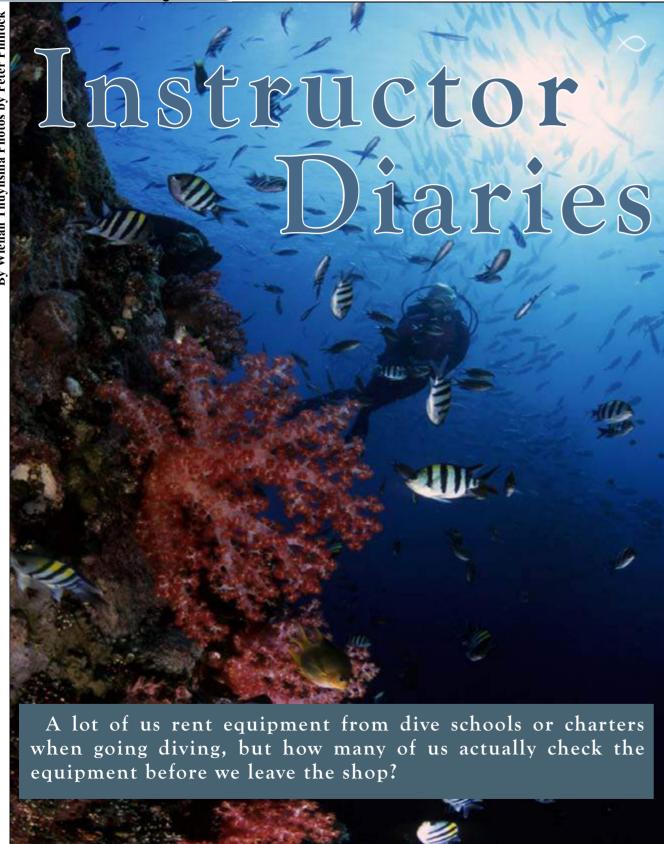


Dive Training in a Class of it's Own

www.diveRAID.com







If the dive shop looks dodgy don't expect their equipment to be in pristine condition either. What I am trying to say is find yourself a reliable dive shop where you can rent your stuff. You need to know that the owner services his regulators often enough and that his cylinders have gone through the required visual and hydrostatic tests before you strap them to your back. Now don't go and base vour equipment selection on looks either - you get. for example, cylinders that have had a new paint job which might make them look brand new, but in actual fact, they may be a few years old, so check for the visual test marks at the very least.

When renting your equipment tell the person helping you what type of dives you are planning as well as where these dives will take place. This will help them to give you the correct items for your needs. A simple example is if you are planning a 40m dive then the shop owner won't give you a 10l cylinder but rather a 12l cylinder, understanding that air consumption at depth is increased. Now I am not saying that you must leave everything to the shop you are renting from, you must take responsibility yourself too - know what you need and make sure you get exactly that - no comprise. Another important point is to make sure that what you are renting actually fits. There is no use getting to the coast and your medium BCD does not fit over your well sculpted figure, so put it on

beforehand and make sure everything is fine. When your diving career evolves, start thinking about buying your own gear. Chat to dive shops, your instructor and do some research, again making sure that you buy what satisfies your requirements. Think about quality, cost, reliability and benchmark products when deciding on brands. What piece of equipment to buy first is often the first question. Well think about what you need most - if you have a high air consumption rate, think of buying a 15l cylinder which you can take to the coast and make your dives longer and more enjoyable. This item will add more benefits and value to your dives than a top of the range BCD. You can always rent a BCD but not all charters have 15l cylinders for rent.

Dive equipment is not cheap so when you decide to buy ensure that you keep it well maintained by rinsing it with fresh water after your dives and storing it in a cool, protected place. Clearly mark your gear (this means all your items) as you don't want to lose or have your kit stolen. On this point, please look after your rented equipment and treat it as if it is your own gear - if you give it back in the state you received it the school or club owner won't ever have any issues in renting you any equipment.

So remember to check your equipment and maintain it as this will not only ensure your safety but also make you a safer diver for all around you.





Rebreathers are more gas efficient than open circuit systems. Generally the gas breathed is the optimum or best mix (mixture of nitrogen and oxygen) and warmer to breathe, which provides longer bottom/dive time. They are not as noisy as open circuit systems (blowing lots of bubbles!).

