Mozambique
Ponta do Ouro

Wild Side of Hawaii

North Sea
Ghost Fishing

Profile
Richie Kohler

Russia
Voronya Cave

Art & Conservation
Zena Holloway

ATHENS
Greece

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Learn a new language

Have a look at this little fellah. Cute, isn’t he? See how he seems to greet us raising his pudgy small tentacles.

Wrong! It is a defensive posture. I either scared the creature or imposed on its territory. Most likely I did both. In any case, I surely made it uncomfortable. After taking the picture, somewhat selfishly I admit, I backed off, after which the cuttlefish settled down and went about resuming its… eru… cuttlefish business.

Most people, at least those who live in areas where dogs are commonly kept as pets understand how to read their moods, at least crudely. Suffice it to say, one has to be really dense not to take a quick step back from a snarling dog.

Those who are pet owners understand a great deal more nuances and vice versa. We bond closely with our pets, thanks to non-verbal communication skills and a growing understanding of other clues.

But what about the wildlife?

We go about poking sea life, cornering creatures or shining bright lights in their faces, with little regard for the distress we may cause. And many people fin around under the surface of the water, mostly ignorant of the behaviour they are witnessing.

Learn about behaviour and body language. With knowledge and a deeper understanding of why the animals we encounter do what they do, we get a more meaningful experience and a greater appreciation of nature. A little knowledge may also go a long way to prevent us from getting in harm’s way, or harming wildlife.

In sharks, a threat posture is an arching back with pectoral fins pointed downwards. If it is a huge one, I would not hesitate to make a graceful retreat, just as I would facing jittery silky sharks pacing nervously back and forth. At the same time, some of the biggest predators have gifted me with the most serene encounters. On one occasion, I swam freely with tiger sharks, even stroking one.

Diving with orcas were also a magnificent experience—although a member of my then travel company committed the major faux pas of entering the water between a mother and her calf. As result, he was whooped by a mighty fluke and was lucky to only suffer a broken arm. Do not mess about where parental instincts are at play. The wrath of a protective mother knows no limits. And if you attribute such behaviours just to mammals, think again; trigger fish are extremely aggressive during nesting.

There is more to body language than just posture or movements. It can also be expressed in coloration. What are known as aposematic signals include primarily visual cues using bright colours and high-contrast patterns such as stripes. The function of aposematism is to prevent attack, by warning potential predators that the prey animal has defences such as being unpalatable or poisonous.

Blue-ringed octopuses are venomous, for example. They spend much of their time hiding in crevices whilst displaying effective camouflage patterns. However, if they are provoked, they quickly change colour, becoming bright yellow with each of the 50 to 60 rings flashing bright iridescent blue within a third of a second.

Octopuses may in fact use both body patterns and postures simultaneously to signal each other during disputes. The patterns and postures can be quite flashy, such as standing very tall, raising the body mantle high above the eyes and turning very dark in colour. It is suspected this behaviour makes the octopus appear as large and conspicuous as it can. Which brings us full circle to the little fellah with which we started.

I will leave it at that and you, dear reader, to have enlightening new encounters in 2017!

— Peter Symes
Editor-in-Chief
Tiny starfish larvae spend 60 days paddling the open ocean, feeding to accumulate the energy needed to metamorphose into the familiar star shape.

Imagine that the cilia on a starfish larva are like the oars that might be used to row an ancient galley—except that each larva has about 100,000 oars, arranged in what researchers call ciliary bands that gird the organism in a pattern far more complex than any galley’s oars.

Like oars, the cilia had three potential actions: forward, reverse and stop. And just as with oars, the cilia moved in different synchronized patterns to create different motions.

Presumably orchestrated by its nervous system, the larva beats its 100,000 “eye-lashes” (cilia comes from the Latin word for eyelashes) in certain patterns when it wants to feed, so as to swirl the water in a way that brings algae close enough to grab. Then, with a different flutter of eyelashes, the larva creates a new pattern of whorls and speeds off.

Using experimental techniques that capture the visual beauty and mathematical underpinnings of this mechanism, the researchers showed how the shape and form of starfish larvae enable the functions that are necessary to support life.

“When we see strange and beautiful shapes in nature, we bring them back to the lab and ask why they evolved this way,” Stanford bioengineer and team leader Manu Prakash said. “That is the perspective we bring to biology: to understand mathematically how physics shapes life.”

**SOURCES:** NATURE PHYSICS (LETTERS), STANFORD UNIVERSITY

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**Vortex arrays and ciliary tangles**

Starfish larvae create complex water whorls to eat and run. Stanford bioengineer Manu Prakash has revealed the beautiful and efficient mechanism that allows these humble creatures to survive to adulthood.

Using experimental techniques that capture the visual beauty and mathematical underpinnings of this mechanism, the researchers showed how the shape and form of starfish larvae enable the functions that are necessary to support life.

“When we see strange and beautiful shapes in nature, we bring them back to the lab and ask why they evolved this way,” Stanford bioengineer and team leader Manu Prakash said. “That is the perspective we bring to biology: to understand mathematically how physics shapes life.”

**SOURCES:** NATURE PHYSICS (LETTERS), STANFORD UNIVERSITY
In our article, “Why and how our coral reefs change” published in X-Ray Mag #17, we described how “phase shifts” could fundamentally alter the structure and species composition of a reef ecosystem. [link]

Small algae-grazing sea urchins and fish may take the place of larger grazers to prevent algae from overgrowing reefs.

**Could tiny sea urchins rescue Caribbean reefs?**

In a healthy reef ecosystem, herbivores keep algae at bay and prevent them from overgrowing and eventually taking over from coral. **Grazers** remove seaweed, reducing coral overgrowth and shading by macro-algae. **Scrapers** directly remove algae and sediment by close cropping, facilitating settlement, growth and survival of coral-line algae and corals.

**Urchins wiped out**

Thirty years ago, a mysterious disease wiped out long-spined black sea urchins across the Caribbean. Subsequently deprived of this large species of grazer, algae grew unchecked, especially on reefs where overfishing had eliminated large parrotfish, leading to massive algal overgrowth that smothered already overfished coral reefs.

Now, marine biologists at the Smithsonian Tropical Research Institute (STRI) report that smaller sea urchins and parrotfish may be taking the place of the large sea urchins, restoring the balance on degraded reefs.

**Small by many**

The scientists went to explore a large area of the sea floor in Bocas del Toro, Panama, where corals had died but, surprisingly, algae had not taken over. The most common algal grazers they found were a small sea urchin about the size of a ping pong ball, *Echinometra viridis*, and a tiny finger-sized striped parrotfish, *Scarus iserti*, which would be of no interest to fishermen. They propose that these tiny organisms may be able to preempt shifts from coral to algae on degraded coral reefs. They may be small, but there are a lot of them: small grazers comprise up to 95 percent of the biomass of all grazing organisms on the reefs in the study. Their combined weight is roughly equal to that of a smaller number of bigger herbivores on healthier reefs.

Based on their observations in Bocas del Toro, the researchers are more hopeful, suggesting that management and monitoring strategies aimed at preventing phase-shifts from coral to algae on reefs should broaden to include the role and importance of diminutive species of herbivores.

**Sources:** Nature, Eurekalert!

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Diving could spell trouble for your teeth

Constant jaw-clenching and changes in atmospheric pressure can cause dental troubles. According to a new pilot study at the University at Buffalo, nearly half of divers experience dental symptoms including jaw pain and broken fillings.

The leader of the pilot study, Vinisha Ranna, who is also a keen scuba diver, became interested in the problem after she experienced it herself. In her case, it manifested as a squeezing sensation in the teeth, known as barodontalgia.

In order to see just how common and severe this problem is, she distributed a questionnaire through social media platforms dedicated to scuba diving and collected data from 100 scuba diving enthusiasts. A substantial number replied they experienced symptoms that range from tooth, jaw and gum pain to loosened crowns and broken dental fillings.

41 percent
Of the 41 participants who reported dental symptoms, 42 percent experienced barodontalgia. 24 percent described pain from holding the air regulator in their mouths too tightly and 22 percent reported jaw pain. Another five percent noted that their crowns were loosened during their dive, and one person reported a broken dental filling.

While the sample size of only 100 respondents and online method of recruitment does not make up for an exhaustive and conclusive investigation, the findings of this preliminary study suggest that a high proportion of recreational divers may experience dental symptoms during a dive.

The study also found that pain was most commonly reported in the molars and that dive instructors experienced dental symptoms most frequently.

Bigger study
Ranna is conducting a follow-up study with an expanded group of more than 1,000 participants.

An experience without equal

At Wakatobi, we take great pride in providing the ultimate in exclusive and personalized service. Our dive staff and private guides ensure your in-water experiences are perfectly matched to your abilities and interests. While at the resort, or on board our luxury dive yacht Pelagian, you need only ask and we will gladly provide any service or facility within our power. For all these reasons and more, Wakatobi takes top honors among discerning divers and snorkelers.

If you are having dental work done, impress on your dentist to take utmost care not to leave any pockets of air in fillings and around implants.

Investing in a good mouthpiece in order to avoid issues with your teeth and jaw is a small but worthwhile investment. Find one that fits your mouth, is comfortable, don’t rub your gums or cause strain.
WWII wrecks ‘disappear’ in Asia-Pacific

Several World War II shipwrecks have vanished from the bottom of the Pacific Ocean, prompting the British and Dutch governments to seek answers.

Three British ships and a US submarine that sank in the Java Sea during the second world war have been destroyed by illegal scrap metal scavengers, the Guardian revealed in November. A preliminary report from an expedition to document sunken ships, seen by the Guardian, shows that the wrecks of HMS Exeter, a 175m heavy cruiser, and destroyer HMS Encounter have been almost totally removed. The USS Perch was 91m long and weighed 1,370 tons.

In addition, three Dutch warships sunk in the Battle of the Java Sea in 1942 have largely disappeared from the sea bed, Dutch defence minister Jeanine Hennis has told MPs in a written briefing. The wrecks of cruisers HNLMS De Ruyter and HMLMS Java and destroyer HMLMS Korte-De Ruyter depicted here during her sea trials is one of the wrecks which has now disappeared

The Dutch cruiser HNLMS De Ruyter and HMLMS Java  and destroyer HMLMS Korte-De Ruyter were found by divers in the waters off Indonesia in 2002 and declared a war grave.

Now you see them, now you don’t

Salvaging of the Allied warships being carried out on an “industrial scale”

The UK government condemns the unauthorized disturbance of any wreck containing human remains.

Who’s to blame?

However, Indonesian officials have hit back saying other countries should do more to protect their wrecks. The Indonesian Navy cannot monitor all areas all the time,” navy spokesman Gig Jonias Moez Sipasulta told Agence France-Presse. “If they ask why the ships are missing, I’m going to ask them back, why didn’t they guard the ships?” The Malaysian authorities have intervened in the past to stop wrecks being pillaged, but with hundreds of sunken vessels in thousands of square miles of the Pacific to monitor, it faces the same problem.

Protection ineffective

The remains of as many as 350 Australian sailors were on the ship, which divers reported had been stripped of most of its superstructure and gun turrets, reported the ABC. However, the HMAS Perth had never been registered as a war grave, giving it little protection.

The Dutch cruiser HNLMS De Ruyter depicted here during her sea trials is one of the wrecks which has now disappeared
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Airlines may have at their disposal ever-more sophisticated software to help them extract the most revenue from their passengers, but travellers can also call on their own arsenal of technological countermeasures.

Meaning to the madness

The apparent randomness of airfares may make for an excellent conversation topic, but it can also be a source of anxiety for many travelers. High one week, low the next and long-distance often cheaper than short-haul—what is going on?

Since the wave of deregulation of airlines, which began with the US Deregulation Act of 1978, spread across the globe and competition becoming fiercer, airlines’ revenue management techniques have become increasingly complex. “The growth of the network airline and the drop in the cost of computing has brought revenue management to whole new levels of sophistication,” Robert W. Mann, a consultant and former airline planning executive, told CNN.

It depends...

“If the airline assumes that leisure passengers will tend to book relatively early, months before their holidays, it may be tempted to start pricing seats on that route relatively high. It would then adjust them according to the market response.”

Knowing their customers

Loyalty programs, registered users and cookie tracking provide airlines with lots of clues as to who their customers are and what they are willing to spend. Revenue management systems will increasingly take into account not only the airfare itself, but the total value a passenger can generate for the airline, including ancillary revenue. That is all the extras that can be added to your base fare such as charging for seat selection, and it is a growing source of profit.

Fare class hierarchy

How does the airline know how much to charge who and when? While most people are quite familiar with the concept of economy, business and first class, there are, in fact, for fare classes, each with their restrictions and rights. The airline will dynamically adjust the number of seats allocated to each fare class. When one class has been sold, the sale price will leap to the next one.

What can you do?

Some mound the passing of simpler times, when a long-haul ticket price included the promise of a checked bag, seat assignment and an oftentimes inedible meal. But consumer behavior supports the popularity of seat-only tickets that deliver a lower price, IdeaWorksCompany stated on their website.

Tech to the rescue

It is practically impossible for travelers to monitor price fluctuations manually. A range of online services such as Kayak and Flyer have introduced fare alerts that allow travelers to monitor fares for specific flights and get automated alerts the moment they change. Other companies aim to take such services to the next level by developing fare prediction technology that promises to help travelers book their flights at the optimal moment, when the fare is likely to be lower.

Fare prediction

San Francisco-based Flyr is a company specializing in the field of airfare prediction using machine learning techniques to offer fare lock-in insurance in partnership with TripAdvisor. Some websites such as Helloworld and Farehack let you search for fares and recommended booking times. Other companies such as Hopper provide a mobile app that does not just let you book flights but also tells you when is the best time to buy. Lately, Google Flights has also been adding new tools to help you buy smarter—whether it is adjusting your itinerary or holding out for a better deal.
As my plane touched down in Athens on a warm and sunny October afternoon, it did not seem that long ago since the country experienced deep economic woes, during which a prolonged spat between the Greek Prime Minister Tsipras and then Finance Minister Yanis Varoufakis and the German Chancellor Angela Merkel over the EU bailout dominated the news for weeks on end, painting at times a bleak picture of a nation on the very brink of collapse and simmering with unrest. Not being totally impervious to these events, I was not sure what to expect when I booked the flights. But as I stepped off the plane, I did indeed look forward to finding out how Greece fared and forming my own opinions about the diving to be found here.
First impressions, once on the ground, was that of apparent normalcy and a metropolis with a steady pulse—like any other major city. Nothing stood out as I was transferred to my hotel in downtown Athens. Traffic was busy and flowing, people were going shopping and visiting cafés and bars as they have always done—or so I presumed, being a visitor and casual observer with a limited frame of reference. As it turned out, I was in for quite a whirlwind of a ride over the next few days.

That evening, the moon was rising over downtown Athens, as I stepped out on the balcony from my hotel room to take it all in. It boggled my mind that the scenery I was enjoying was the stage for so many formative events in Western history and culture. More than two millennia ago, this site was the birthplace of democracy, a powerhouse for philosophy, science and many ground-breaking realisations. (I presume, as an attentive reader who has also paid attention in school, you would know what I am talking about.) So, I sat there, in the dusk, immersed in ponderings on time and history for quite a long while. Then again, I could not help it... Athens woke the philosophical steak in me.

The next morning, my Greek hosts took our dive party down to a location called Anavysos on the coast, about a 1.5-hour drive south of Athens, on the western seaboard of Attica (the triangular peninsula jutting into the Aegean Sea). Off the highway, in a picturesque cove with...
azure-blue water framed by a rugged coastline of dry vegetation, the dive center Aqua Divers Club had its facility, tucked neatly under a restaurant overlooking the archipelago.

Here, we were greeted by David White, an English expat with an infectious good mood and Eleni Siatra, one of the facility’s partners. At the jetty, a couple of powerful RIBs sat prepared to take us out on our first foray into the glittering Agean Sea.

**SS Eleni**

Our first dive site was the wreck of SS Eleni—a 99m steel freighter, which foundered against the coast of the nearby island of Patroklos where it had sought shelter in a storm. Despite heroic efforts by its crew and being on what appeared to be the leeward and sheltered side of the island, winds curving around the island pushed the vessel against the rocks. Its hull was breached, and as it took on water and started to list, the crew managed to climb onto the island, from where they were rescued the next day.

The wreck now appears to be in two main parts, with the stern laying deepest at 30m and a debris field of twisted metal in the middle. The bow stands up almost upright at 18m and I found this to be the most photogenic part of the wreck.

It was a decent dive, but I will not pretend that piles of contorted and rusting steel with little or no historical
Greece

Blue Canyon
The late afternoon dive took us out along the coastline of the nearby Arsida island just opposite the dive center, to a site called Blue Canyon. Here, there was a vertical fissure in the wall with a corridor leading into a wider grotto and glistening blue water. I drifted off again, pondering which historical events this very coastline, being the entrance to the Saronic Gulf, came to witness since the dawn of civilisation. One event that sprang to my mind was the Battle of Salamis, which was fought just to the west of modern-day Piraeus, and while perhaps not exactly in front of where I was now sitting, it happened close enough.

The battle, which took place in 480 BC, was a major turning point in European history. It saw the Athenians decisively defeating the much larger invading Persian fleet, after which their king, Xerxes, retreated to Asia, with most of his army, assuring Athens its place as the cradle of modern European culture.

Meditteranean style interval
What I did enjoy, as I usually do in the Mediterranean, were the long and lazy lunches which leave one with no sense of hurry or worry in the world. As I also savoured the fresh produce. I dug into the Greek salad (of course) put before me with much gusto. Crunchy cucumbers, tomatoes rich in flavour, olives, feta cheese… it is such an uncomplicated composition and, being in Greece, the ingredients probably came straight out of a nearby vegetable garden. And I do not mind it being a very healthy meal, too.

As I slowly sipped my coffee, my gaze wandering across the archipelago significance excited me all that much. I tended to go looking for critters taking up refuge in the holes and crevices, in fact. But I did fancy the overhangs and rocks, as their sheltered sides were covered with sponges and soft corals in various colours.
Where modern technology enhances old fashion diving

W4 5mm

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W4 is the latest back-zip wetsuit from Waterproof. After nearly 30 years of experience of making wetsuits we have put all our knowledge into this high-quality suit with an eye-catching retro-futuristic design.

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Double smooth-skin seals at arms and legs, adjustable neck and a 10mm spinepad, with an extra seal at the back zipper work together to keep the cold water out. Seals are designed to fit WP boots and gloves.

All zippers in top class Vision from YKK. The Bronze slider in the back zip ensures trouble-free function for many years.

ToughTex panels at elbows and knees, Bonded HiQ Nylon Thread and 100% CR Neoprene in all panels - quality in every detail.