Closed Circuit Rebreather Systems

The exhaled breathing gas is circulated within the breathing loop and only a small amount of oxygen is added to replace the used/metabolized oxygen by the diver.

There is a wide range of Closed Circuit Rebreathers (CCR) and some designs border on the Passive Semi Closed rebreather design. All of them have oxygen sensors and electronics in order to have a reading of the PpO2 in the breathing loop.

eCCR

Electronically/computer controlled oxygen solenoid adds oxygen into the breathing loop in an attempt to maintain Set Point, based on information determined by the oxygen sensors.

The diver has the added ability to manually add oxygen by way of a valve in the event of solenoid failure.

mCCR

The delivery of oxygen is controlled manually by the diver in an attempt to maintain Set Point, based on information determined by the oxygen sensors. The diver has to regularly add oxygen by way of a valve.

cm CCR

A constant oxygen pressure injection system mechanically supplies a constant flow of oxygen into the breathing loop, which is then supplemented by the diver with manual addition of oxygen to maintain Set Point, based on information determined by the oxygen sensors.

ecm CCR

Electronically/computer controlled oxygen solenoid adds oxygen into the loop in





Gear Talk

Kitting Up

an attempt to maintain Set Point, and is supplemented with a constant oxygen pressure injection system mechanically supplying a constant flow of oxygen into the breathing loop. This is then backed up by the diver with manual addition option. All are based on information determined by the oxygen sensors.

All the various types of CCR's rely on the information provided by the oxygen sensors. The constant flow of oxygen into the breathing loop attempts to reduce the risk of hypoxia (too little oxygen content), but has created a risk of hyperoxia (too high oxygen content). In view of this, the units with a constant flow will have depth limitations, unless they have a method to shut off the constant flow at depth.

All closed circuit rebreathers attempt to

optimise the oxygen gas mixture. The diver does this by looking at the hand set which will show the oxygen sensor readings of the gas in the breathing loop. These readings are shown as partial pressure of oxygen (PpO2), for example, 0.7 (near the surface) or 1.3 (at depth). Controlling the loop, PpO2 may be manual or with electronics or both.

Rebreathers generally use two cylinders, one for oxygen and one for diluent gas which is generally normal air. The oxygen consumption is slow as the gas added to the breathing loop only replaces the oxygen consumed. This may be anywhere from three to 0,8 litres/0,106 to 0,028 cubic feet per minute.

The oxygen consumed/metabolised by the diver is a fraction of that used in either semi



closed or even open circuit. The oxygen is supplied from a small oxygen cylinder, with attached first stage and LP hose connected to the electronic solenoid or a mechanical valve. The important issue is that the oxygen must be added in a controlled manner into the breathing loop. Too much or too little is dangerous.

With electronic closed circuit rebreathers, the oxygen solenoid is controlled by the computer software. Electronic control systems (eCCR) attempt to maintain a constant partial pressure of oxygen, within the breathing loop to the Set Point. With a manually operated oxygen system, the diver has to physically add oxygen to the loop in order to maintain the partial pressure with the Set Point. The diver monitors the breathing loop partial pressure by the display reading from the oxygen sensors.

The diluent/air cylinder is an important part of any rebreather system because gas needs to be added to the breathing loop to equalise the pressure difference, incurred directly upon descent. Without adding the diluent gas, the water pressure would collapse the breathing loop and you will not be able to breathe. Diluent gas may also be added to the breathing loop to reduce the partial pressure of oxygen by 'diluting' the oxygen content of the loop. This is why the gas is called 'diluent'.

The diluent gas is supplied by the diluent cylinder, with attached first stage and LP hose connected to the automatic diluent valve (ADV) or a mechanical valve manually operated by the diver. The rebreather diver's exhaled carbon dioxide is cleaned from the breathing loop by the 'Scrubber' (absorbent). The exhaled gas/dirty gas from the diver which has a high CO2 content passes into the counter lungs which are felxible and therefore allowing exhalation. The inhalation by a diver draws in the CO2 cleaned gas and oxygen enriched gas to breathe.

The inhalation also draws the dirty gas through the CO2 absorbent where the reaction occurs and the CO2 is removed from the gas. The capicity of the absorbent is the amount of absorbent available for this reaction to take place – and it is limited. The risk of CO2 must never be underestimated and is a real danger and will quietely kill you if you do not follow the simple rules.

Always ensure that the absorbent canister is packed correctly and never use the absorbent beyond safe limits. Always have new absorbent when planning a deep dive or you are unsure of the remaining absorbent time. Do not hestiate to replace used absorbent with fresh material – it could cost you or your buddie's life.

In order to reduce the risk of breathing high levels of carbon dioxide (CO2), which is potentially fatal, companies have designed real-time CO2 monitoring for rebreathers. At the time of writing these monitors are still in their infancy, but because of the real danger of CO2, these monitors will soon become mainstream.

Once the gas passes through the absorbent it is then analyised by the oxygen and carbon dioxide (CO2) sensor/s together with the electronic computer and determines the amount of oxygen needed to maintain the oxygen partial pressure (PpO2) limit with Set Point.

The oxygen solenoid will add oxygen from the oxygen cylinder as required into the breathing loop, after which the cleaned (scrubbed) and oxygen enriched gas (blue) is drawn into the inhalation counter lung on the right, ready for the diver to inhale.

Any fitted CO2 monitor will activate the relevant alarms between 0,5% and 1,0% gas content or the surface equilevant of 5 mbar and 10 mbar. 0,5% exposure over a prolonged period may lead to unconsciousness and death. 3,0% is 'abort immediately!'

NITROX IT'S A GAS

© 2014 Institution of Invisible Gas Photographers

PICTURE OF NITROX IN ACTION, TAKEN WITH WIDE ANGLE LENS

START YOUR COURSE ONLINE TODAY!

There was a time when the use of NITROX was viewed as extreme by many in the recreational dive world. Now it is fast becoming the gas of choice for mainstream diving and is available for all divers. Like so many changes to the industry it is driven by the top echelon of the technical diving community. That's one of the things that makes RAID different, the owners are real divers and in fact two of the directors are considered among the best technical divers in the world (see their profiles below). That means RAID training programs are at the cutting edge and in a class all of their own.

So what is NITROX and how does it work? It is essentially oxygen enriched air, it has many benefits over the use of traditional air, including potentially longer bottom times, less risk of decompression sickness and many people report increased energy levels. That's why all RAID dive centres actively promote the use of NITROX.



Paul Toomer

Paul is a force of nature in the diving world and his unique approach to training is legendary. Paul has reached the pinnacle of the world's leading diver training agencies writing the technical programs for a major training agency before becoming a partner in RAID. He is a sort after speaker at technical events and dive shows around the world and an expert in all facets of technical and rebreather diving. Paul is the International Training Director for RAID.



Barry Coleman

Barry is a pioneer in technical diving. Barry conceptualised the design of the world's first recreational rebreather and working closely with the design team at Poseidon, the Mk VI Discovery Rebreather was born. To support the diver training required for Mk VI, Barry wrote the initial training program which ultimately became RAID dive training, clearly demonstrating the power of adapting traditional technical products and training to the recreational market.

An Introduction to Diving with NITROX

Want to Dive on NITROX? - This may be a familiar question

So what exactly is **NITROX** and how may it be of benefit to me diving?

Contrary to what many people believe, NITROX is not a deep-diving gas mixture.

In the SCUBA diving community NITROX refers to any SCUBA diving gas mixture composed of nitrogen less than 78% and oxygen greater than 22% and less than 40%. The trace gases are ignored. As you can see from the picture above, NITROX is a colourless and odourless gas and is available for all divers.

NITROX will extend your allowable no decompression limits or bottom time. It does this simply by reducing the amount of Nitrogen gas you are exposed to under pressure.

These benefits do of course have conditions associated with them and like everything can be abused. You will learn about these conditions and how to safely dive whilst breathing NITROX in RAID's NITROX course.

NITROX is known by many names: Enriched Air NITROX, Oxygen Enriched Air, NITROX, EANx or Safe Air.