The W4 also features double computer strap anchors with anti slip, comfort front neck zipper, inner plush lining, seat and shoulder antislip reinforcement.

The WPAD™, or the Waterproof Personal Accessory Dock, is a soft artfully constructed docking station located on the right thigh used for attaching our expandable pocket.

The W4AD™, or the Waterproof Personal Accessory Dock, is a soft artfully constructed docking station located on the right thigh used for attaching our expandable pocket.

space. Inside, the walls were covered with colourful sponges and algae. Looking outward, the rays of light from above and colours of the deep blue behind was a beautiful view. Outside the fissure, small reefs alternated with patches of seagrass and areas with boulders and rocks under which fish and critters were hiding. This was, as shallower dives often turn out to be, quite a relaxed and prolonged dive, with ample time to prod about and take a closer look at the marine life.

It was a spent bunch of divers with sunburned faces who sank deep into the soft seats of the minibus that brought us back up to Athens while the sun was sinking low over the archipelago in the West, but the day was far from over.

Evening in Athens
After a quick shower and change of clothes at the hotel, we went to the nearby metro station, the rapid-transit system that connects the conurbation of Athens and Piraeus. When in foreign cities, I do have a penchant for using public transport to gain an

Nightlife in downtown Athens café (above); Colorful sponges and algae on rocky walls at Anavyssos dive site (top left)
impression of the local population, as one can sit immersed in a random mix of all sorts of people going about commuting, visiting friends, going shopping or enjoying a night out on the town. The transportation system in Athens is clean and modern, and we did not have to wait long before we were on our way, off to enjoy dinner in the bustling downtown area.

**Scuba Hellas**

Our visit in Greece came about thanks to the admirable efforts and initiative of our host and guide, Avgerinos Vrazopolous, and his team. They are professionals behind ScubaHellas.com—a privately funded portal created to promote Greece’s underwater wonders and support its dive industry by providing interested dive travellers with an easy overview of the many options and ways to book dive holidays with many operators scattered across the country.

I met Avgerinos some years ago, at the Boot show in Düsseldorf, Germany, where I was both puzzled and pleased to see an entity promoting Greece and Greek diving, as both have been notably absent for a very long time. I came to learn that Avgerinos heads a successful marketing agency and has also been putting his knowhow and resources behind his passion which is diving. His country could not get a better ambassador.

As we sat under the open sky enjoying dinner and a cool beer, we got to hear about Avgerinos’ vision and his take on the challenges ahead. Seeing it for myself, Greece does indeed have a lot to offer, both above and below the surface. It only needs to be showcased.

For decades, diving in Greece has been stifled by extensive bans, originally put in place to protect the ancient amphoras found in Rafti Bay were probably in a shipwrecked vessel like the one pictured above, long since rotted away.
vent looting or damage to its antiquities. While the need to protect historical sites and assets is quite understandable, the virtual blanket ban that was put in place for so long clearly went overboard, deterring a whole generation of divers from going to Greece. A shame really, since it is only a short flight from all other parts of Europe.

**Porto Rafti**

The next morning, after not too much sleep, we were driven to Porto Rafti. A seaside resort town situated in Rafti Bay on the eastern coast of Attica, some 35km southeast of Athens, it is a place which is known for its fine beaches. The port, which is surrounded by hills, was a major trading place until the collapse of the Roman Empire.

Just as we were coming down the last long hill, enjoying a magnificent vista over the port and the Aegean Sea in the distance, the bus suddenly pulled over, while still on the outskirts of town. Oh, this was the dive center, I found out. “AquaTeam,” the sign on the building read.

We got off and entered the premises, which was spacious, tidy and quite well laid out. On the racks, hung quality brands and technical dive equipment, with rental and school equipment appearing to be of good standard and in good repair. On the far side, a huge mixing panel was mounted on the wall. This was clearly a facility that could cater well for all sorts of divers.

Once properly briefed on the upcoming dive, everybody kitted out with needed gear, and several good Greek coffees later, we once again saw ourselves expectantly heading out to sea in a densely-packed RIB, bumping over the wave crests while clinging onto our camera equipment. I was stoked.
because we were going to dive on a wreck site dating back to the antiquity, or rather its cargo, since the vessel itself, being made of timber, had long since deteriorated.

It was not many minutes out of port before the anchor was set along the craggy shoreline, which dropped off steeply into the sea. I slipped into the water with a back roll and went for a flat patch on the sea bed, some 10m deep, where I could sit and get buckles and straps properly adjusted and my camera rig properly configured, with the strobes pointed in the right directions and test fired.

Once I was all set and ready to carry on, I saw our guide waving to get my attention from further down the sea bed. I pushed off the bottom, adjusting my buoyancy and letting gravity pull me effortlessly along in an even glide, while using my fins to steer me slightly above the sea bottom.

Sticking out of the sand, were the unmistakable shapes of amphoras. That, dear reader, was a magnificent moment, and the realisation of what I had in front of me took long moments to fully appreciate. I was looking at artefacts, which were easily several thousand years old—dating from around 1,400 BC, I was told. I could just reach out and touch them if I wanted to, but I chose to keep a respectful distance, being extremely mindful of my buoyancy and posture.

I hovered just over the bottom, and with slow and deliberate movements—as if I was performing some underwater variety of tai chi—I moved about very carefully and consciously, inching myself into position to compose my shots without any risk to the site. There were several patches of amphoras and shards that led me down to +35m for quite a while, deeper than I had intended to go.

This was one of the times I was happy that I bothered to bring my own dive equipment. I am rather fussy about using quality kit, maintaining it and keeping it in perfect condition. It gave me some reassurance, as I was moving about, doing my thing down there, without a buddy close by, as one ideally should have.

I had a large 15-liter tank, thank heavens. The 28% nitrox therein provided me with a much-appreciated buffer, enabling me to accomplish shooting a good series of photographs while keeping a reasonably wide margin for gas reserves, decompression limits and contingencies.

With time to spare, I made my way up slowly along the slope and spent extra time around 5m breathing down my tank. I have made a habit of lingering in the shallows for a good while longer, as it is cheap, extra insurance against freak...
occurrences of decompression illness. Whether or not I broke the surface actually sporting a big grin, I do not recall, but I surely felt exhilarated. That was a big bucket list dive ticked off.

So far so good, and it was not even lunchtime yet.

For a surface break, anchor was heaved, and we sailed into a little protected cove nearby to enjoy some sandwiches, cake and soft drinks. It was one of those sacred breaks where time seemed to come to a halt and all the worries in the world were far, far away.

Rafti’s Island
Right in the mouth of Rafti Bay sits an island that looks almost like a skewed pyramid from some angles. I did not get the name of it at first, but an online search later determined it to be Rafti’s Island. Nothing above surface gave away that there was anything spectacular about it, but along its shoreline, there was a most exquisite cavern and overhang under which the walls were covered with a colourful tapestry of soft corals and sponges, giving it an almost cathedral-like appearance. The images should tell it all.

Placed in shallow waters, it was another dive site where one could go about looking at stuff for quite a long time, as long as gas reserves lasted. I only saw the sporadic little fish skittering about, but from the ceiling, it was raining fireworms, which were apparently being knocked off their footing by our bubbles, comically resembling miniature paratroopers falling out of the sky.

As I was rummaging about the sea floor, I came across a recess along one of the walls. I poked my head inside to discover the most magnificently coloured tube anemone strutting out of the sand like a delicate bouquet of flowers. Once again, I found myself moving about with the most utmost care, in order to neither stir up any particles nor to disturb the creature and cause it to instantly retract its elegant plume of purple tentacles.

Greece
These delicate manoeuvres required no small amount of careful contortion on my part, and dead accurate control of buoyancy and posture, as there was not really enough room to safely squeeze into the space both my torso and my camera rig, which I had to hold out in front of me with arms extended, essentially as a point-and-shoot camera.

To sum it all up, in the manner of just a couple of hours, we had gone on two completely different, but each in their own way, spectacular and memorable dives, making it one of the most wholesome dive days I have had in a very long time. Needless to say, I felt quite accomplished and elated as we headed back to port. Having worked up quite an appetite, I was also looking forward to a well-deserved lunch, which materialised in the form of a barbeque, which was already fired up on the porch in front of the dive store when we came back.

**Evening at the Acropolis**

That evening, while being only my third in Greece, was also my last chance to see a bit of Athens on this trip. Our group was taken to dinner in the Acropolis Museum, which sits right beneath the citadel plateau, with a spectacular view of the Parthenon.

The museum is built right on top of a settlement dating from the Archaic to early Christian period, and the excavated remains can be viewed through the glass floor of the museum—pretty neat. It is one of those museums in which one can easily spend a whole day, indeed several days, taking in the impressive collections of artefacts. But having already spent most of the day diving, we had lamentably little time to see the exhibits. This facility is surely one I would like to visit again.
The idea of Hawaii conjures up images of blue water, white sand, palm trees and soft breezes. One pictures a calm, easy-going, relaxing sort of place where one can recover from the hustle and bustle of everyday life. But if one looks hard enough, there is adventure to be found beyond the sun-soaked beaches and mai tai cocktails, and so I went in search of them on both ends of the island chain that make up the Hawaiian archipelago.

The main Hawaiian Islands, which make up this US state, consist of eight islands stretching from the easternmost island of Hawaii, to the westernmost island of Niihau, with Maui, Kahoolawe, Lanai, Molokai, Oahu and Kauai in-between (east to west). They stretch across about 580km (360mi), and scuba divers can find amazing and unique diving opportunities on every island.

The Big Island
To the eastern end of the island chain is the island of Hawaii, more commonly called the Big Island, and divers most likely know this island for Kona’s manta ray night dive. Having lived and worked as a dive instructor for several years on the Big Island, I am quite familiar with this amazing spectacle where divers kneel in the black, volcanic sand with flashlights pointed upwards to bring in the favorite...
food of manta rays: plankton. It is almost guaranteed that several mantas, with two- to three-meter wing spans, will show up to feast on the plankton attracted by the lights. On some nights, as many as 30 or 40 mantas will show up.

But hey, everyone does that dive. I wanted to do something different. Having spent many hours off the Kona Coast, I knew that sightings of rare marine mammals and sharks were a possibility. But how often can you just drive a boat offshore and hope to come across something cool? Wild Hawaii Ocean Adventures (you have to love their acronym: “WHOA”) does just that. Every morning, they take off in a former navy assault vessel, which was previously used by the Navy SEALs. Named the Ocean Warrior, just getting to ride around in this incredibly fast and maneuverable boat is an adventure in itself. The passengers stand at the back of the boat leaning back into the seats and hold onto a bar in front to stabilize themselves, as the captain does 360-degree turns, practically on a dime, and speeds into overhanging lava-formed caverns at the shoreline.

I did not go for the boat ride though. We were out for more than 20 minutes before I saw a sleek, black fin break the water. The captain saw it too and slowed the boat down a short distance from the place where we spotted the fin. Then, about four fins surfaced. We waited a little longer and the captain took note of the direction the fins were heading, eventually moving the boat a tad in front of where we spotted the four pilot whales and a small baby! Cheers and excitement rang through the air as everyone returned to the boat. Again, the captain took note of where the fins were headed, moving the boat slowly in front of them and going wide around their potential route. Then, it was my turn. Getting into the water as quietly as possible so as not to disturb the whales, my group of three floated in the open ocean—nothing but blue water all around and below us (the channel was over a mile deep). Then, at the edge of my vision, I saw a dark shadow in the water.
distance. As I kept my eye on it, it got bigger and soon became the four pilot whales the first group of divers had seen. The tiny baby kept close to one of the adults and the whales moved in unison up to the surface to take a breath and then dove down just below the surface. They continued past us as if we were not there.

We continued to take turns swimming with the pilot whales. At one point, I was on the boat and saw a light gray shadow in front of the boat. Not quite sure if I was seeing things, I kept my eyes on it and saw it move from the front of the boat towards the back. I pointed it out to the captain and found out it was an oceanic whitetip shark! The adrenaline started rushing.

These stealthy, slow-moving, sometimes aggressive sharks are common off the coasts of the Hawaiian Islands. But divers and snorkelers do not often see them, since they rarely come close to shore. Sporting a very large dorsal fin with a bright patch of white at the end, these sharks are easily identified and often seem curious about boats and other things floating in the middle of the ocean.

The next group of snorkelers got ready and slipped into the water with the shark, which did not move away from them, but it also did not go for them or charge. It just seemed curious, as it checked them out. The divers had a great view of this beautiful shark, in all its glory. Then it was my turn to dive with the shark. It had moved off a bit, as we got in the water. I could just make out the body shape and the white of the dorsal fin, but the shark did not want to get any closer to us for the rest of the day.

We eventually continued searching the blue horizon for other animals. We found another pod of pilot whales, then a large, gray, diamond-shaped object appeared off the side of the boat. Our guide jumped in and said it was a mobula ray. However, it descended immediately and we only got a glimpse of it from the surface.

Towards the end of the trip, we headed back towards the jagged Kona coastline, stopping to snorkel through a lava-formed cavern. Had my plane to Kauai not been leaving the next day, I would have stayed and gone out on the Ocean Warrior again in search of more animals, in the open Pacific...
Ocean. But, I was headed to the other side of the Hawaiian island chain. Ni‘ihau and Lehua Rock Seventeen miles west of the Hawaiian Island of Kaua‘i, across the notoriously rough Kaulakahi Channel, is Ni‘ihau, often referred to as the “Forbidden Isle.” It is accessible only to the island owners and residents, military, government officials, invited guests and limited authorized tourists who generally have no contact with the residents. The residents live in a manner similar to the ancient Hawaiians, with no running water and little electricity (and only some solar power), engaging mostly in subsistence farming—and they still converse in the Hawaiian language.

Less than a mile north of Ni‘ihau is Lehua Rock—an uninhabited, barren island, which is part of the extinct Ni‘ihau volcano that is a Hawaii State Seabird Sanctuary. The sanctuary serves primarily as a migratory home and nesting place for 16 species of seabirds.

In the summer months when conditions are calm, a few dive and snorkel operators make several trips a week across the bumpy channel, usually taking around three hours to get there. I was lucky enough to have friends with a private boat. We headed over to the area with the intent of doing some boat camping and diving for two days.

The crossing itself can be an adventure, with the possibility of seeing spinner dolphins, pilot whales, bottlenose dolphins, and rare marine mammals like beaked whales, false killer whales and humpbacks in the winter. Seabirds, including several endangered species, can also be seen, and we
travel

had some follow our boat all the way across the channel.
Upon arriving, we jumped in for our first dive, close to Ni‘ihau. Beneath the surface, we found lava rock shelves that looked almost as if the lava had just recently flowed to this area, with fluid lava rock piled on top of each other. We swam down a canyon-like wall and under an arch, out to the open blue. Two eagle rays swam by and huge schools of butterfly fish moved along the rock, circling down to eat off the rock and then back up into the water column, one by one. A giant trevally swam by and a few gray reef sharks ignored us as they made their way past.

Moving over, close to Lehua Rock, what I had hoped most to see was already at the surface beckoning us to come underwater with it—an endangered Hawaiian monk seal (Neomonachus schauinslandi, formerly Monachus schauinslandi). Critically endangered and ranked as the United States’ most endangered mammal, there are estimated to be less than 1,200 Hawaiian monk seals in the world. Most of the population live in the protected Northwestern Hawaiian Islands, which start just northwest of Ni‘ihau and continue for over 1,100 miles northwest. About 170 individuals are thought to reside in the main Hawaiian Islands. And I was looking at one of them.

Endangered monk seals
Monk seals have had a rough relationship with humans and were first threatened by sailors hunting them for their skins, oil, and as food. They were easy targets because they haul up on beaches for long naps. It is believed they reached an all-time population low of 19 individuals
but are now making a comeback, although many threats still exist. Some threats come from the monk seals’ natural habits. Mat- ing can be quite violent, causing wounds to the females that can lead to septicemia and possible death. Females give birth after nine months and stay with their offspring while nursing them. After six weeks, the mothers leave, and the pups have to fend for themselves, leaving them susceptible to shark attacks and being trapped in marine debris such as nets and garbage.

Monk seals also compete with commercial fishers for their food as the seals’ diet includes many fish and crustacean species, which are being depleted due to commercial fishing. They also eat lobster, tuna and other game fish, which are becoming less and less common, so they are facing starvation.

Anthropogenic diseases are also being shown to affect monk seals (and other seal species around the world). Seals have shown up with parasite infections such as the cat parasite, Toxoplasma gondii (stray cat populations on the main Hawaiian Islands are massive), as well as bacterial infections such as leptospirosis, which is spread by rats on the main Hawaiian Islands.

There is hope though, and the population seems to be slowly climbing. Protection on the main Hawaiian Islands has kept those monk seals safe, and many research efforts are going on in the Northwestern Hawaiian Islands as well.

Diving with monk seals
All this aside, we geared up for a dive at a site known as Vertical Awareness an underwater pinnacle just off Lehua Rock. The pinnacle has sheer walls on all sides descending much, much farther than we could see. Monk seals are protected under the Endangered Species Act and the Marine Mammal Protection Act, and it is obviously illegal to kill, capture or harass them. Diving encounters with monk seals are entirely left up to the seal. (Swimming after them will not accomplish anything but just cause them to swim away, anyway.)

Once in the water, we got to about four meters before hearing a low-pitched grunting noise. Looking
around for where it was coming from. I saw a monk seal about 40m from us, off in the blue, looking right at us. We watched as the seal slowly went to the surface for a breath of air; then, it came back down to the rock ledge and proceeded to scratch itself on the rocks below.

A little while later, I saw my dive buddy point into the blue. Expecting a monk seal, I quickly realized the large object was not another monk seal, but a large silky shark! The monk seal started growling again, and the sharks moved closer to the seal, looking like they might have a face-off. But the monk seal held its ground, and the shark was the first to alter course, moving to one side of the seal.

The walls were covered in hard corals, upon which there was plenty of macro life to be seen, for those with enough willpower to ignore the monk seals, sharks and eagle rays swimming off in the blue. Endemic nudibranchs only found in Hawaii were all over the walls, and tiny harlequin shrimp hid in the cauliflower coral heads. One of my favorite fish, also endemic to Hawaii, is the bandit angelfish. Several of these could be seen swimming along the wall. I was so intrigued by their black and white bodies, sporting a black stripe over the eyes, just like a bandit.

We spent the night on the boat. In the middle of the night, I woke up to a puff of air and a little bit of a growl. I looked over the side and saw a monk seal swimming around the boat. Staying up for a little while, the seal came up right next to the boat about every 20 minutes to breathe. I couldn’t wait for dawn when I could go diving again.