If you see "NITROX32" or "NITROX36", the number is referring to the percentage of oxygen content in the gas mixture and in turn the diving cylinder you are using.

So "NITROX32" or "EANx32" or "Oxygen Enriched Air 32" contains 68% nitrogen and 32% oxygen. "EANx36" contains 64% nitrogen and 36% oxygen etc...

The two most popular blends are EANx32 and EANx36, developed by NOAA for scientific diving, and also named NITROX I and NITROX II, respectively.

It is very important that you check the gas mixture in your cylinder before each dive, because you need to know what mixture you have for calculating your dive times and to find out the maximum depth you can dive. You will learn how to do this in your RAID NITROX course.

Oxygen is toxic at depth for us humans! Yes the increased pressure at depth will increase the partial pressure of oxygen (PpO2) and this increased pressure can become toxic. With NITROX diving we have to stay within two limits, the NDL limit which as a diver you already know about and the other is the oxygen toxicity limits. Staying within these

two limits will allow you to dive underwater longer than an equivalent AIR diver at the same depth and more often than an AIR diver to the same depths.

It is all about balance!

When you complete your NITROX course you find how NITROX will be of benefit to you. You will use it as a means to help you diving, not as a macho status!

For example if you are planning 3 or 4 dives a day whilst on holiday then use NITROX, because of the benefits, but if you are doing one dive in the day to a shallow depth, there is little need for NITROX. This is a generalisation, and there are always reasons for and against. The important issue is to understand it and plan for using NITROX if it will be of benefit which you will learn more about on your course.

Historu

NITROX gas mixture is nothing new and has been in use under differing names since before the Second World War.

The history and development is well known and risks associated with well documented. NOAA is perhaps the best known authority and has developed tables and working parameters that are still in use and followed today.

Miiths



- NITROX does not remove the risk of decompression sickness.
- NITROX does not remove the risk of pressure related injuries.
- NITROX does not reduce Nitrogen Narcosis

The RAID NITROX Diver course is designed to introduce you to the procedures and skills to safely dive NITROX. There are many benefits of diving NITROX and the course will give you a good grounding in the use of gas mixtures other than pure air.

This course is also a grounding set of theory and skills that will help you through the rest of your RAID journey. All other levels above the RAID Open Water and NITROX courses have gas analysing and calculations embedded. This means the information and skills you learn in your RAID NITROX course are valuable through all your RAID training

Sign up for RAID's NITROX course today in just 3 easy steps.



STEP 1 head to www.diveRAID.com and click the button REGISTER at the top right. Then complete the form and wait for an email from RAID. STEP 2 on receipt of your registration confirmation email, open and follow the instructions. Step 3 complete the forms. You are now registered! Once you have completed your online training successfully you will have a great understanding of diving with Nitrox. Your RAID Dive Centre can then complete your training and issue your certification, this may include diving on Nitrox. For more information contact RAID at admin@ diveRAID.com or call 02 4088 0560.

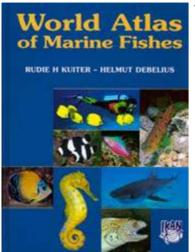


Dive Training in a Class of it's Own

www.diveRAID.com



Just like RAID there are loads of benefits to NITROX, the more you use it the more you'll see it.



World Atlas World Atlas of Marine Fishes

count, no fewer than 14 000 species of marine fish had been identified, while some 250 new species are scientifically documented every year. This means that there are more species of fish on the planet than all the amphibians, birds and mammals put together, thus it is no wonder that the average diver may become somewhat confused when trying to identify exactly what fish it was that he or she saw on the last dive. Any attempt to produce a fish identification guide aimed at addressing this problem can only be described as mind boggling, yet Helmut Debelius and Rudie Kuiter have succeeded in doing just this. Containing more than 6 000 high quality, full colour photographs covering more than 4 200 species of marine fish in their natural environments, World Atlas of Marine Fishes provides a new benchmark in fish identification. The book is aimed at anyone who is interested in expanding their

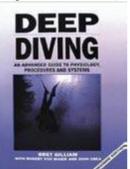
knowledge, not only of fish biology, but also of their scientific expertise in the field of marine taxonomy. Focusing on those species that divers are most likely to encounter while diving or snorkelling around shallow, in-shore coral and rocky reefs, as well as those pelagic fish that visit these waters, the atlas includes both tropical and temperate species. Although the book is designed around a formal taxonomical classification, each chapter begins with a box text which orders the fishes to be described and provides their families, genera and species in the simplest terms possible in order to make it readily accessible, even to the layman. These introductions also provide the reader with a wealth of information with regard to the fishes' distribution, biology and habitat as well as interesting facts on their behaviour.

Comprised of 720 beautifully illustrated pages and easy to read text, World Atlas of Marine Fishes represents a seminal milestone in Debelius' highly popular series of Reef and Field Guides. As such, it is a must have in the collection of every serious amateur diver, snorkeller and fisherman, while it will also not look out of place in the library of any dedicated marine scientist.

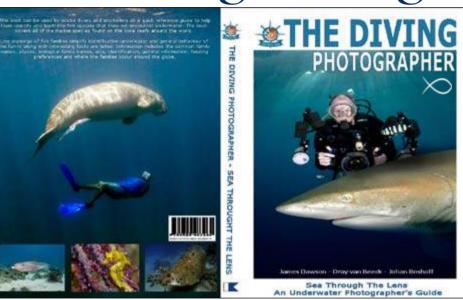
Deep Diving by Bret Gilliam

If you are a so-called technical diver (advanced nitrox and beyond), you probably know this book. If you are a tech diver and you don't know this book, get it, and get to know it. If you are a sport diver and you find vourself more and more curious about what lies beyond 30 metres, this book is also for you. As a matter of fact, I would go as far as to say that all scuba divers should read this book. It is certainly the most useful of the documents I have read on diving, which include all the training manuals I've struggled through. The beauty of this book is that the author educates you without you even knowing it. He's basically telling a story, and a compelling one at that, about the real pioneers of scuba diving - the people who died while testing out the different tables - and about how he set the world record for deep diving on air, at an amazing depth of over 100 metres. At the time of writing, Gilliam had logged over 14 000 dives, and it is clear that he knows what he is talking about. The clear, uncomplicated, yet in-depth explanations he gives of the different threats divers face are simply amazing. From shallow-water blackout in apnea diving to deep-water blackouts,

nitrogen narcosis and, the main threat facing deep divers, oxygen toxicity, Gilliam makes sure that you understand the theory in a way that will stay with you even at depth. Different options when it comes to gear and gear configurations are also dealt with in a thorough but interesting manner. The chapters on deco stops, the importance of self-sufficiency in deep diving and what contingency means in tech diving will certainly improve your diving. And even the last three chapters on nitrox, mixed gas and dive tables read easier than most Sunday newspapers (and contain more truths). In a sport where it is often difficult to distinguish between fact and fable, and where the athlete is often face to face with his own mortality, this book certainly succeeds in stripping away the nonsense and giving you the tools needed to be the best diver you can be. I give this book ten out of ten.



The Diving Photographer



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

This easy-to-use guide book for the diving photographer can be used by all levels of photographers. It helps you with choosing the right type of camera for your ability – although with all the information presented you will learn so quickly that you will have to buy a better camera after working through

the book! Preparing and setting up your equipment becomes a breeze with easy pointers on how to check and replace o-rings, quick tips on keeping your housing dry and other small things we usually forget to check.

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

I must say that this book has proved to be a great help in improving my photographing and editing techniques. Watch out Sodwana Shootout, here I come!

The Diving Photographer is available in all good scuba diving and book shops or online at www. thedivespot.com.au. Cost: \$30