On our second day, the diving around Ni’ihau and Lehua Rock was just as good as the first. We had numerous silky sharks and saw a total of three different seals underwater. My favorite dive started at a place known as Keyhole, where a crack in the islands runs about 30m high above and below the waterline. Swimming through the crack is like going through a narrow canyon, with steep walls on either side.

Eventually, we had to return and headed back across the channel, getting to Kauai right before sunset. The diving opportunities in Hawaii are endless, and these two wild adventures are just a small sampling of the different experiences that can happen in Hawaii’s waters. As always, I cannot wait to return to Hawaii and maybe spend some more time with the pilot whales, monk seals and sharks!

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Ponta do Ouro

Text by Christopher Bartlett. Photos by Christopher Bartlett and Jenny Stromvoll
When I lived in South Africa for two years a decade ago, Ponta do Ouro in neighboring Mozambique was a place of legend in the wilds beyond the KwaZulu Natal border just a five-hour drive north of Durban. Tales told of a rustic village in the dunes with great diving, yet the village was swamped by South African fishermen off-roaders and quad-bikers during the school holidays. Whilst tempted to check out the underwater action, the tales of topside tourist trash won over, and I never made it. Then one day last August, on a whim spurred by two traveling companions while visiting South Africa again, I decided to go.

The drive up from Durban was uneventful until the border, where the excellent tar road stopped and a massive squiggle of sand tracks started. All roads lead to Ponta, we were told. I was not going to try all of them, but the combination of the ones I picked at various points did lead us to the village. The drive through the sand should only be attempt-
We checked in at Back to Basics, a local dive shop run and owned by the affable Rupert from South Africa, and his partner Jenny from Sweden. My traveling companions, Manu signed up for an Open Water course and Andy a refresher, whilst I was down to dive the best the dive center staff could show us in four days, which they did a great job doing.

**Marine life**

Ponta do Ouro has some great sites, with reefs ranging in depth from 10m at Crèche to 47m at Atlantis, with diverse and plentiful marine life. 1km to 12km in distance from the launch site on the main beach. The shallower reefs are made up of boulders and fossilized sandstone covered in soft coral, hard coral, sponges and invertebrates. Marine life ranges from the tiniest shrimps to beautiful nudibranchs, leaffish, scorpionfish, lionfish, triggerfish, surgeonfish, eels, frogfish, numerous potato bass (groupers), dolphins, mantas, turtles and up to 19 shark species, including whale sharks.

Although I was early for shark season, which runs from September to April, a group of 20-odd oceanic blacktip sharks had been hanging around for the past week, having fun with schooling baitfish, only to have disappeared the day we arrived.

**Doodles.** Still, the first 15-minutes out to the dive site Doodles did not disappoint; a humpback whale treated us to some tail fluking before one mighty breach and belly flop. They often put in an appearance between July and November, albeit mostly fleetingly.

Depth ranges between 14m and 18m and life includes a variety of game fish, moray eels, mantis shrimps, octopus, potato bass and rays. The reef is sandstone covered with soft coral, sponges and hard coral. At times, this reef can be invaded by so many snappers, scad and small pelagic fish that you cannot see the reef for all the fish. This abundance of food attracts various game fish and shark species to the reef. It is also a magnet for rays needing a clean from the abundant butterfly and angelfish on the reef. In three dives here, I saw southern stingrays, leopard rays, a whiptail ray and a diamond ray, as well as three female groupers, porcupine fish, green and hawksbill sea turtles, and some abundant macro life. In such a short trip, I would not normally like diving the same site three times, but two dives with a fisheye lens were really necessary, and then one with a macro lens, as there really was lots to see on Doodles. Manu also did her final qualifying dive here, and what a place to do it!

**Atlantis.** The polar extreme of Doodle is called Atlantis, as the depth of this 300m long reef is between 38m and 47m. Atlantis is for experienced divers with an advanced or deep diving qualification only, and being 3km from the shore, currents can be quite strong. The topography along the edges of this reef is very interesting with drop-offs and boulders on the sand. Black coral and green tree coral are present, and common visitors are marbled rockcod, bull shark, blacktip reef shark, black coral, Spanish dancers, kingfish, sawtooth barracuda, royal seaapple, trumpet fish and jellyfish.
Steps. The depth at Steps goes from 13m at the top, tumbling into overhangs and cracks at 16m on the sand. This reef is narrow (10m to 20m wide), and runs 4km along the inside of the bay. Due to its length, it is an ideal dive on days with a strong current. Natal knife jaw, cave bass, green job fish and leaf fish are just some of the species found here. Blue spotted and round ribbon tail rays lie basking in the sand while the odd devil ray can be seen swimming along the fringes of the reef.

Steve's Ledge. An extension of Steps, this long, thin reef ranges in depth from 14m to 19m. Anemones host clownfish, anemone crabs and shrimps. Fish life includes blue banded snappers, goatfish, trumpetfish and angelfish.

Checkers. Checkers is another reef in the 15m to 18m range. While the topography is far from unique, the marine life inside this horseshoe reef is excellent. Clouds of blue-banded snappers, anthias and yellow back fusiliers hang out here and frogfish and the elusive pineapplefish have also been spotted here.

Crèche. A firm favorite with novice divers when there is no swell is a dive site called Crèche, taking its moniker from the abundance of juvenile fish found there. The average depth is 12m, with shallower sections of the reef coming up to 10m, with different-sized boulders and rocks on a sandy bottom. Fish life includes potato bass, crocodile fish, scorpionfish and green job fish. Ragged-tooth sharks have also been spotted here. Manu did one of her open water dives here, and Andy had a blast on his refresher.

Pinnacles Reef. The main dive site for seeing sharks in shark season is Pinnacles Reef. Popular with fishermen, divers and sea life, the area abounds with life during the summer months.
In addition to the sites off Ponta do Ouro, it is also easy to reach the dive sites around Ponta Malongane and Ponta Mamoli in Back to Basics by RIB, with each spot offering more variety.

**Ponta Malongane**

Cloudbreak. This dive site is a long flat coral reef, busy with sharks and game fish, plus all the usual suspects seen on a deep dive. Depths can reach up to 45m (147ft), suitable for advanced divers with experience in unpredictable currents.

The Three Sisters. This dive site is just off the point and reaches a depth of 26m (85ft). There are three big boulders, an overhang and a cleaning station. Shrimp life is good and one can also spot surgeonfish, long nose hawkfish and even giant honeycomb moray eels here.

is located 3.5km off the dunes of southern Mozambique. Because the Pinnacles rise off the depths of the sea floor from 50m to 29m, the area acts as an magnet drawing fish to the area and it can attract large numbers of bull sharks. So far, a surprising 19 species of shark have been identified in the area. Out of season, when you are the only diver qualified to go deep on a boat of novices, you may not always get there, but in shark season it is visited very frequently and with much success.

A deep reef starting 28m dropping off to over 40m, huge potato bass congregate here, together with game fish, which attract sharks of all descriptions, especially zambesi (bull), hammerheads and the odd tiger shark. Mantas are also seen here, coming in for a clean. With water visibility usually around the 30m mark, this site is a firm favorite of many a visiting diver.
Ponta do Ouro

Wayne’s World. This dive site has a great swim-through and plenty of coral. Here, one will find frogfish and potato bass, rays and kingfish, to name a few. Depths reach 29m though, so this is another site for more advanced divers.

Kev’s Ledge. There is good drift diving at this site. With slow changes in depth and multiple levels to adjust to while exploring a series of widely spaced ridges with different features, it is always a fun dive. I was joined by a beautiful butterfly ray and then an inquisitive hawksbill sea turtle here. The average depth is 24m (78ft), so it is ideal for nitrox diving.

Ponta Mamoli

Bass City. For advanced divers, Bass City is wonderful if you want to see plenty of fish. The series of
algae-covered rocky outcrops attract an amazing array of marine life, including more friendly potato bass. Other critters often spotted here include lionfish, juvenile boxfish, harlequin shrimp and zebra shark, to name a few. There are plenty of cleaning stations, some boulders, overhangs, and also an intriguing sandy floor at around 25m deep.

Playground. There is abundant and diverse range of marine life at this dive site, which is wonderful for a night dives as well as shallow dives in good conditions for new divers doing their Open Water certification. There is a central cave and other nooks and crannies. The depth is 12m (39ft). One can find fusiliers, soldierfish and bigeye stumpnose fish here, as well as honeycomb stingrays and sand sharks, brilliant nudibranchs and hard and soft corals.

Conditions RIB launches can be a little sporty, but for anyone used to Aliwal Shoal or Protea Banks, they are an anti-climatic affair. For the novice, they are a fun start to any dive. The water temperature ranges from 21°C, with visibility of 15m to 25m in winter, from April to August, and in summer, 29°C with 15 to 20m visibility is to be expected.

Topside treats As much as underwater Ponta lived up to its reputation, it was most pleasantly unwarranted topside. Outside of the main South African holidays, it is quiet and peaceful with half a dozen decent cafes and bars serving homemade savory and sweet dishes and some excellent coffee. In the evenings, service can be a little slow at the various restaurants on the beach or up the
gently-sloping sandy hill, but there is always a plentiful supply of Dois M lager and Laurentina Preta (a dark lager) to tide one over. The evenings were all decidedly quite calm and pleasant, and an extra touch of civilization was provided courtesy of DSTV (South African satellite TV) showing cricket test match highlights at the end of the day’s play.

With only four days to dive here, and without getting a chance to see the prime deeper sites, I feel like I have just starting scratching the surface. As I write, I am hankering to go back, either in October or November, or in February or March, to get a crack at the top shark sites. African dive areas this far south tend to be either mainly about big fish, à la Aliwal Shoal and Protea Banks, or abundant in small stuff and reef life, like Rocktail Bay and Sodwana. Ponta do Ouro looks like it contains the best of both worlds.

Special thanks go to Back to Basics Adventures (Backtobasics-adventures.com) This trip was arranged by Indigo Safaris (Indigosafaris.com). Email ines@indigosafaris.com and she will put together a dream trip for you.

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Many divers dream of owning their own dive center, of doing what they love and making money out of it. But what does it really entail? Do you have what it takes to open and, more importantly, operate a recreational dive center? And what does it really mean? Whether you are planning a part-time weekend business or opening a luxury dive resort and hotel, it is worth reading further. Dive resort owner Farfat “Raf” Jah opens our eyes to the world that surrounds the business of resort diving.

It is 5:45 a.m. and my wife gets up in the dark. She is on breakfast duty and kindly wakes me. I am on generator duty. I push the mosquito net aside and climb out of bed. I pull a fleece on over my t-shirt and shorts, and grab a torch. We are close to the Equator and the moon has gone, so it is very dark outside and still quite cool.

I stumble over to the generator shed, unlock it, making sure that I don’t step on an object disregarded by the staff the previous night, and check the generator oil. The level is perfect. I swish the torch around the engine and floor, looking for untoward leaks or bits of wire that may have come loose. All looks to be in order. Depending upon who has been on duty the day before, I also open the fuel cap and dip the fuel tank with a twig that has been our fuel gauge for a year. All is okay.

With that, I turn the key and the two great pistons lumber up and down. We have recently re-sleeved the unit, and within one compression cycle, the unit bursts to life. The light flickers above me and I know that we have power in the camp.

So you want to open a dive center?

Dive center staff
Francisca opens the kitchen and lets the staff in. The kettle goes on, and I have a few spare minutes. I sit on the deck and look at the sea. At 6:30 a.m., the coffee starts to appear. At 6:45 a.m., one of the dive team members arrives to open the shop. Today, it is the lead instructor, a 49-year-old former electronics salesman. He is a phenomenal instructor who is rare in that he has been diving longer than I have. After a corporate life and running his own dive center, this lead instructor has found equilibrium working as chief

Text and photos by Farfat “Raf” Jah
instructor in Pemba. He lets the boat crew in, who take the fuel they need and filter it through a fuel-water separating funnel. Even with our 40hp workhorse type engines, the fuel quality is so bad that it must be filtered every day.

Captain Haji is a young man. He used to fish for a living, but for the past few years, he has been my skipper. He is as at home with twin 115hp engines as he is with 40hp. He is not fazed. He is a man of the sea. Like many of the villagers, he and his family have always made their living by the sea.

He and his team bring out cylinders, bags of dive gear and two 40hp outboard engines. They load all of this into the oxcart. The African oxcart with Land Rover wheels is the best way of getting our kit to the boat. The only thing missing is the ox. On busy days, the captain hires an ox from a farming friend of his. The team has to put the engines on and then remove them each night, as theft of the 40hp is rampant on the islands.

I take this time to look at the boat from the deck. I look to see if it sits right in the calm water and also for any abnormalities. Then as the crew load, I watch them pull start the engines. If the engines start the first time in the morning when cold, they are performing well. Multiple pulls could mean new spark plugs are required, or worse. Both engines start the first time. One is new and the other has just been rebuilt.

Everything about dive safety seems to be a combination of regular recorded servicing and observation. It is the observation of a minor glitch or client concern that encourages us to investigate. If we then find an issue, we can solve it, either by reassuring a client, changing to a spare, or fiberglassing a very small hole. It is all down to observation.

Checking everything
Some of the guests start to appear. They take coffee and sit on the deck. My quiet moment is over. Still in my fleece and shorts, I wander over to chat with the lead instructor and Haji. If Haji needs a hand with the heavy lifting, this is the time for me to weigh in. He rarely does.

I get the village gossip from Haji and ask the lead instructor if plans have changed. I may be the boss, and I may know more about the underwater world of the island than anyone else, but I have long learned that information is golden. I ask the instructor what he thinks—is all okay? It is not. Indeed, it is usually me that brings the news of more divers, who decided to go diving at the last minute the previous night, and the need to kit up more people and load more cylinders.

The instructor knows his stuff. Sometimes, I come across as an authoritarian type, but this is an illusion. I am never too proud not to change plans based upon someone else’s better ideas. I like to think of myself as a rather gruff captain rather than an abject fascist—but as he says: “You do have your moods.” To my shame, he is not wrong.

Planning
The divemaster appears and gets her orders or updates from either me or the instructor. We all must know exactly what we are doing. I am on the boat today, which in
In the past, we had people make bookings but never showing up. So now, we require full prepayment in advance. Sixty days before arrival, the payment becomes non-refundable. But people do not always pay on time, and we are always chasing for the money. Sometimes, people arrive with only a deposit paid, and we must ask them to pay as soon as they walk in the door. Too many bad experiences make this an unpleasant necessity.

First dive of the day
At about 9:00 a.m., we are wading out to the boat. The tide is coming in, but we cannot get the boat in too close, so it is waist-deep water for all of us. I climb on the boat and sit at the back. A crew member hauls up the anchor, and Haji restarts the engine (which has been allowed to warm up).

On the way out, I either sit at the back and compose my thoughts or talk to students and divers. The boat is an old Tornado 8.2 RB (which is, in fact, 8.6m long). The original tubes wore away a long time ago and I replaced them with fiberglass barrels. The boat is heavy, but extremely seaworthy and buoyant.

Twenty minutes later, we arrive at our dive site. We have already helped the first group of divers kit up, and they roll into the water, almost upon arrival. We find our dive sites by dead reckoning. Haji is pretty good at it, and I hold my own.

As soon as the first group are gone, the second group kit up and roll in. In this way, we can comfortably have two groups of five clients diving. Most of our diving is wall diving, which is simply spectacular, but you need to watch your depth, and we, the dive guides, are constantly looking behind us to make sure that no one has done anything stupid.

My briefing is clear: You are certified divers responsible for your own safety. And that means you, the diver, need to watch your own depth, time and air. Problems occur when divers have neither watch nor computer. They will not buy a watch, and they will not rent one of my computers. I will not push the point, so all I can say is, “Stay above me.” But realistically, there needs to be some form of industry-wide insistence that people dive with a timepiece.

The dive starts to come to an end when a diver runs low on air. At 70 bar (1000psi), I start to bring the group slowly up. Our dive may run for another 15 to 20 minutes.
after the start of the ascent, but it is a struggle to get people to tell us when they reach 70 bar, not 50 bar. There seems to be a perception among divers that it is okay to dive until 50 bar, at any depth, and then miraculously make it to the surface within 5 bar.

Beach interval
The instructor and the divemaster come up, and we are off to a small beach. At the beach, a crew member opens the cooler boxes and gets the fruit, tea and coffee out. He pours and chats away with his team. Some of the clients wander off to look at the crabs and fauna of the island. I check my phone for messages, telling Francisco where we are and listening to any info I need.

“Tell John and Jane their flight is confirmed” or “Morris’ luggage has still not been located” are normal messages. Then I turn to my people, for having coffee and tea and talking to our clients on a totally deserted beach with Haji is fun.

Divers are usually a fascinating bunch, and this is one of the joys of our job: meeting interesting, often like-minded people. We do occasionally get a bad apple, an abject racist or, more recently, an Islamophobe. These people can make our lives very difficult, as we must shield our other guests and staff from their rabid opinions. I sometimes wonder why people who hate Muslims travel to a country that is 98 percent Muslim. Thankfully, everyone is delightful today.

Haji gives me the nod and tells me that all tanks are changed and the boat is ready. He is usually bang on the money with timing. The lead instructor and I shepherd our people back onto the boat. My group of divers goes first as they were first out.

Second dive of the day
Our second dive is often as deep as the first and always multi-level, with much time spent in the shallows at the end. This time, after a short sojourn at 24m, we spend ages at 6 to 8m, in and out of the rocks and fans. I love the top of the dive site, Trigger Wall. You just need to watch out for the triggerfish during the mating season.

After the second dive, it is back on the boat for a final roll call and we steam back to the camp. I call it “steaming” as at six knots, we are not powering back and it is not quite sailing either. As we return, the boat crew packs away all the kits into the relevant bags, and the lead instructor and I ask if anyone would like to do a third dive. If the morning has been amazing, we usually get a load of repeat divers. Today, it is an average one or two.

Back at camp
We are almost back on time today—1:45 p.m. at the camp. The clients wash their kit and head off to shower. They will be eating by 2:00. We wash the regulators ourselves. It is me that does the servicing on the Aqua Lung Calypsoos. I want to make sure that not a drop of water enters the first stage. I used to be the Aqua Lung distributor, but the French were painful to deal with, so we now buy whichever brand we get the best deals on. At the moment, it is Beuchat and Typhoon, but from MDE, a British company.

If Francisca is around and we are back reasonably early, she will wait and we can eat lunch together. But usually a client asks us to organize an afternoon tour or a flight off the island in a few days, so lunch can be a “working lunch.” I have noticed that anytime a client is near you, or can see you, you are fair game to be asked questions or simply chatted to.

Service
The diving industry is called a service industry. We exist solely to make our clients happy, and that means sorting out problems created by others, smoothing the path, finding lost luggage, re-booking flights, dealing with rogue safari operators (whom we do NOT use or recommend), or...
very often, just telling the Pemba story, or our story.

Francisca is an anthropologist and I studied politics and history. I have studied Africa, read up on it, and interviewed hundreds of people who have lived in Africa about their experiences. It is easy to lose an afternoon over coffee listening and explaining.

Food planning

Francisca wanders off to sort out dinner. Each meal must be carefully planned and this involves purchasing (as all our produce is fresh) and thrice daily issuance of food items. Our cooks literally need the food to be handed to them for each meal, otherwise you end up with a massive lunch and tiny dinner. For that is what the islanders do.

Food is absolutely vital to a dive center. Either you buy it in, or you make it. Either way, it has to be the best that you can make it. People underestimate the importance of good food. I have been to very few (but very unpleasantly memorable) dive resorts where the food is mediocre or bad. Whether we like it or not, we are accommodation with a dive center, not a dive shack with rooms. There is simply no way around this, and I have to keep reminding myself of this.

Day’s end

At this stage, most of the clients relax on the deck or beach, or sleep in their rooms. Francisca uses the time to catch up on the tasks that she missed out on in the morning. This is a much more relaxed time and all she has to do is to get dinner out.

I attend to some electronic paperwork, or do some equipment maintenance. We try to service every item, inspect and clean every tank and check every engine and item before the season starts. This usually guarantees that dive equipment stays in good shape throughout the season, but things do go wrong, clients do drag regulators through the sand, and no matter how many times you tell people, someone always throws a whole regulator into the dunk tank with a loose dust cover.

The day draws to a close, and as the sun sets, most guests wander down to the bar and deck to look at the horizon. It is a magnificent time of the day, and I either sit alone or with Francisca on the beach and watch it go down, or I lie down and rest for an hour. After that, I take a shower and then go down to see the guests.

Dinner

Dinner is a family affair with all of us sitting at one long table. When we have loads of pre-booked divers and diving is easy, we know exactly what we are doing. The hotel and dive team sit by the pool and briefly discuss the next day’s plan. But when we have a series of walk-in guests, or accommodation for only pre-booked guests, then I do the rounds during dinner, sometimes with a clipboard, asking who would like to do what. After we have an idea, we sit down and work out how we can accommodate everyone’s wishes, i.e. two try dives, an open water course, and some recreational diving. Sometimes, when we are really busy, we help serve dinner, and then eat later.

As soon as dinner is done, Francisca feeds the dogs, and we stroll back up to the house and have 30 minutes free to read or listen to the radio before I fall asleep. It has been a long day, but a fair-typical one, and a fruitful one.

Farfat “Raf” Jah is an underwater photographer based in Pemba, Tanzania. He leads specialist bush walking safaris and operates a dive resort on the island of Pemba. See: Swahilidivers.com.
Equipment

Aquabionic
Beuchat’s newest fin is a result of a collaboration with Canadian fin manufacturer Cetatek, maker of the Aquabionic Warp 1 fin. It has a soft membrane in the middle of the blade and comes with with fast-ex buckles. It is equipped with universal spring straps that give you three inches of adjustment when tensioned or loosened by twisting the strap. The big eyelet on the strap makes it easier to pull on and off. The fins are available in five colors and three sizes.

Beuchat-Diving.com

Forcea
The Forcea Comfort is French manufacturer Beuchat’s new range of high-end wetsuits are designed with pre-formed arms and legs, contoured lower back and crotch for a snug fitting suit, with double seals and zippers on arms and ankles. On the hip is a hook to fix the hood to the suit when it is not being worn. The hook tucks away in the suit when not in use. On the left wrist, a universal holder is mounted. Offered in 5mm and 7mm versions.

Beuchat-diving.com

Waterproof E-Series
It is not quite official yet, but nonetheless a new range of drysuits from Waterproof was seen on display at the recent DEMA show. The new E-Series sees several components, such as the breathable fabric, which was first introduced with the D9 lightweight drysuit a few years ago, combined with new features to make for a lightweight yet sturdy suit for the discerning recreational diver. Enhancements includes big pockets on each thigh and small zippered pockets for small items on the sleeves (for car keys perhaps?). Colors have, obviously, now been added, enhancing visibility in water and perhaps making a better-looking group of divers. Further details and pricing information is expected to become available early 2017.

www.waterproof.eu

NX Series
Striving to further improve an already good and proven concept, Polish manufacturer XDEEP went about deconstructing the traditional wing, back plate and harness system. In order to make the concept even stronger, reliable and comfortable, they took a look at how they could improve every component. In doing so, the backplate has been given an hourglass shape with the aim of providing better lateral stability and lumbar support. The bladder has also been reshaped with a narrower profile to reduce drag. Also, the top has been made smaller to provide easier access to valves and tidier routing of hoses. This design also reduces “dead space”—the part sticking out of the water providing no lift when floating on the surface.

Xdeep.eu

Nova 2100
Scubapro’s Nova 2100 SF (Spot Flood) multi-use dive light offers both a powerful 2100 lumen 65º wide beam and a 800 lumen 15º spot beam. The Nova 2100 SF comes as a set, with both a large and a small Goodman handle, plus a pistol grip handle and a GoPro adapter. Lights also come with a wrist lanyard, rechargeable battery, charger and spare parts, all packed in a zippered EVA carry case.

Scubapro.com
Ghost Fishing in the North Sea

Text by Annet van Aarsen
Photos by Cees Kassenberg
In May 2016, the dive team of the Dutch Ghost Fishing Foundation helped a German Greenpeace campaign, with the goal of drawing attention to the sizable problem of ghost nets in the North Sea. After almost two weeks of ideal weather conditions—with bizarrely bad visibility underwater—the deck of the Arctic Sunrise boasted five enormous BIG BAGs (the Swedish eco-friendly garbage bag brand) full of nets and fishing lines. A considerable catch, but there is plenty more work waiting at the bottom of the German North Sea.

“These wrecks have no ghost nets,” said Andi Peters, the man whose own website introduces him as “Der Nordseetaucher” (“The North Sea Diver”). An experienced wreck diver, Peters can be found regularly on the Sylter outer reef in the German part of the North Sea, an area to the west of the island of Sylt and north of Helgoland.

Peters was on a ship in the distance when I first started helping the Dutch Ghost Fishing dive team on their Greenpeace campaign in early May, aboard the Arctic Sunrise. Greenpeace Germany wanted to see the protection of the Natura 2000 areas of the seas finally being put into action. [ed.– Stretching across 28 European countries, Natura 2000 is the world’s largest network of protected land and marine areas.]¹

“It is a very slow political process,” said Thilo Maak, campaign leader for Oceans of Greenpeace Germany. “In 2007, roughly a third of the German North Sea and the Baltic Sea have been designated Natura 2000 areas. But since then, practically nothing has happened. The protection is theoretical only.”

In a small part of the Sylter outer reef—one of those “unprotected” Natura 2000 areas—large boulders are a natural occurrence. It is somewhat like the Cleaver Bank in the Dutch part of the North Sea. In other places, the area has a sandy bottom. Despite its status as a “nature reserve,” there is a tremendous amount of fishing. Maak has a map of fishing activities that has been colored almost entirely black.

The goal of the expedition with Dutch Ghost Fishing dive team aboard was not the area with stones. We were going to dive for wrecks and hunt for ghost nets. An
Cuxhaven on May 2, there was not a breath of wind, just a clear blue sky, some nice sunshine and waves less than a foot high. It was a pleasant way to start. After all, the Arctic Sunrise was nicknamed the “washing machine.” In choppy weather, Greenpeace’s rugged icebreaker is said to behave like a bucking horse. But now? The sea sickness tablets could stay at the bottom of the bag.

On the chart table was a list of wreck positions. We had no idea how accurate they were. “Are there really nets on every wreck?” the Greenpeace crew asked several times. “When we find a wreck, we find fishing gear,” replied Pascal van Erp—founder of the Dutch Ghost Fishing Foundation—very decisively.

After the first few dives, that first part—finding the wrecks—proved to be a difficult task. We threw out the wreck anchor several times, but when we dived down along the line to look for steel and nets, we found nothing but sand. On the bridge of the Arctic Sunrise, the sonar showed a result, but for some reason, the anchor was constantly thrown well away from wrecks.

After some experimentation, we quickly found a solution. The crew of the RIBs, who took to the water’s surface with every dive to assist the divers, could also see a wreck on their sonar. They then dragged the wreck anchor to the correct position. We never missed another wreck. And so, we found the MV Sorstrand, a small Norwegian cargo ship that went under in 1981. It was standing upright on the bottom.

Conflicting views
Dive after dive, we ran into something odd in this part of the German North Sea: The upper ten meters of water barely had any current, and visibility was good. Below that, the light was suddenly switched off, there were algae blooms everywhere, and the water looked like pea soup. Suddenly, we found ourselves dangling in the current. The algae and current together created a “snowstorm” on the wreckage. Visibility was dreadful.

When Peters and his dive vessel cruised by, we called him over. We always saw him taking to the water a few hours after what we calculated ourselves. When asked if he knew any wrecks with a substantial amount of ghost nets, he answered in the negative.

And we had also proven that the Sylter outer reef did not have significant amounts of “decorations”; they were covered with large trawler nets, but also a lot of trammel nets. We were diving
A preliminary investigation of lost fishing nets in the German North Sea. He said the efficient and project-based approach that the Dutch Ghost Fishing Foundation uses works seamlessly with the highly-organized protocols of the MY Arctic Sunrise’s captain and crew, thus minimizing safety risks.

Van Erp said that the Dutch Ghost Fishing Foundation works with both volunteers and a fixed team of experienced technical divers. Each diver on the team has a considerable amount of experience diving the North Sea. In addition, all the divers have specific knowledge of fishery techniques as well as how to find and remove lost fishing equipment, he said. The divers dive in teams of two, he said, and each team has a specific task from which they never deviate. On each dive, one of the team members stays on board the Arctic Sunrise, he said, in order to ensure overall safety and assist the ship’s crew in case of complications. Before and after the dive, there is a briefing and evaluation with the diving team and the ship’s crew, said Van Erp.

“In terms of technical diving, everything is fine-tuned,” said Van Erp. “The divers’ certifications are taken into account, and we use equipment that is positioned exactly the same for everyone. The procedures are standard, and the same goes for the gasses, which we mix aboard the ship with our own installation. We dive to 30m with nitrox 32; Should we go deeper, then we switch to using trimix (21/35 or 18/45) and add decompression gasses (nitrox 50 and possibly oxygen). By using standard gasses, the decompression calculations are simple and the same for everyone—so simple that a diving computer is unnecessary.”

Van Erp said that the advantage of using standard procedures, equipment and gasses is, among other things, that “we can always quickly switch team composition before a dive and assist each other underwater in case of an emergency.”

Members of the dive team for this particular trip in 2016, which took place from April 30 to May 10, included Pascal van Erp, Bas Poelmann, Hans van der Plas, Ben Oortwijn, Cees Kassenberg, Cas Renooij, Ron Baas, Rutger-Jan Hoogerdiak and Annet van Aarsen. During their ten days of diving at the Sylter outer reef, the team made a total of 18 dives. Only twice did they have a diving day with only a single dive—firstly, due to necessary compressor maintenance, and secondly, due to visiting German journalists, who came aboard to do media coverage.

For more information, please visit: Ghostfishing.org

REFERENCES:
• HTTP://EC.EUROPA.EU/ENVIRONMENT/NATURE/NATURA2000/
• www.greenpeace.org
In this latest column, Simon Pridmore looks at three instances where divers survived close calls, picks out the techniques that they employed to survive and recommends strategies that you can adopt to make you a safer diver.

Accounts of diving accidents hold a hypnotic fascination for us. We pore over the details looking for lessons that we can learn from each incident to make us better divers and perhaps, by being forewarned and forearmed, improve our chances of survival should we ever find ourselves in a similar situation.

Some common survival strategies include strength of character, determination, perseverance and a refusal to quit. However, not all survival strategies involve overcoming a predicament after it has become serious. Other strategies focus on preventing an incident from occurring in the first place or taking early action to avoid a situation escalating into an emergency.

Each of these three stories illustrates a specific preventative strategy. These are all true events; only the names of those involved have been changed.

**Survival story #1**

Alex was busy, successful and largely office-bound, not given to athletic pursuits but drawn by the lure of the ocean to become a diver. He bought a boat, took some training and started diving with friends at weekends. Diving did not come easily to him physically but, as an intelligent person, he stayed within his comfort zone, developed a good range of skills and fell in love with the sport.

One Monday, he walked into his local dive store to buy a weight belt and weights. In conversation with the owner, he explained that the previous day, he had ascended from a dive with his buddy. They had found themselves some distance from the boat, having been carried down current, and started to swim back to the boat. Surface conditions were choppy and Alex’s buddy, a better swimmer, forged ahead of him and disappeared from view.

Alex soon became out of breath, removed his regulator from his mouth, took a couple of waves in the face and swallowed some seawater, which caused him to choke. He sensed that he was on the verge of panic but in what he described as “a moment of clarity,” he remembered learning in his initial diver training that, if he ever found himself in...
difficulty at the surface, he should drop his weight belt. This was something his instructor had made him practice over and over again. So, he reached down, released the buckle and his weight belt fell away.

Immediately, he found that he was floating higher in the water, his head now above the choppy waves, his mouth clear of the splashing foam. Free of the belt around his waist he found it easier to breathe. He could now see the boat and his buddy who had almost reached it. He lay back, took several deep breaths in and out and started to fin slowly but as powerfully as he could towards the boat.

Comment

Having to replace his weights and weight belt was a small price to pay for survival. It is likely that Alex only thought to remove his weight belt because he had practiced doing it so many times that it had become deeply imbedded in his mind. Therefore, even when he was highly stressed, he still remembered his training.

Survival Strategy #1: Practice self-rescue skills so that they become instinctive.

Survival story #2

Terry is an experienced rebreather instructor. “I travelled out from the city on a Friday night for a weekend’s wreck diving. I arrived around midnight and, although I was exhausted, I did not sleep well. I woke the next morning and did not feel at all like diving but the other guys were excited so I played along.”

“Because I still had a bad feeling looming over me, I ran an extra-thorough check on the rebreather and thought to myself, “maybe I will feel better when I get into the water.” The dive started off just fine and I had shot some good video when I noticed that my oxygen sensors were reading high. “No problem,” I thought, I will flush the rebreather with air and that will take care of it. So, I held the button down, injected fresh gas and took a few deep breaths. Then I suddenly realized that anything was wrong. I was confident he would eventually.

“I wrapped the cord of my video camera around a rail post on the wreck, knelt down on the deck, leaned forward, grabbed hold of the regulator with my hand and wedged my lower arm against the railing. Basically, I did everything I could think of to keep my regulator in my mouth.”

“And I waited. And it came. It felt like an electric current flowing through every muscle in my body, even my tongue, getting stronger as it continued. It did not hurt but every part of me was shaking. It gradually subsided. I have no idea how long it lasted. It could have been 10 seconds; it could have been 60.”

“My buddy was by my side now, looking concerned. We exchanged signals, headed for the ascent line, did our deco and reached the surface.

www.simonpridmore.com

Reach down and release the weight belt, if you have to. The cost of a new one is a small price to pay for your safety.
with no further incident. I felt fine but a little weak.

“What did I learn? Do not dive when you feel bad. Always have the self-discipline to sit a dive out, even if it means disappointing your friends. I cannot explain why I made the mistake. It just happened.”

Comment
As nitrox divers know, if you breathe oxygen at a high partial pressure, you may experience convulsions. These are not fatal in themselves, but if they occur underwater, you lose control of your muscles, your regulator can fall from your mouth, and therefore, there is a high risk that you may drown. Terry’s experience enabled him to react calmly and logically to the emergency and this, plus the reassuring presence of his buddy in close attendance, allowed him to sur

Steve is a top divemaster. One day, he was guiding a group at 20m along a reef wall with the seabed over 90m below. The plan involved ascending at the end of the dive through a blue hole in the reef. One of his divers had been a little nervous about the prospect, so Steve had instructed him to hold onto his harness when they reached the blue hole so he could help him maintain control of his buoyancy. Another member of the group was an experienced diver using a nitrox 32 mix and Steve had reminded him beforehand to concentrate on his buoyancy control and make sure he did not drop too deep during the dive because of the risk of oxygen toxicity.

As the group arrived at the blue hole and started to swim out over blue water and away from the wall, the nervous diver grabbed onto Steve’s harness as planned. Seeing this, another of the group, having perhaps had second thoughts, approached and indicated that he would like to get similar support. Steve placed the diver’s hand on his other shoulder strap and proceeded across the cavern with one person attached to each shoulder.

He looked up and saw that the nitrox diver had begun a comfortable ascent, but he noticed that the last diver in the group was having difficulty maintaining neutral buoyancy across the void and had started to drop deeper than planned. Steve managed to attract his attention and indicated that the diver should add a little air to his BCD. The diver acknowledged the signal, picked up his inflator hose and released air instead of adding some. This of course led him to drop still further. When he did it again and felt away even more, apparently out of control, Steve felt he had no choice but to swim down to him to help.

He checked the grip of the two divers at his shoulders, both of whom seemed oblivious to what was going on, and then descended to deal with the third diver. He reached him, added a little air to the diver’s BCD and managed to

New Dive Guide to Raja Ampat
As part of their series of 2016 Diving and Snorkeling Guides, authors Tim Rock and Simon Pridmore have produced a brand new guide to Raja Ampat and Northeast Indonesia.

Diving or snorkeling in this remote region at the edge of the Pacific Ocean is a life-affirming, bucket-list-topping experience! Abundantly rich in marine life, these seas are proving to be a gift for divers that keeps on giving. Raja Ampat is the superstar destination, but other areas such as Cenderawasih Bay, Triton Bay and Southwest Halmahera are shining brightly too and acquiring similarly mythical status.

This richly illustrated, detailed and informative guide is the first to cover all of these incredible places! It tells and shows you—the adventurous travelling diver—what to expect from this remote, fascinating and often downright astonishing part of the world. It will help you plan your trip, enhance your experience when you get there and provide you with the best possible souvenir of your visit. Available on Amazon.com

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get the whole group neutrally buoyant. He now had three divers attached to him and a glance at his computer showed him they were all at a depth of 55m. It was then that he noticed a movement out of the corner of his eye. It was the nitrox diver who had seen what was happening and had come down to help! Steve used his free hand to signal in no uncertain terms that the nitrox diver, who was now a long way below his maximum permitted depth, should go up. He got the message and disappeared, leaving Steve to manage a slow and safe ascent for himself and the glassy-eyed divers holding onto him.