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Marine Life app





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



Biological Name Caretta caretta

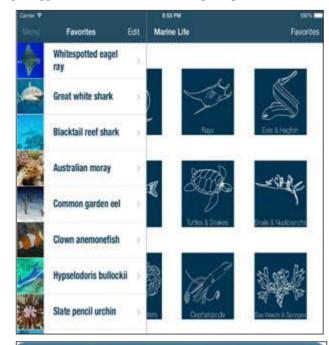
Identification

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

Information

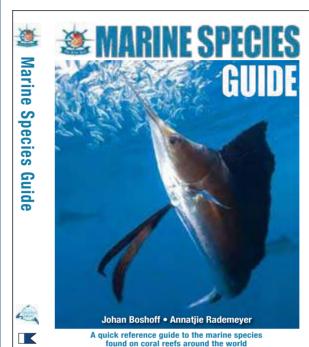
Loggerhead turtles the second largest turtle on the South African coast and can be found on coral reefs. The huge head and neck that is much bigger than the Hawkehill and the Green turtles identify

http://AppStore.com/marinelifemarinespeciesguide





Marine Species Guide -



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

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

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

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

To buy your copy for \$ 30, visi www.thedivespot.com.au or email info@thedivespot.com.a





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WTH

How to fail your Open Water test

- a. Tell your instructor you will race him to the surface.
- b. Lie face down and motionless while holding your breath.
- c. Loudly proclaim that safety stops are for "wossies".
- d. Show up with a set of tables based on your own algorithm "that's way better".
- e. Spit in your wetsuit and pee in your mask.
- f. Ask your instructor which fin goes on which foot.
- g. Tell your instructor there is no way you can lift a cylinder with 2 000 pounds of air in it.
- h. When asked for your dive plan, hand over a bundle of travel brochures.

How do you know your buddy is suffering from 'Nares'?

- a. He keeps staring at himself in your mask.
- b. You find him buddy breathing with a shark.
- c. He pees in his dry suit.
- d. His mask fogs under water and he spits in it.
- e. Your mask fogs and he spits in it.
- f. He looks at you cross-eyed and slurs his bubbles.

What not to say on a dive boat a. "Can I keep this coral your anchor broke off?"

- b. "Buddy? Oh, did I go down with a buddy?"
- c. "Can someone lend me a computer, mine keeps flashing 'Deco Violation'?"
- d. "Does anyone else smell smoke?"
- e. "What do I do with this bucket of vomit?"
- f. "Is that your mask under my tank?"

You can spot divers by:

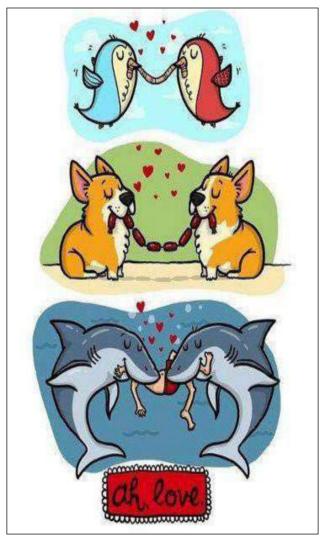
- a. Funny tan lines.
- b. A big watch.
- c. Say "Huh" a lot.
- d. Bad shocks and springs in the car.
- e. Scars from Triggerfish bites.
- f. Expertise on anti-histamines.

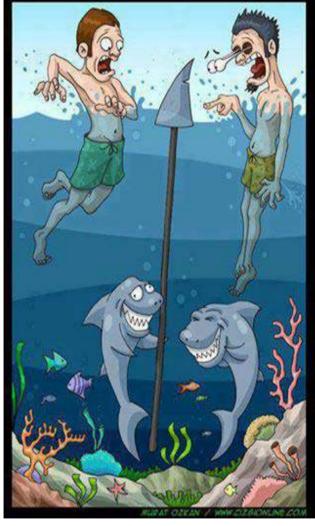


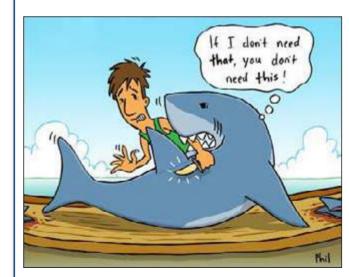


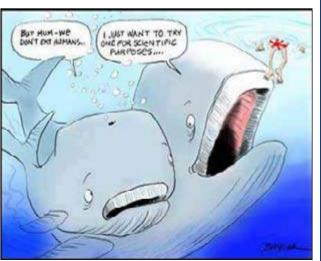
Send your funnies to johan@ozdiver.com.au











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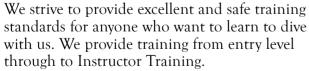
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