Once back on the boat, the three divers chattered excitedly on what a great dive they had had, while the only thing the nitrox diver had to say was, “You guys are not paid enough!” Steve made sure he brought a colleague along with him to assist him on all future blue hole dives.

**Comment**

With experience comes confidence, but the more experienced you become, the more you need to guard against over-confidence. Steve allowed his familiarity with his job and the dive site to persuade him that he could take these divers there on his own without help. As it turned out, when things started to go wrong, he was pushed to the limits of his ability to ensure the safety of the group.  

**Survival strategy #3:** Be wary of overconfidence—know your limits and do not test them.

Simon Pridmore is the author of the international bestsellers, Scuba Confidential: An Insider’s Guide to Becoming a Better Diver, Scuba Professional: Insights into Sport Diver Training and Operations, and Scuba Fundamental: Start Diving the Right Way. He is also the co-author of Diving and Snorkeling Guides to Bali and Raja Ampat and Northeast Indonesia. This article is adapted from a chapter in Scuba Confidential.

Be wary of overconfidence—know your limits and do not test them.
**Insights from the Deep**

*Shark Tracker: Confessions of an Underwater Cameraman*, by Richard Fitzpatrick.

Award-winning cinematographer Richard Fitzpatrick takes readers on an eye-opening journey that dips into the depths of the ocean. From the Great Barrier Reef to the Amazon, he shares his experiences and adventures, from tagging sharks to witnessing seahorses give birth. This book comprises intriguing stories and science, giving readers an intimate insight into sea creatures and the environmental issues they face.

**Sound**


This book provides a comprehensive and up-to-date foundation in the major aspects of underwater acoustics. Written by experts in the various fields, each chapter comprises a brief background description, necessary definitions, description of the applications, along with a roadmap to the chapter. No prior knowledge of underwater acoustics is needed, and the physical principles and mathematics are designed to be readily understood by scientists, engineers and graduate students of underwater acoustics.

**Ancient Shipwrecks**

*Caligula’s Barges and the Renaissance Origins of Nautical Archaeology Under Water*, by John M. McManamon SJ.

Around 1446AD, the first effort was made to raise two Roman vessels that sat at the bottom of the lago di Nemi, south of Rome. It was unsuccessful. Over the next 500 years, various attempts to raise the two vessels also failed. Then, from 1928 to 1932, the lake was drained. Eventually, the ships were recovered and placed in a museum. They remained there till 1944, when they were destroyed in a fire. Author John M McManamon connects the early attempts at underwater archaeology with the Renaissance interest in reconstructing the past in order to affect the present.

**Underwater Photo Tips**


Ports, strobes, housings... To a budding underwater photographer, all that equipment can be pretty intimidating. If that is you (don’t worry, we won’t tell!), reach out for this book, which lays out the basics, then progressively advances to more technical aspects of the craft. Drawing from his own experience, the author describes how to keep your camera watertight, how to choose lenses and accessories, and how to assemble the system. Subsequent chapters are about working with a strobe, ensuring sharp focus and achieving vibrant colour in your photos, etc. Strategies for managing workflow and doing basic image editing are also covered.

**Underwater Photography**

Eating the Ocean, by Elspeth Probyn.

This book examines the importance of the ocean, and the future of fish and human entanglement. The author dives into the bluefin tuna market, the politics of sustainability, the business of producing fish meal and fish oil, and the long history of encounters between humans and oysters. In highlighting the food politics of the human-fish relationship, she hopes to bring to light a new sensibility to questions about human relations with non-humans, as she ends with the hope that one tries “to eat the ocean better.”

Hardcover: 200 pages
Publisher: Duke University Press
Date: 9 December 2016
ISBN-10: 082236235X

Harry Hawksbill Helps His Friends, by Paul J. Mila

This is not just another children’s book. We see the world through the eyes of Harry Hawksbill, a hawksbill turtle who is friends with everyone he meets (including human divers). One day, when he notices the angelfish not getting along with one another, he sets out to do something about it. Vibrant photos (almost all taken by author Paul J. Mila) are incorporated seamlessly into the storyline, and literally give readers a glimpse into the underwater world. Besides showing children the joys of friendship with those different from oneself, this book also dispenses bite-size fun facts about marine life.

Paperback: 50 pages
Publisher: Best Publishing Company
Date: 10 October 2016
ISBN-10: 1930536976

Sea Level Rise in Florida: Science, Impacts, and Options, by Albert C. Hine.

With sea levels rising at an unprecedented rate, Florida’s low topography places it in direct peril. Add to that the state’s immobile infrastructure of condos, suburban developments and tourist meccas along the coast, the stakes raise even higher. This book examines the geologic cycle of sea level movement in the past and its future projections. It also assesses the most likely range of sea level rise for Florida in the next century. Ongoing and potential consequences for natural marine and coastal systems, and how to strategically plan for them are also discussed.

Hardcover: 200 pages
Publisher: University Press of Florida
Date: 25 October 2016
ISBN-10: 0813062896


This book focusses on the development and deployment of Japan’s midget submarines during the Pacific War, and mostly notably during the attack at Pearl Harbor in December 1941. This book is the culmination of years of extensive research that includes combing the records of the US Navy, the Japanese, Australian and British archives, as well as tracking down leads to uncover the truth. The result is “a fascinating story of innovation, courage, secrets, and failed expectations” that combines historical sleuthing, scientific insight and good storytelling to capture the essence and impact of these midget submarines.

Series: Ed Rachal Foundation
Nautical Archaeology Series
Hardcover: 240 pages
Publisher: Texas A&M University Press
Date: 7 November 2016
ISBN-10: 1623494664

This investigative book tells the story of Henrietta Maria, a 17th century slave ship that transported hundreds of slaves from West Africa to the plantations in the West Indies, before sinking off Key West, Florida in 1700. The photographs bring to light the conditions on board the ship, as well as the present-day wreck as it lays on the seabed. Amidst the author’s personal reflections on the subject, readers also learn about the wonders of diving, detective work, discovery as well as the history of slavery.

Age Range: 10 - 12 years; Grades 5 and up
Hardcover: 128 pages
Publisher: National Geographic Children’s Books
Date: 3 January 2017
ISBN-10: 1426326637
Richie Kohler

One of only four men in the world to have been to the wreck of the RMS Titanic and physically dived the interior of the equally tragic vessel, HMHS Britannic, is the American underwater explorer and author Richard Kohler. Internationally known for exploring some of the most challenging and dangerous shipwrecks on Earth, Kohler has pursued his passion for technical diving and maritime history since the early ‘80s. Indeed, his explorations have helped to locate and identify many lost vessels, such as U-215, the minelaying submarine on the Georges Banks off Nova Scotia, as well as USS Murphy, the WWII destroyer lost off the New Jersey coast. Kohler’s deep diving endeavors have led to features in television and film documentaries, a best-selling book, Shadow Divers by Robert Kurson, and the History Channel’s television series, Deep Sea Detectives, for which he is co-host. Jaclyn Mackey interviewed Kohler to gain insights into this pioneer’s extensive experience and passion for exploring deep shipwrecks.

Text by Jaclyn Mackey
Photos by Michael C. Barnette, William Barney, Leigh Bishop and Richie Kohler

JM: Tell us what it was like to start diving and what pushed you to continue.

RK: When I was about eight years old, the American space race was in full force. I recall watching Neil Armstrong walk on the moon, and like many other kids, I wanted to be an astronaut. That same summer my dad took scuba diving lessons at the local YMCA and brought me with him to observe. As I watched him go below the surface of the pool with a double-hose regulator, I was amazed. Later that summer, my dad put the tank on me and allowed me to try scuba diving first in our small family pool, and then later in the ocean. Over the next few summers, my dad would take me diving with him and on a rare occasion, allow me to go solo, tying a rope around my waist and letting me dive from the back of our family boat. I was officially certified at 15 years old, but it would be years before I would see and explore my first real shipwreck. My early years of diving were about spearfishing, collecting lobster, and enjoying being underwater.
underwater. Here it is almost 40 years later, and I am still as enthusiastic and excited about the next dive I am about to do as I was when I was eight years old. It does not really matter to me if it is a 400ft (122m) shipwreck exploration, a 100ft (33m) lobster dive, or a winter bottle dive in the local rivers and bays. I love it all, and I am happy when thinking about or planning for a dive!

JM: How long have you been diving and how has your diving evolved? Touch on some technical aspects about equipment and gas.

RK: Next year will be 40 years that I have been a certified scuba diver, and in that time, I have seen incredible leaps and bounds in the sport I have grown to identify with so much. I was originally trained on both the double-hose regulator and the then new-fangled single-hose regulator. This was at a time when having a submersible pressure gauge was an option, and there was no such thing as a BCD or dive computer. As the years went on and I went farther offshore and deeper in pursuit of shipwrecks, my equipment changed. Moving into the deeper, colder water of the North Atlantic, I quickly changed my wetsuit for a drysuit so I could be more comfortable and spend longer times diving. When the aluminum 80 cylinders came into vogue, I quickly changed from the steel 72 because getting eight extra cubic feet of air is always a good thing! Soon I banded them together and was diving with double aluminum 80s. The introduction of steel 120 tanks once again had me changing to add even more air on my back, for longer and deeper dives. If you look at it linearly, it was 72-80-160-240 cubic feet of gas on my back over a 25-year period, but even that eventually would give way to the current equipment: the closed-circuit rebreather. Of course, using air changed to nitrox in the late ’80s, trimix for even deeper diving in the ’90s, and with the turn of the century and the use of my rebreather, I often use heliox for deep dives. I can only imagine where we will be in another 10 years!

JM: Who were the individuals you respected? Who inspired you?

RK: When I was 15, I became a junior scuba diver and the following year a basic (adult) scuba diver. My instructor in Florida was Paul Heinerth, a then young maverick cave diver who would go on to garner a name for himself in cave exploration and technical diving. I am sure I made him a little gray in those classes. A decade later, I was learning to dive wrecks in the New York area but there was no official training or classes. Knowledge and know-how was passed from the older, more experienced divers and dive boat captains down to the “greenhorns.” If you were lucky and social within a group. When there was an accident or an issue, it was discussed and dissected among our group, and lessons were sometimes tragically learned. Equipment was adapted and sometimes customized for the diving we were doing, which at the time was way beyond the accepted norms for sport diving.

Decompression dives and air dives to depths over 200ft (61m) earned us the nickname the “Crazies” and “Thugs,” but as a group we came up with the more respectable name for our gang—The Atlantic Wreck Divers. Almost every one of the group was much older and more experienced than me, and they took me under their wing, helping me choose the right gear and teaching techniques and philosophies that would help keep me out of trouble and hopefully alive. Through the years, I have had many other incredibly talented and experienced instructors help me along, from mixed gasses and onto numerous rebreather certifications, and every one of them are a part of the diver I have become.

JM: You’ve had a public life in TV,
RK: Until 1990, I had been like most folks, working a job during the week, and diving for fun on the weekends and holidays. Up until 1990, diving the Andrea Doria was the highlight of my diving experience, and almost every summer I would book every trip I could afford to get back out to the Mount Everest of shipwrecks. All that changed with a virgin shipwreck, one that no government, historian or expert could explain. The work to identify the submarine was very deep and the diving dangerous. It would tragically take the lives of three of my friends and change my life. That story is well documented in the New York Times bestselling book Shadow Divers by Robert Kurson, and I always thought this was the end of the story. But fate had another plan for me. After the airing of an Emmy-award winning documentary, Hitler’s Lost Sub, a NOVA film detailing the exploration of the submarine, my diving partner John Chatterton and I received a phone call from the executives at A&E television in New York City. They had seen the documentary (and us) and wanted us to work for them on a new television series about diving and underwater mysteries. We had never acted or been on television before and were stunned, but somehow the program Deep Sea Detectives was a success for the History Channel with six seasons (56 episodes). This, of course, provided numerous other documentary projects around the world, the most famous being our self-funded expedition to Titanic in 2005 and subsequent 2006 expedition to Titanic’s sister ship Britannic. This would lead to another book, Titanic’s Last Secrets by Brad Matsen, but it the passion for me to spend the next 10 years of my life trying to solve the mystery of Britannic.

Along the way there were many other films and projects on lost American submarines, destroyers and U-boats. Probably the most special for me was working alongside famed underwater explorer Dr Bob Ballard, which culminated in correcting fractured history and allowing a WWII sea captain to receive his due honors (posthumously) in an award ceremony at the US Pentagon. This was one of my prouder accomplishments as a shipwreck explorer.

JM: Discuss your involvement with Titanic, Britannic, U-Boat Malta, the challenges you faced, the triumphs, etc.

RK: In 2005, we documented new evidence and parts of Titanic’s hull that changed the way some experts saw the break-up and sinking of the ship. It centered around an engineering feature called an expansion joint. The theory was that these joints were flawed and may have caused Titanic to break up during the flooding, in effect causing it to sink sooner and faster. In order to see to test these theories, we needed to go to Titanic’s sister ship, the HMHS Britannic (which had sunk off a Greek island under mysterious circumstances during WWI) to make comparisons between the two ships. This Britannic expedition was planned for 2006 and would really have an effect on me. When exploring Titanic, you are crammed into a submersible, the entire project a huge and expensive undertaking to dive 2.5 miles (4,023m) down to the bottom of the Atlantic. On the other hand, Britannia is relatively shallow and at 400ft (122m) can be visited by divers. The water there is warm, blue, and very clear. The wreck is encased in colorful sponges and marine growth while shoals of fish at times block the visibility. Where Titanic is cold, dead and broken, Britannic is alive and very much intact. If it was just for the visual, it’s easy to understand why a diver for Britannic would hold such allure, but there were many unanswered questions and a
Richie Kohler

In 2015, Kohler led an expedition to Britannic’s famous sister RMS Titanic. In 2005, Kohler led an expedition to Britannic’s famous sister RMS Titanic.

JM: Explain the “Science Fiction is Science Fact” theme.

RK: In 2015, I met the members of the U-Group aboard their amazing research vessel the U-boat Navigator. Partnered with the Russian Geographical Society, the 30m vessel had two submersibles (a three-person Triton and a one-man prototype Triton); a Perseo ROV; a six-person hyperbaric chamber and a diving bell. The U-group had been filming Britannic for a feature length film and we agreed to work together on our planned 2015 and 2016 expeditions.

In working with submersibles, ROVs and the diving bell at depth, it was clear to all involved this seemed like a scene from the science fiction movie, The Abyss. Using scooters, our dive team circumnavigated the largest passenger shipwreck in the world, while filming the wreck and being escorted and watched over by some of the most advanced underwater equipment available. Upon surfacing from a dive, director of photography Evan Kovacs commented that our dive “seemed like something from science fiction”, to which I answered, “No Evan, it’s science fact!”

Of all the equipment aboard the Navigator, the most basic was the diving bell, an underwater elevator or lift, with a clear acrylic dry bell that divers could stand up in and be out of the water. The bell provided a safe habitat with real-time communications and video feed, as well as extra breathing gas in case of an emergency. Although low-tech compared to the submersibles and the ROV, the diving bell was a vital tool for the diving component of the project, made the dives safer, and the long six-hour decompression phase safer.

JM: What does exploration signify to you? Why is this your passion?

RK: I have been drawn to the darkness of caves, shipwrecks and deep water for as long as I can remember. Like the thrill I get from riding a motorcycle or downhill skiing, it is hardwired into who I am as a person, and at heart, I am an adrenaline junkie. But there is a cerebral side to the rush of adventure I get diving. For me that is not only the technical aspect of gases and buttons and shiny chrome gadgets, but the stories and unanswered questions, the research, and the historical documents that complete the package of exploration.

For more information about Richard Kohler and his book, Mystery of the Last Olympian, go to: Bestpub.com.

I am a nerd at the core who wants to be part “Indiana Jones” and part Neil Armstrong. It is not so strange when I consider that in school, both science and history were my favorite subjects. In the early years, researching shipwrecks came easily when motivated by finding artifacts or virgin wrecks. It became harder when the work spanned years of effort, like on the mystery U-boat off New Jersey or even the past decade of work on HMHS Britannic. It’s easy to become distracted and give up, going after easier goals. To stay the course, I have always focused on the human aspect of a shipwreck. It becomes personal and sharpened the focus of the “why.”

For me, the human connections will always be the most poignant and the real reward is when what we do as divers can make a real difference in someone’s life. ■

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Profile

Richie Kohler on the deep wreck of HMHS Britannic

Richie Kohler

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Powerful images can help achieve a goal. Art can stir up emotions in people and emotions lead to action, leading to change. By conveying one strong message in a visually striking image, viewers may stop and think. They might decide to make real changes in their lives, affecting their friends and families—the message spreading outward, ultimately leading to a real and positive change all over the world. It all starts with a single image. To this end, British underwater photographer, Zena Holloway, uses her underwater photography to raise awareness of the fragile nature of our oceans and marine ecosystems. Ran and Danielle Mor interviewed the artist to find out more about her mission, passion and creative process.

Underwater portrait and fashion photography is a unique form of art, allowing infinite creativity, pulling the viewer into the surreal, liquid world in which it was created. Holloway’s images convey this sense of surrealism. It is what makes her photos so powerful. An underwater photographer based in London, Holloway discovered her passion for underwater photography in Egypt, when she was only 18. She fell in love with diving, and shortly after, began taking photos underwater as well. Holloway decided to chart her own course in an ultra-niche profession. Nobody showed her the ropes. She taught herself. In 1997, she received her first commissioned work for a major brand, and since then, her work has been commissioned by many known brands, fashion designers, lifestyle magazines and celebrities. Among her clients, one can find Nike, Fabergé, Mastercard, Sony, Speedo, Elle Style, Herbal Essences and many more.

Zena Holloway’s image for an ad for the Birmingham Royal Ballet’s production of The Tempest. Enchanting and elemental, this water sprite floats weightlessly on Prospero’s magical isle in Shakespeare’s great play.
Holloway is currently one of the top underwater portrait and fashion photographers in the world and very well known in the industry.

**Thinking outside of the box**

Photos capture a moment in time. Indeed, Holloway’s images seem to capture moments out of a dream. Refreshing and original, her work reaches beyond the conventional boundaries of underwater photography. Her photos lift one up and lead one to another world, a world where the impossible becomes possible and the confines of reality, as we know it, cease to exist.

Her motto is, “Think outside the box.” This is a necessary state of mind when working with the unpredictable, ever-flowing underwater world, she said. Creative thinking is the most prominent characteristic in her work, noticeable in both her commissioned and editorial images, as well as her fine art photography. “My images illuminate the space between myth and reality,” said Holloway. “On the one side, our seas and oceans are powerful symbols from folklore and fairy tale, places of enchantment but also mystery and danger. On the other, water is an eternally present and powerful truth, nourishing, sustaining and commanding our respect. Somewhere in between is a world of imagination that I am inspired to bring to life, in the process asking questions about ourselves, our relationship with water and our responsibilities to the natural environment.”

Holloway believes that every person should be passionate about one’s own work, especially when creating art. One must work from the heart and without fear, she said. This is the only way to create something that is truly unique.

**Technical & logistical skills**

However, passion is not enough. According to Holloway, a photographer needs to master the technical and logistical skills of the art as well. She said one of her most challenging photo sessions, in which creative thinking outside of the box was a MUST, was her first photo shoot, which actually jump-started her career. Out of this session in 1998 in the Caribbean came her unique photo of horses swimming in the sea. It has won several awards since.

**Horses in the sea.** At the time, Holloway was intrigued by a popular television commercial featuring an elephant swimming in the ocean to grab a bottle of Diet Coke. She thought, if an elephant could make an interesting subject underwater, then why not try horses?

No doubt horses are not a common subject underwater, so snapping such a unique image was bound to create a visually striking photo. She jumped on a plane and flew over to a beach in the Caribbean where there was a local who was famous for his swimming horses.

During her two weeks there, Holloway spent plenty of time in the water with the horses. She was determined to capture the action from below, pulling the viewer deeper into the shot—a determination that almost cost Holloway her life! As it turned out, the horses moved rather quickly in the water, and she nearly got killed with a hoof in the head while positioning herself for this shot. Ultimately, the effort paid off.

**Girl in a pool.** Another interesting session was commissioned by Shangri-La Hotels in Taipei, Hong Kong. Holloway was asked to shoot a photo of a girl in a swimming pool, looking out onto Taipei at night. An odd request, but she happily accepted the challenge. When planning the shoot, it was
clear to her that the water would have to somehow combine with the skyline—which is not an easy task, she said, when shooting in the confined space of a swimming pool. Luckily, the pool location was quite deep, she said, reaching about 3m (10ft) in depth, sporting nice tiles with which to work in the image.

Holloway chose to use a 14mm ultra-wide angle lens, which is not her first choice when shooting underwater, she said. But in this case, the wide lens was crucial to create a sense of space that helped produce the original vision of the shoot. Holloway said, the lens was wide enough to allow the lighting to fall away at the edges of the image, which created the desired effect for the final image and helped create a smooth transition to a night sky.

Another important element in this shoot was the model’s pose, said Holloway. In order to create a powerful composition, Holloway asked the girl to lay back in a sleep-like state, a pose that does not come naturally for most people underwater. Holloway guided the model to the pose she had envisioned in her mind. After several attempts, with the model using a nose-clip, Holloway got the shot.

Holloway’s final touch is often what makes her images pop, such as the addition of a little girl (above) at the last minute.
Holloway’s image, Sisters of Serenity; celebrates the birth of the goddess of love (left): “This backstage image (right) always makes me smile,” said Holloway, “as the freedivers, having fed air to the mermaid, rush to get out of the shot before they have to rush back in again to feed her more air.”

Holloway and Aqua Spirit Dive Expeditions will be collaborating with Center for Oceanic Awareness, Research and Education (COARE), a non-profit organization that was created to raise awareness of the plight of the oceans. The organization strives to foster positive and lasting change in humankind’s attitude towards the oceans.

Conservation objectives
One of COARE’s major fronts is the fight against unnecessary plastics. While plastic has made modern life better—with plenty of useful, cheap products embedded in every aspect of society—for the oceans, plastic is a ticking time bomb.

An example of the terrible effects plastic has on marine life is the thousands of sea turtles dying each year from feeding on plastic bags. Sea turtles can easily mistake plastic bags for jellyfish, one of their natural food sources.1

In the US state of California alone, a staggering 123,000 tons of plastic bags are thrown away every year. Recently, in a single worldwide beach clean-up day, 441,493 plastic bags were collected. Just think of how much plastic ends up in the oceans. It is a plague, in every sense of the word. Today’s plastic products are highly resilient, and unfortunately, built to last a lifetime, which is why they are so dangerous to the marine environment, taking ages to disintegrate, and even when they do, they remain a threat, releasing toxins and pollutants into the ocean ecosystems.2

It is safe to say that divers and ocean lovers are very aware of the need to protect the ocean, and will rarely touch or harm anything underwater, let alone eat shark-fin soup or other endangered marine life. However, how many are aware of the perils of taking coffee in a plastic to-go cup on their way to work, or using a straw when sipping a favorite soft drink? Are people aware of how much these habits put marine life at risk?

Only recently, after a long ongoing struggle led by COARE and other organizations, a legislative bill (SB270) was finally passed, effectively banning single-use plastic bags in the state of California. It is the first US state to pass such a law, and hopefully the rest of the United States will follow suit.3

By raising awareness of the dangers of plastic and reaching the masses, we divers can make a real change, reduce plastic and save our beloved oceans, by simply changing our small daily habits, and those of everyone around us. It is what Holloway and Aqua Spirit hope to accomplish as one of the outcomes of the collaboration with COARE.4

Ran and Danielle Mor have devoted their lives to scuba diving. Ran Mor is a divemaster and an underwater photography expert, and Danielle Mor is an experienced PADI andSSI instructor. Together, they founded Aqua Spirit Dive Expeditions, leading specialty dive trips around the world, oriented towards underwater photographers. See: AquaSpiritDive.com.

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Indonesia’s
Wakatobi — A Natural Attraction

Text by Walt Stearns
Photos by Marco Fierli, Didi Lotze and Walt Stearns
Off the tip of Southeastern Sulawesi, Indonesia in the Banda Sea, Wakatobi Dive Resort offers an unfor-
gettable blend of pristine, protected reefs with sustainable luxury.

Dive sites that offer unusual or dramatic under-
water topography have always intrigued me. And from what I had been hearing, the site
known as Blade was a prime candidate to add to my “favorites” list.

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

Blade is one of the most distant sites visited by the resort’s dive boats. Unlike the majority
of the sites that are within a few minutes of the dive center, this one required a boat ride of
almost an hour. But as soon as I entered the water, I immediately realized that the wait had
been well worth it.

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

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

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

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

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

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

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

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

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

In between these choices are resort’s 15 Ocean Bungalows. Like the villas, these face the shoreline, and provide the same indoor amenities as the Palms plus a few additional additions. The most noticeable is a spacious Asian spa-style outdoor shower with tall privacy walls adjoined to the bungalow’s indoor bathroom. Creature comforts are not the only area in which Wakatobi excels. Never before have I seen such a large and well-equipped restaurant kitchen in as remote a location as Wakatobi. Every meal is prepared by internationally-trained chefs with a talent for creating an blend of delicious Indonesian and international cuisines. And the deserts are, well let me put it this way: Don’t count on your wetsuit getting any looser during the trip!

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

For basic diving activities, divers have the option of air or 32% nitrox supplied by two state-of-the-art nitrox membrane systems, fed by multiple water-cooled Bauer compressors. For the technical crowd, there are higher nitrox blends available, including pure oxygen, along with helium on special request for trimix.

Wakatobi also caters to the silent diving crowd, they can not only provide rebreather divers with 8/12 grade (797) Sofnolime but enough O₂, dil and bailout bottles for up to 21 CCR divers at a time. Close to a third of these cylinders for rent are Faber 2L and 3L steels with inline rebreather valves, with the rest being 2L (13 cu ft) and 3L (19 cu ft) aluminum models fitted with DIN K-valves. For off board bail, options include 4.5L (30 cu ft) and 5L (40 cu ft) aluminums. Divers needing something larger can choose the aforementioned 12L (80cu ft) and 15L (100cu ft) aluminums.

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

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

Another nice touch is that it is common for the boats return to the jetty in between the first and second dive, giving divers a chance to stretch their legs, and giving late risers to catch the second dive. This flexibility, combined with the House Reef, allows guests to improve their diving skills.
to create an almost custom boat and shore dive schedule.

In my book, the thing that can break or make a great dive experience is the boat. Wakatobi’s core fleet of dive boats are five enormous vessels measuring 23 meters in length. Locally crafted, each boat is designed specifically for diving with a copious amount of deck space with ample seating and ample space for camera equipment, no matter the size. While they may not be fast, they are impressively stable on the water, providing an enhanced comfort level that is further elevated by a full roof that provides overhead protection from sun and rain. Though these boats could easily hold two dozen passengers, Wakatobi likes to ensure that guests have plenty of elbow room by limiting the number of divers and/or snorkelers on board from 10 to a maximum of 14.

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

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

Expect every boat dive to run 70 minutes in length, but you always have the option to end the dives sooner. Spending the latter portion of dives off gassing in the shallows can often be the most interesting part, as the tops of the reefs are just as vibrant as they are deeper down. The shallows are home to a parade of macro-size critters—from blind shrimp with their ever-watchful guardian gobies, to more flamboyant subjects like nudibranchs and broadclub cuttlefish.

For those who are new to Indonesian waters, or who simply wish to see all the wonders of the reef, I would strongly advise following the guides. The Wakatobi dive crew is especially adept...
Wakatobi

Life abounds on the lush corals of Wakatobi’s House Reef (left); Porcelain crab on anemone at House Reef (center inset below)

Travel

out fear of contacting the reef. That allows the photographer to use tripods, providing a steadying grip. Tripods can be easily damaged. Guides are always at the ready to lend assistance when needed.

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

Even if you are not a photographer, Wakatobi’s dive guides are just as attentive, taking every step to ensure the quality of your experience both in and out of the water. The dive staffs are equally respectful of guests who prefer a bit more autonomy. Thus, if buddy pair wants to explore at their own pace, they are allowed the freedom to do so within the safe range of their personal experience and training. During the surface interval, in addition to snacks, water and beverages like coffee, tea or hot chocolate, guests are given refreshing hand towels infused with water and lemon grass. Having one those towels at the end of a 70-plus minute dive on a beautiful, picturesque reef affirms that life is good.

The House Reef

In addition to the boat dives, there is Wakatobi’s famed House Reef, which is available to divers and snorkelers between 5:00 a.m. and 10:00 p.m. Accessible from both the beach and the property’s pier, which spans 80 meters from the shoreline to the reef’s drop-off, the House Reef offers a topography ranging from inshore grass beds and shallow coral gardens to a drop-off with a precipitous face. At the edge where these two interfaces meet, the reef takes a sudden plunge from snorkeling depths straight down more than 50 meters into the blue. Down the wall’s face, divers will find a wall perforated by crevices and overhangs, decorated with a dazzling array of hard and soft corals. Between these two realms is a sufficiently large and diverse range of subject matter to keep even the most avid enthusiast captivated for hours on end.

Over the course of a single dive, without even needing to venture more than nine meters on either side of the pier, I have seen the guides provide food and drink to guests to the neighboring site of Turkey Beach for a truly memorable drift diving experience as you utilize the current to bring you back to the pier.

For all these reasons, Wakatobi’s House Reef has received numerous accolades and awards from magazines and websites such as Trip Advisor, which has called it the “world’s best house reef dive.” I have even dedicated a piece exclusively to it on my own site: UnderwaterJournal.com. Yes, it is that good.

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

For more information or to make reservations, visit: Wakatobicom.
Harbor porpoises can control their heart rate

Harbor porpoises have the ability to consciously control their heart rate, enabling them to manage their oxygen stores efficiently and so remain underwater for longer.

Researchers at Aarhus University have discovered that these mammals—sometimes known as the Danish whale—can control their heart rate to match the length and depth of an intended dive.

This is in contrast with our own dive response, which is a reflex that blocks our breathing, lowers our pulse and sends blood to our organs when we are underwater—all of which we have no control over.

“The fact that harbor porpoises can consciously adjust their pulse means in practice that they can manage their oxygen stores optimally when they dive. And it is absolutely crucial for their survival that they are able to dive for longer periods and spend less time on the surface. This means quite simply that they have more time for eating,” said Siri Lander Elmegaard, who had conducted the research for her master’s thesis.

This is important for the harbor porpoises. Due to their high metabolism, they need to spend much of their time looking for food. Dives can last five minutes but typically last one minute.

However, they live near the coast and, as its name implies, in areas where shipping and activities conducted by the oil industry take place. It is not certain whether such disturbances disrupt their ability to consciously control their pulse. If so, the harbour porpoise would be unable to spend as much time foraging and may adversely affect their chances of survival as individuals and in pods.

According to Professor Peter Teglberg Madsen, an animal physiologist at the university, “The new research results therefore emphasize the importance of understanding the whales’ physiology, capabilities and limitations, if we are to understand our correlation with them and our impact on them.”

Harbor porpoises tend to be solitary foragers, but they do sometimes hunt in packs and herd fish together. They tend to feed close to the sea bottom, mostly on small pelagic schooling fish, particularly herring, capelin and sprat. Young porpoises need to consume about seven to eight percent of their body weight each day to survive, which is approximately 15 pounds or 7kg of fish. They are generally seen as a solitary species. Most of the time, porpoises are either alone or in groups of no more than five animals. Some studies suggest porpoises are relatively sedentary and usually do not leave a certain area for long.

SOURCE: CURRENT BIOLOGY
Hope remains for the Irrawaddy dolphin with the discovery of 10 new calves in Cambodia’s section of the Mekong River. According to the World Wide Fund for Nature—Cambodia (WWF-Cambodia), 10 new calves were spotted in 2016—seven in Kratie province and three in Stung Treng province. The Mekong population inhabits a 118-mile stretch of the river between Cambodia and Laos.

While the discovery sparks a glimmer of hope for the critically endangered species, conservationists warn that pressure remains around 80.

### Encouraging

While the discovery is encouraging, WWF-Cambodia Country Director Chhith Sam Ath said they still need protection. “WWF-Cambodia will continue to address the challenges of Mekong dolphin conservation with renewed hope and energy,” he said.

Although the Cambodia population may be making a comeback, the WWF claims it to be functionally extinct in Laos, where gill nets are legal. In December, villagers near the Cheuteal transboundary pool between southern Laos and northern Cambodia’s Stung Treng province discovered only three dolphins remained in the pool. Eight lived in the area in 2010.

Irrawaddy dolphins reside in coastal areas in South and Southeast Asia, but are only found in three freshwater rivers—the Ayeyarwady in Myanmar, the Mahakam in Indonesian Borneo, and the Mekong. Also known as the Mekong River dolphin, the population is estimated to number around 80.

### Distinct populations

However, not all beluga whales are affected; the study had also discovered another beluga whale population that had not altered its migration timing. The two beluga whale populations are genetically distinct, but spend winters in the Bering Sea, before swimming north in the early summer as the sea ice melts and the open water allows them to access the Beaufort and Chukchi seas.

There, they feed on the fish and invertebrates during the summer before travelling south in the fall. The Chukchi population, which had responded to the changes in sea ice loss by delaying migration, may mean that they are opportunistically feeding into the fall. This may not prove to be completely beneficial for the whales, as they risk being blocked from the migration path if the ice quickly freezes up and catches them off guard.

As for the Beaufort population, which did not alter their migration patterns, their lack of behavioral change is a mystery, given that the two populations share the same feeding areas and appear to have similar life histories. It is possible that the Beaufort whales have a tradition of feeding elsewhere that requires them to depart earlier in the fall.

### Flexibility

Researchers from Florida Atlantic University’s Harbor Branch Oceanographic Institute and a team of scientists working in collaboration with native hunters in Alaska and Canada found that beluga whales exhibited a tremendous ability to deal with varying sea ice conditions from one year to the next over a 20-year time frame upon their return to traditional summering grounds each year.

One of the predictions of climate change is animals are going to change their seasonal presence in a region. This study shows that at least one population of belugas might be adapting to rapid changes in its environment. We can’t be sure, but this study is a start in documenting how an Arctic species is reacting to these changing conditions.

— Kate Stafford, oceanographer University of Washington
Eagle ray patterns are unique

With their inky backs boldly patterned with white spots, spotted eagle rays are among the most graceful and photogenic fish in the sea. However, new research has revealed these striking patterns are not only beautiful but unique. These pigmentations can be used to identify individuals through photo-identification.

As a scientific technique, photo-identification is best known for its applications for studying humpback whale tail flukes. Lately, research conducted by a group led by Maria del Socorro González-Ramos, a doctoral candidate at Mexico’s Instituto Politécnico Nacional, has found that the technique can also be used to identify individual eagle rays.

To keep track of individual rays, researchers fastened a unique tag to each fish. Socorro González-Ramos and her team then utilized photo-identification software to calculate how reliably a ray’s spots could be used to identify it. They discovered a ray could be accurately identified from a photo 88.2 percent of the time.

**Fickle technique**
The spotted eagle ray *Aetobatus narinari* is characterized by pigmentation patterns that are retained for up to three to five years. Simon Pierce, a marine biologist with the Marine Megafauna Foundation not involved with the study, emphasized that while the study was performed carefully and correctly, photo-identification is a fickle technique.

If the technique is used improperly, individuals appearing multiple times may be misidentified as multiple individual animals. "That could inflate estimates of population size and lead to individuals appearing more transient than they really are, and that’s bad news for management and conservation,” said Pierce. “You could think that there are more animals left than there really are, or that they are less likely to be impacted by local human activities than is really the case."

Now that photo-identification has been validated for spotted eagle rays, Socorro González-Ramos is optimistic it can be utilized to obtain additional data on ray populations, as they are often caught as fisheries by-catch in Mexico. There are no target fisheries for the spotted eagle ray, but it is often eaten after being caught unintentionally.

Spotted eagle rays are found in warm and temperate waters worldwide in shallow coastal water by coral reefs and bays, in depths down to 80m. The rays feed on a wide variety of prey they can find on or in the bottom such as mollusks, crustaceans, octopi, and some small fish by digging with their snouts in the sand. While doing this, a cloud of sand surrounds the ray and sand spews from its gills.

SOURCE: *JOURNAL OF FISH ECOLOGY*

Uniquely among rays, eagle rays dig with their snouts in the sand, surrounding themselves in a cloud of sand that spews from their gills.
Parallels in Psychological Factors in Technical Diving & the Olympics

Achieving the Olympic dream is often described as the culmination of four years or more of hard work, sacrifice, commitment and dedication. To be an Olympian, there will be three components that must be present in each competitor before the dream can be achieved: talent, physical potential and psychological potential. Whether someone gets to “live the dream” is entirely dependent on whether they can maximise the three elements.

Surprisingly perhaps it is not the most talented that always succeed. In fact, an abundance of talent can actually work against the potential success as insufficient drive and effort is needed and thereby applied to realise a good level of success. When the last three percent is needed and its drive and commitment that will get them there, the highly talented are often found lacking to make the final step to the top of the tree.

For the competitors in Rio 2016, that medal was the rare and unique blend of exactly the right amount of the necessary ingredients, properly prepared. Sports science has added a considerable body of knowledge to the talent identification process and immeasurably to the physical preparation. Where it is really added value lately, though, is in understanding the mind of the elite athlete. Unsurprisingly there is no one-size-fits-all profile, but certain characteristics are prevalent in all that do achieve “gold.”

How can we apply these characteristics to what might be considered “elite” diving—that is, cave, wreck and mine exploration, deep mixed gas diving, etc? Well, you do need a certain amount of talent that will be developed and shaped by training and meaningful experience to manage the skills and planning that technical diving demands. You will need an appropriate level of physical fitness—both to manage the gear and to have some spare capacity for managing the physiological reactions to psychological stress. What about the psychological side though? Let us look at each characteristic in turn.

Text by Matt Jevon
Photos by Peter Symes
Foundations

Motivation. Defined as the direction and intensity of effort, no one is going anywhere unless they put in a little hard graft. But what will be the drive that gives sufficiently high levels of motivation? An intrinsic sense of self-satisfaction of a job well done (task focus) or a boost to the self-esteem that the goal will bring (ego focus). For many elite athletes the fear of failure and the resultant damage to the self-esteem or ego is a massive driver. Thereby any and all effort goes into not failing or... winning. The truth, at the elite end, is that you will find people high in both—high task and high ego. They may not be arrogant, a term often confused with a high ego, but they will have an unusually high internal motivational focus. Highly externally motivated people tend to lack consistency as the rewards of approbation, recognition and fame vary.

In divers it is the same. Many divers push through the certification levels to gain status in the eyes of their peers and themselves. They then give up, “goal” achieved—although maybe not much more than the highest level piece of plastic their chosen agency can provide. Others are in it for the long haul and it is these consistent high achievers who will share the same motivational traits as the Olympian.

I look upon motivation as a foundation stone. It can be improved and made clearer or consistent, but, you cannot teach someone to be motivated. You can only find out what it is, if anything, that motivates them and help structure their goals and actions accordingly. So ask yourself, do you have these traits, in any area of your life? Is there something in life, career, relationships, sport or otherwise you have felt driven to achieve and have put in the effort and made the sacrifices required? If so,

how do you feel about your diving? Does it have the same passion? If not, maybe the motivational foundation stone needs bedding in, or, that is just not who you are. Let us be realistic here, we are probably talking about people with the capacity to be in the top five percent in their chosen field of endeavour.

Attitude and mindset. This, for me, is the second foundation stone of psychological approaches to elite sport or elite diving. Some people would have you believe it is all about being positive—having a winning mentality. I cannot really say, in my experience of working with elite athletes, that this is the case. Yes, some are amazingly positive people, others, less so, but driven to “not lose” as opposed to win—welcoming the pain and suffering to prove to themselves, to that little voice inside them, that they can succeed. Winning to this mindset is a relief first and foremost. With both the positive or “alternate” mindsets, what is common is a desire to leave no stone unturned, no detail overlooked—no sacrifice is too great in the pursuit of success.

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Some sports people will relish being part of a team, others, usually in ultra-endurance events, the individuality. As such, team working skills, people and communication skills will be highly developed in some and almost non-existent in others. What is important is that the person understands their role and how they relate to the environment and people in which they will train and perform. This is not to say the individual eschews the team, but places first the emphasis on self-reliance.

In diving, the team mindset is seen as overwhelmingly positive. I tend towards this view, but there are different team dynamics. Three individuals, operating autonomously, can still be an effective team if they understand the roles and deliverables expected. This is maybe only appropriate in more limited, pre-defined circumstances, and knowing exactly when not to interfere with others by stepping outside of agreed roles. Ideally, diving lends itself to the team approach, increasing situational awareness through teamwork and sharing this through excellent communication skills. The synergy of multiple brains does create a capacity greater than the sum of its parts.

In any event, the attitude will be one that keeps the Olympian and diver moving towards their goal, regardless of obstacles and setbacks, and even regardless of early high achievement. For example, a golfer can be as distracted by a hole-in-one as by a nasty slice. Carefully pushing the boundaries out, managing the risks and rewards against each other and keeping a consistent approach, are the traits that most often bring success in both environments. Setting off in the 5,000m race at a full sprint will only end in tears. We see this in divers who progress very quickly, only to push too far, too fast and if lucky, escape with a cold, hard introduction to reality.

Individuals, operating autonomously, can still be an effective team if they understand the roles and deliverables expected. This is a structured way of checking on oneself and one’s immediate environment in the close circle, on team mates in the medium range environment, and in the next circle, scan what is happening in the dive boat or exiting diver, or what might be developing at a longer distance as well.

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Unlike recreational diving, most tech agencies allow you to fail a student on a course on the basis of attitude alone, and rightly so.

Unlike recreational diving, most tech agencies allow you to fail a student on a course on the basis of attitude alone, and rightly so. Depth seekers for the sake of depth need not apply. Ego is not a bad thing though, especially if internal and not reward-seeking. All too often, confused with arrogance and self-gratification, ego is a major driver for all high performers, without exception. If you work with truly elite athletes, then you appreciate this is what has driven them to the Olympic gold medal. You can, trust me, have a massive ego and still be a kind and considerate person. Situational and self-awareness, I quite often teach a scanning technique based on three circles: close, medium and long range. This is a structured way of checking on oneself and one’s immediate environment in the close circle, on team mates in the medium range environment, and in the next circle, scan what is happening in the dive boat or exiting diver, or what might be developing at a longer distance as well.

Awareness. Scanning in three circles—close, medium and long range—is a structured way of checking on oneself and one’s immediate environment.
Being able to stay aware in dynamic situations as both your own and your team mates interact with the stimuli and events allows the first chance at responding appropriately to be made. Quickly and accurately recognising stressors and precursors to stressors gives more time for assessing one’s own coping ability and benchmarking the stressor against previous training and experience. If there is a match, then the stress is positive (eustress) and it is likely to be met with confidence and a good solution. If there is a mismatch between the threat posed by the stress and perceived coping ability, then the first link of the error and accident chain is forged. In itself the first event does not have to be significant, but it will then shape future appraisals of the next stressor and badly affect coping perception and decision making.

In team sports or versus competitors training and practice, competition is designed to provide the stimuli and situations that both embed and test the expectations we have and the comparisons to existing patterns of memory. In this way, the “experienced” performer has an edge. They may lack fitness and certain skills, but their ability to predict and use embedded patterns of what is happening to determine the most effective response outweigh any deficiencies in VO2 max. This is undoubtedly true in diving.

Building blocks
Building blocks on the foundation are not just the mental skills mentioned below, but also, critically, the capacity and ability to execute these mental skills in situations containing multiple stressors, significant valency that is a high relevance and consequence of success or failure (death or injury vs. fame or fortune). These skills include:

Imagery – of which visualisation is a part, but imagery includes the richness of all the senses (touch, taste, smell, hearing as well as seeing). It is also likely that imagery is best done for skill acquisition purposes internally—that is, you feel the mental rehearsal as a participant, not a spectator; you look out through your own eyes, you do not watch it on a TV screen. You can see this imagery occurring in Olympians before training and competition, in quiet moments. Perhaps the best examples are white water kayaks where you see them sitting on the bank, moving and even paddling the course, moving the whole body as if they were in the boat even though they are on dry land. In diving, I have noticed a trend of divers not only using visualisation.
Cue identification and utilisation – Applying relevant filters to one’s situational awareness, embedding appropriate cues or patterns to recognise it, stimulate prepared and practiced actions or responses—dismissing irrelevant cues in favour of what demands attention and what is important. This demands significant and robust embedding of patterns—that is, a full sensory experience of what will happen around you.

Fencers in the Olympics can predict the attacks and defences of their opponents before the moves are made. If a fencer could not do this, these moves are usually made so fast, the fencer would have no effective response. The same is true in diving. An experienced instructor will see a student about to make an error or struggle, and as such, engage in preventative or early interventions that arrest a more serious incident. This is where training, devised to expose the athlete or diver to realistic and relevant cues, coupled with meaningful experience where one is exposed to these cues, embeds the useful and genuine patterns. You might be able to do a 30-second shutdown, but if you are waiting for the instructor to signal with wetnotes or a hand signal, you may be too late, as you fail to recognise the bubbling behind you.

Pre-, in- and post-performance routines or scripts – These routines or scripts provide a way of ensuring one is in the optimum cognitive, emotional and behavioural “mood” for the dive. Whether you need to get “up for it” or relax into it, a solid pre-performance routine will help. Checklists often provide a reassuring discipline and form part of the routine for some people. The key is always the consistency of the routine, coupled with the discipline with which it is applied. Post-dive routines should encompass the debriefing and review—solving what went not so well and embedding the good, so it becomes more consistent. Spend double the time on analysing what worked and why, as opposed to all your time...
Dive Psychology

In biathlon, the concentration required to ski down a technical slope versus climbing a hard and long section, and then at the end of either, being calm enough to place shots on target, is incredibly varied. The same is true in diving.

Arousal and anxiety recognition and management - We have all been told by someone to “calm down”, or “take a chill pill”, only for that comment to throw petrol on the smouldering bonfire. If we are to get control of our mental and physical arousal, and choose the most appropriate state for the task we face, then we must become sufficiently self-aware to recognise when we are too distracted, they need to flow—to happen naturally. Love or hate, fear or joy, attempting a blocking of the emotion only amplifies it.

In the Olympics, there are a myriad of events that can trigger these responses and not just during the obvious pre- and in-competition periods. The Olympian is in a foreign country, there is heightened security, searches and long queues to get in and out of controlled spaces. Olympians endure confinement to the Olympic village, temptations of unlimited food and are surrounded by equally young, fit people with associated temptations and distractions. Add in media attention and pressure, one’s own country’s expectations, sponsors and officialdom and it is a miracle anyone copes at all.

In diving, we often discount many of the associated but not directly diving-related stressors, such as travel, lack of sleep, required permits, boat rules and restrictions, etc. I know there is a tradi-
The Kruber-Voronya Cave is located in the Arabika Mountain Massif of the Gagrinsky Ridge in the Western Caucasus, in the town district of Gagra in the Abkhazia region. With a depth of 2,197m, it is the deepest known cave on the planet. The entrance is located at an altitude of 2,250m. In 2006, an expedition discovered a lake at a depth of 2,146m and went about exploring it. It was named “Dva Kapitana” (“The Two Captains”). During the initial expeditions, which were covered in a previous article in 2007 (see issue #15), the sump was explored to a maximum depth of 51m and 180m horizontally. But what has happened since then?

The level of the lake and entrance of the sump varies depending on precipitation, season and melting snow. During spring, the surface can rise to 150m above that of the lower levels. The water temperature is about 7°C (~ 46°F).

A brief history
To recap, the first to explore the sump was cave diver Gennady Samokhin, who conducted two dives in the summer of 2006. The passage was oval, some 2m by 1.5m in dimension, and sloped gently downward. After first diving 20m to a depth of 6m, Gennady reached a depth of 14m on his second dive and laid out 40m of guide line. Further down, the passage became slightly wider only to contract again before a big stone obstructed the passage.
That was where further progress was halted and matters came to an end, when we last covered the exploration of Voronya Cave in early 2007. “What is there on the bottom of the world’s deepest cave so very close to sea level?” wondered one member of the 2006 team, Yuriy Kasyan, in this article.

Recent explorations
The next diver to explore the sump was Oleg Klimchuk who visited the cave in the winter of 2007. Using two 4-litre tanks, he managed to bypass the blocking rock and explore a further 80m, which took him down to a depth of 20m. The following summer, Samokhin continued the exploration, this time accompanied by fellow cave diver, Yurij Evdokimov, using tanks with just air.

On the first day, Samokhin made his way through a narrow, winding, underwater passage to reach a depth of 24m. The following day, Yurij Evdokimov managed to reach 36m. On the third day, Samokhin went even further to a depth of 45.5m and 140m horizontally. At a depth of 37m, the passage widened to 3.5m and then ascended to 31m. Here he found a dome about 3m in diameter and a horizontal passage (oval shape in shape, 1m by 1.7m), which dropped down via an underwater shaft with a 3m diameter. At a depth of 42m, the shaft changed to a sloping gallery. At that point, the documented length reached 2,191m.

During summer expeditions in 2010 and 2011, cave diver Yuriy Basilevsky attempted to dive the sump with a semi-closed rebreather, but was unable to bypass the big stone block at a depth of 12m.

2012 Expedition
In the summer expedition of 2012, Samokhin dived the sump with trimix gasses, exploring a further 180m to a depth of 50.5m, extending the recorded length to 2,197m. A total of 59 cavers from the Ukraine, Russia, Lithuania, Poland, Israel, Spain, Ireland, United Kingdom and Lebanon participated in the historical expedition, lasting of 34 days. Led by Yuriy Kasyan, the team included cave divers as young as 13 years old on up to 57 years of age. What follows is Samokhin’s account of his exploration of the world’s deepest known cave.

“In 2007, after reaching a depth of 45m, I was convinced that it was the last dive in the Two Captains sump,” said Samokhin. “It was difficult enough. Forty-five meters may not seem much. A couple of constrictions may not sound like such a big deal either. However, when you have to consider everything at once, you really need to come up with a new approach for attacking the challenges ahead. At that time, I had only 50 bars of gas in each tank, instead of the predicted 90 bars. That is when I realized that further exploration would require a bigger quantity of gas and use of trimix. I also came to the conclusion that it would be better and safer to use a rebreather.

Preparations
But this was easier said than done.

Samokhin on his way from camp to the Two Captains sump in Voronya Cave (above) and preparing to dive (left)
Other teams have attempted to dive the sump using rebreathers and failed. Passages are quite narrow in places, so regular rebreathers cannot be utilized. "In 2011, a fateful decision was made by our team. We had decided to organize a great expedition and use three deep divers for diving at the bottom of the cave. All of the three divers were very experienced cavers," said Samokhin. "However, before we even departed for Abkhazia," said Samokhin, "we were informed that one of the divers would not be able to join us. Next, as we were about to descend to the bottom of the cave, transporting all the bags of equipment for diving and setting camp to a depth of 1,200m, we received news that the second diver did not make it through the border, due to issues with his passport. As a result, we ended up having only one diver—me. It was thus necessary to reassess and rework the scheme for traversing the sumps. There were 31 tanks in the camp at a depth of 1,200m. Now only seven of them was needed and another two were brought just in case. "Thanks to a massive effort, the gear made it to the Rebus camp, which had been set up at a depth of about 1,960m. Here was a cozy platform, a pack of UPS batteries to supply computers with power and a pile of 7-litre tanks, looking rather knocked about from previous expeditions. We were surprised they had not become rusty, but had a white musty appearance that was a bit disconcerting. "We had no intentions of just sitting around. The following day we would dive the Two Captains sump. Below the camp at a depth of 1,980m was the Kvitochka sump (meaning 'diminutive flower'). We planned to take five 4-litre tanks, one for each person. All the divers agreed to use only one tank. In the case of a regulator failure, it was possible to swim 5-6m holding one’s breath." A YouTube video, by three cavers from Lithuania, describing the passage of the Kvitochka sump in 2010 has been posted here: https://www.youtube.com/watch?v=8B260OKm1PU.

Two Captains sump

On the August 8, the team of five cave divers—including Gennady Samokhin, Yuriy Kasyan, Aidas Gudaitis, Arturas Artjushenko and Alex Pustovitin—carried two bags of 6-litre tanks with nitrox, two bags with underwater equipment, wetsuits, warm clothes and a bag of ropes and rigging equipment, plus a half-filled bag of photos into the cave. Kasyan had gone down quickly to begin rigging the cave, while the others, heavy with bags, came down slowly to the Two Captains sump. "This year, the surface of the sump face was at the 2,144m level," said Samokhin, "1.5m below the mark of the water level we made the first time we visited the sump. The level of the sump’s surface seemed to be ever changing; There was a time when we found the mark 4m under the water. In any case, this mark represented the extreme point of penetration—The Underground Pole!" "Changing our attire from
‘walking’ to ‘diving’ suits (which were very thin and light, specially made for deep cave diving) was straightforward. Despite wearing layers of fleece jackets and pants, it was quite comfortable nonetheless.

“The dive had two primary goals,” said Samokhin. “The first was reestablishing the guide line to 37m, the location of a small extension and a very unpleasant narrow section behind it. The second was to carefully look round and plan for a deep dive.

“I knew by experience that a minimum of four 6-litre tanks would be required to go beyond a depth of 45m in the sump. It was not possible to carry them on, all at once, due to the restricted space. To get around this issue, we planned that two tanks of trimix would be carried forward by two support divers who went in ahead of the main explorer. The explorer would go to 37m using two tanks with Nitrox before changing to the trimix tanks put there by the other divers and use these to dive down as far as possible. Upon returning, he would leave the spent trimix tanks at 37m, go back on nitrox tanks for the ascent to 6m, where there was oxygen for decompression. The equipment and tanks left behind would be collected by a support team on the next day. However, 66 percent of the diver team dropped out. I needed to figure out whether I could possibly carry all four tanks at once through the narrow passage on my own.

“Over time, we have obviously become more familiar with the sump,” said Samokhin. “So I decided to dive with two 6-litre tanks with 270bar of Nitrox 32, to become accustomed with the sump. Although it may not sound like a major issue, there was a little problem: I did not have a reel, as the second diver had it. But where was he?”

“The previous day, I had carefully packed 200m of marked guide line into a little bag, which would be hand-carried,” said Samokhin. “Up to a depth of 10m, visibility was about 15-20cm. At 14m, I passed the stone that stopped me in 2006 because of my back-mounted equipment. From 18-22m, the passage had several constrictions, which I had to traverse sideways. I took note there was a multilevel winding passage, and it should have been passed by the middle or the bottom level. At 22m was a small elevation (about 0.5m by 0.5m) and after that, a beautiful column with a diameter of about a meter bisecting the passage in two. I took the one on the right and made a note to look on the left upon my return.”

Call me an optimist

“After the column, the passage went sideways,” said Samokhin. “It became possible to turn and go more or less horizontally, touching walls with my tanks. A this point, I came across two handbags with a hammer and hooks, which we left behind five years earlier. The depth was 35m and the passage felt wide. Call me an optimist! In reality, the passage was only a meter wide, with a height up to one-and-a-half meters. Continuing to a bend at 37m, I attached the guide line to the rocks and left the bags behind. The pressure was 190 bar on one gauge and 170 bar on other. So far, so good.

“I had used only a third of my gas, so everything was going according to plan. Above my head were two windows. That was strange. I only remembered one from my visit five years prior. Turning back, I went around the column at 22m; the water was clear and the guide line in sight. Two to three meters above the column, I noticed an oval opening, some 1m by 0.7m going up. Having only seen the entrance, I pondered going further without the line but decided against it.

“Coming back, I constantly adjusted my tanks while crawling along the 10-15m narrows, from 22-18m of depth. As I was slowly...
ascending, the cheerful shouts of welcome echoed from above. Even with no decompression, the dive took 32 minutes. I spent 20 to 30 minutes getting dressed before climbing the 180m back up to Rebus camp.

“For the second dive, I decided to carry four tanks at once. Twin 6.8 litre composite tanks with trimix were firmly affixed in a sidemount. The two 6-litre nitrox tanks were placed in transport bags so I could carry them by hand. As a precautionary measure, I would also leave an oxygen tank for decompression at 6m.”

The next day Samokhin, Kassyan, Gudaitis and Gintautas went through the Kvitochka sump.

Kvitochka sump

“Being the exploratory diver, it was agreed that I should not carry down any bags,” said Samokhin. “So the others carried two sacks each. I gave them a head start, but I soon caught up with them in the winding Gambit passage. Encumbered with two fully-loaded transport bags, one cannot move so fast, especially in narrow places. Without the load, however, it was much less noticeable how cramped the quarters really were. “It took us less than half an hour to kit up to traverse the sump. While gearing up, Yuriy Kassian and Gudaitis Aidas assembled a sophisticated construction from two tanks, regulators, belts and ropes to make it more easy to carry. I asked if they could add a carrying handle and change the orientation of valves for first stage of regulators. The resulting contraption resembled a large suitcase with a handle, which later turned out to be negatively buoyant (a real added bonus). “I left the oxygen tank on the guide line at depth 6m. The silt continued down to two to three meters. At 14m, I was relieved to be able maneuver myself above the stone and the ‘suitcase’ on one side of the stone. From here on, I breathed out of the tanks in the suitcase. Once in the narrow winding passage, it became much harder to swim. It takes a lot of effort to move sideways while dragging two tanks by hand and breathing from those very same tanks at the same time. The regulator hose was not long enough to allow me to put it down. If I let go of the suitcase, the regulator would be pulled out of my mouth.”

Fish

“Reaching a depth of 22m, I was out of breath,” said Samokhin. “At the narrowest point, I pushed the suitcase through and placed it on the rocks behind. Attempting to pass through myself, I needed both hands to adjust the tanks on my side. However, the hose was too short and I pulled the mouthpiece out of my mouth when I was moving. After some effort, I ideally positioned the suitcase behind the narrow section and passed through, but my breathing was slightly less heavy. While lying in the crack, I observed a school of small, translucent fish with flat elongated bodies and tail fins. Why did I not see them earlier? Most likely, I was focused on the morphology of the sump and just did not notice them.

“Descending to 37m, I rested and regained my breath. I was supposed to leave the suitcase with nitrox here. Gauges indicated 150 and 160 bar; at the beginning, it was 280. Alarmingly, I had already utilized more than a third of mixture. Picking up the bag with guide line, which I had left yesterday, I left the suitcase behind....
hind and started to breathe from the two trimix tanks, each with 290 bar. I then changed my dive computer from nitrox to trimix gas mixtures. Rising to three meters, I realized a second window was near the main one, but it turned out to be only a small niche.

“The main window itself proved very tight. Adjusting tanks, I squeezed into the window and dived headfirst down to 45m, which was my deepest point in 2007. The trimix provided a bit of clarity in perception. The well was not vertical, but a 75- to 80-degree steep incline. The pass looked like an extended crack. Just after 2m, the passage flattened out before continuing in the form of crack 1-1.5m in height and 0.5-0.7m wide. When planning my dive, I set a maximum value at 65-70m. The run-time in one direction was 6-8 minutes. I went along the pass, constantly keeping an eye on the trimix dive computer and a second Aladdin dive computer I wore for redundancy, to better estimate my gas consumption as the dive progressed.

“I crawled for 10m, but the depth was only 46m. I moved primarily on the side, but occasionally, the passage allowed me to turn horizontally. The depth was 50.5m, which necessitated laying out an additional 40m of line from my last point. The furthest passage barely changed in morphology and continued as far as the light penetrated. Naturally, I wanted to dive as deep as possible, but gas supplies are not infinite and I had already used 40 percent. For me, this was the limit for the configuration used in this trim. It was time to turn back, but there was no place to turn.

Hatha yoga
“Stopping, I attempted various postures of hatha yoga. At last, I crossed my legs, maneuvered the fins from under my armpits to along my back and managed to turn around. Breathing a sigh of relief, I noticed a school of fish was near me the entire time. Coming out, I got up the well from 45 to 34m and got stuck into the tight window. With my head stuck up the window, I could see my suitcase with tanks, but I could not get through. I tried several postures, moved tanks on my sides here and there, but nothing helped! Finally, I achieved the right position and dropped down to the suitcase. "I then switched from nearly empty trimix tanks back to the nitrox tanks I had left behind. From here on everything was straightforward. Carrying all four tanks, I went to the 6m stop, breathed oxygen for nine minutes and came up. Seeing my friends made me very happy! (See video showing exactly that moment here: https://www.youtube.com/watch?v=hz7moUaaAM4)" "We decided to sit a couple of hours. I periodically breathed oxygen in intervals of 10 or 15 minutes. Finally, it was time to go. Passing vertically 100-120m during the ascent, my elbow joints started to ache, which continued for two months afterwards. We finally arrived at camp after midnight to find no one had slept. Everyone had been anxiously awaiting news of our arrival. "The next day, I did nothing but drink tea, eat, drink more tea and sleep again. After that we headed for the surface with our massive amount of gear."
Dragons that swim and fish with wings and bizarre color patterns, and slugs made of strings? No, these are not fantasy movie creatures, but Mother Nature at her best.

Some of our planet’s most interesting creatures live below the waves, with gaudy and interesting appearances that seem like they are straight out of a creative, fictional Hollywood movie. However, it is Mother Nature that seems to be the master of creating non-fictional subjects that survive in our planet’s most hostile environments—against all odds. Whether in open ocean, on sandy seabeds, soft corals or small coral heads, each species has evolved in some special way that enables them to eat, hunt and proliferate.

Don’t be fooled by their whimsical appearances either, because one thing is for sure, these zany-looking critters are truly masters of their immediate domain.

My obsession with critters seemed to officially hatch during one of my first check-out dives in the frigid waters off the coastline of the US state of California. Living near some of the greatest macro spots in Southern California, I was lucky to dive as often as I wanted. As I began to explore and learn about the hidden treasure trove of macro fauna that existed there, my obsession became insatiable. I had no idea that it would forge an unforeseen curve in my life ahead and eventually take me to one amazing destination after another, each packed with its own unique and mysterious critter finds.

Can learning about marine life help a photographer find subjects? This is a question that I get asked a lot. The short answer is: YES! Of course, it does. It is not enough to swim about looking. If you want to find a subject, learn-
a valuable tool for grassroots style research; at a more local level, I have used it to make contact with divers in the area I am planning to visit.

Here are some things to note, with regards to some specific species:

**Hopkin’s rose nudibranch.** When I first found this species of nudibranch, *Okenia rosacea* (previous page), they seemed hard to come by. Over time, they have populated the area and can now be found up and down the California coastline. Appearing like a perfect mimic to a small anemone, these bright pink slugs can go unnoticed and are easily overlooked. Inhabiting in-shore rocky reef structures around the coastline, these lovely delicate-looking gems seem to love the surge. In fact, while shooting them, I found myself being bent into positions that would make a yoga master blush. Specs: Nikon D7100 camera, 105mm lens, 1 Sea&Sea YS-D2 strobe, Retra snoot.

**Panda goby.** These elusive gobies inhabit a specific type of coral known as *Acropora*, which is vital in locating them. Not all the smaller *Acropora* will have this particular bearded goby, though, as there are several types in this family. They share a symbiotic relationship with the coral and live out their entire lives within the small coral heads, keeping them free of invasive and harmful algae growth. They are opportunistic feeders and wait for morsels of food to drift by. Occasionally, they can also be seen on a small nest of eggs within the said coral heads. Specs: Nikon D7100 camera, 105mm lens, 2 Sea&Sea YS-D2 strobes.

**Melibe colemani nudibranch.** One of the most coveted slugs among slug lovers is the *Melibe colemani*. At one time, it was found exclusively in Komodo Park, Indonesia, but can now be found in other environs such as this one found in Anilao in the Philippines. Many subjects seem to move about, populating wherever the food supply will support them, either by boat bilge blow-off or water current. Appearing as a ball of twine, they remain nearly invisible when on their host, which is a specific type of *Xenia* coral. It feeds on small shrimp and whatever else it can catch. Specs: Nikon D7100 camera, 60mm lens, 1 INON Z-240 strobe, Retra snoot.
Weedy scorpionfish. With the scientific name, Rhinopias frondosa, these scorpionfish are of the Rhinopias family and are what I like to call a “high impact critter”, as they have remained at the top of the macro shooters’ hit list for many a moon. A scorpionfish by description, it commands its domain with a seemingly lazy attitude but is very capable in aptitude. Lumbering along the bottom, it relies on camouflage, clumsy body movements and lightning fast speeds to strike and devour its prey. Its camouflage also makes it nearly imperceptible to divers and guides, and are oftentimes found by accident. Specs: Nikon D7100 camera, 105mm lens, 1 INON Z-240 strobe, 1 Kraken 1000 dive light for backlighting.

Leafy seadragon. The leafy seadragon is straight out of a Dr-Suess-meets-Mother-Nature cookbook. A member of the Syngnathidae family, it shares the same family lines as the pipefish. Closely resembling the algae in which it hunts, it is found exclusively on the southern coast of Australia. It has slow, hypnotic movements, which allow this master of disguise to hunt and survive. A prized subject for collectors, these subjects are protected in South Australia, yet their numbers are steadily declining. Specs: Nikon D300s camera, Token 10-17mm lens, Zen port, 2 Sea&Sea YS-D1 strobes.

Tasselled anglerfish. Tasselled and angry, these guys certainly have attitude. Somehow Mother Nature jumped the tracks again with this one, seeming to have combined a puffer fish with a hairy frogfish. Aggressively mimicking its surroundings and using its built-in fishing tackle to attract and stimulate their prey, the tassy depends on its strike speed and gape—or gulping strike tactics—to survive. Specs: Nikon D7100 camera, 60mm lens, 1 Sea&Sea YS-D1, Reef net snoot.

Banggai cardinalfish. No article on crazy critters would be complete without paying homage to Lembeh, its critters and guides. I was eager to photograph a Banggai with eggs when my guide told me that he found something even better! It took me several dives to get a second chance to photograph this very special occurrence. In this photograph, the young fry have actually hatched and are residing in the mouth of the parent, presumably a male. The fish was well hidden among spine urchins and tucked under plate coral just a few inches above the bottom. After waiting for what seemed like hours, the fish turned towards me and I was able to snap off a couple of images. Luckily, this image captured the
Pugheaded pipefish (Bulbonaricus brauni), Romblon, Philippines

moment. Specs: Nikon D300 camera, 105mm lens, 2 Sea&Sea YS-250 Pro strobes.

Pugheaded pipefish. Romblon has recently come on the macro scene in the Philippines as a must-see destination, with a variety of unique subjects unto itself. It is not only one of the first places to find the Melibe colemani nudibranch reliably but other subjects as well, like the special pugheaded pipefish, which lives exclusively in Galaxae corals. It is small enough to be shot with a diopter but difficult at best to photograph, as it tends to wrap itself tightly around the small coral cups. Taking a lower angle and waiting is key to capturing any image of this fish. Specs: Nikon D7100 camera, 105mm lens, 2 Sea&Sea YS-D1 strobes.

Gulf signal blenny. The Sea of Cortez is not normally recognized as an underwater macro photography destination, being highly regarded for whales and larger animals. That is, unless you are looking for macro. Blennies abound in the Sea of Cortez and can be found inhabiting rocks, stones, reefs and even the sand flats. There are also numerous nudibranchs to be found there. Hunting signal blennies can be a bit tricky. Moving slowly and keeping a close watch on the substrate ahead will help to locate them, as they are easily mistaken for twigs or even another type of fish. However, once they become active, there is no difficulty in identifying them. Their frantic up-and-down motions and flaring of their dorsal fins are unmistakable behaviors and have often frozen me in my place. Shooting them can be quite tricky as they are unpredictable at best. Specs: Nikon D300s camera, 105mm lens, 2 Sea&Sea YS-250 Pro strobes.

Gulf signal blenny (Emblemaria hypacanthus), Sea of Cortez, or Gulf of California, Mexico

Punk blenny (Acanthemblemaria sp.), Sea of Cortez, Mexico

It is impossible to get enough of this special blenny, which has earned its rightful place in the macro hall of fame for those who hunt them. So far, they have only been found at a few dive sites in the northern portion of the Sea of Cortez, which has most divers watching for sea lions. This particular subject (pictured) was hiding in a small alcove and was as small as a child’s pinky finger. Timing is everything, as punker blennies love to bob in and out of their little holes, constructed between sponge and stone. Specs: Nikon D7100 camera, 105mm lens, Nauticam D300s camera, 105mm lens, 2 Sea&Sea YS-250 Pro strobes.
Psychedelic frogfish. It took me four trips to Ambon in South Papua to finally see this animal. Relatively new in discovery and description, the psychedelic frogfish create a huge stir in the macro photography community whenever they turn up. Hard to find and photograph at best, it is speculated that this species is a deeper dwelling frogfish of the Histiophryne variety. This class of frogfish lacks the formidable lures their brethren have, and brood their eggs in clutches attached near the tail of the female. Not much is known of their behavior, unfortunately, as observing them can be quite difficult. Specs: Nikon D7100 camera, 105mm lens, 1 Sea&Sea YS-D2 strobe, Retra snoot.

Cyerce sp. nudibranch. Transparent, with flecks of colored pigment in its cerata, the cyerce nudibranch is a very special slug. I used a combination of lighting and snooting to bring out the colors of the slug from behind. The cyerce nudibranchs move with erratic start-stop body motions, which cause the cerata to flop over their cute facial features. Each time the lens locks in the focus, it decides to move on. “Grrrr,” is a word I use a lot when shooting these delicate creatures. Specs: Nikon D7100 camera, 105mm lens, 1 Sea&Sea YS-D2 strobe, Retra snoot, INON LF-800N for backlighting.

Okay, enough talk. Get out there, have an adventure and find some crazy critters of your own. ■

Mike Bartick is a widely published underwater photographer and dive writer based in Anilao, Philippines. A small animal expert, he leads groups of photographers into Asia’s underwater realm to seek out that special critter. For more information, visit: Saltwaterphoto.com.
Call for Entries and Sponsors:
Lens Beyond Ocean International Photo Competition 2017

Now in its seventh year, the annual international underwater photography competition, Lens Beyond Ocean, is accepting entries from 1 January 2017. Winners in each category will be chosen by an international panel of judges, with the winning photographs and videos to be displayed at the Malaysia International Dive Expo in Kuala Lumpur, May 12-14. Deadline for submissions is April 15.

Prizes
Since the competition’s humble beginnings in 2011, it has grown each year, with over 500 underwater photographers from around the world participating for a chance to win fantastic prizes, including travel packages to some of the best dive spots in Asia as well as top-of-the-line dive gear and camera equipment.

One winner will be selected in each of the eight categories. Other images selected by the panel of judges will be awarded honorable mention as “Memorable Pictures.” Winning videos will be showcased on the big screen on the main stage at MIDE. The Young Talent category was added for young photographers, 10 to 18 years of age, to showcase their images. The aim of this category is to encourage youths to go diving, learn about marine environments and understand and appreciate the underwater world.

Call for sponsors
Businesses and organizations keen to sponsor the event or donate prizes will benefit from intensive international exposure. Your organization’s logo will be posted on all print and online promotional materials. This includes a classification as Sponsor on the Lens Beyond Ocean website with a link to your organization’s website, logo promotion on social media, the Lens Beyond Ocean gallery banner and venue banner panel during MIDE 2017.

For more information, please visit: Lensbeyondocean.com

New developments
Every year new aspects are incorporated into the competition to entice, encourage and motivate more underwater photographers and videographers around the world to capture images of the nature and wonder of the underwater world. Through the years, with the exhibition open to the public, imagery by these artists have created greater awareness of the fragile beauty of the underwater realm among divers and non-divers alike.

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Amazing prizes are waiting for you!
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Participate now!
Send your photo to lbo@mide.com.my
Contest ends at 15th April 2017
Visit www.lensbeyondocean.com

This year, a new category, “Free Diving,” has been added to the roster of competition categories, which include Macro, Wide-Angle, Portfolio, Compact Camera, Creative, 3min Video and Young Talent.
Trio

The Trio from Spanish manufacturer Saga Dive is an assembly of three different interchangeable wet diopters. The Trio has two groups of lenses inside, one with +5 diopters and the other with +10. These two groups can be moved independently, so you can get four levels of magnification.

The two levers make it easy to change lenses even while looking through the viewfinder. With the the two levers in the upper position, you can use your lens normally, even focusing to infinity without any vignetting. By pushing the first lever, we get one +5 diopter, with the second, one +10; and with the two levers in the lower position, we use the two groups of lenses and we get a +15 diopter lens. The trio is designed to be used with macro lenses such as the Canon 100mm or the Nikon 105mm but will also work with some 60mm or 180mm lenses.

Cinebags

The Square Grouper is a camera bag by Cinebags, which is specially designed for use on dive boats and to carry assembled underwater housing on location. Its waterproof construction in a heavy-duty tarpaulin fabric with saltwater resistant zippers means the bag can also function as your personal rinse tank. Its collapsible design makes it fit easily in your dive luggage. The storage pouches can hold accessories such as water bottles, sun screen, keys, spare o-rings or dome port covers.

Fed up with forgetting your gear at home?

GearEye’s new RFID tagging system for your gear could change the way you pack your camera bag. Thin stickers, in three versions, allow you to tag all kinds of gear from memory cards to camera bodies and lenses. A scan of your bag—using a dongle attached to a smartphone—will verify which items are in your bag, ensuring you never forget a piece of gear. Alternatively, it can also help make sure that you are never carrying more than you need. The accompanying app also enables you to organize your most important equipment into gig-specific groups, so that you always have exactly what you need when you need it. GearEye.co

KeyMission 360

Three-hundred-sixty-degree imaging seems to be the new fad. Nikon has the Nikon KeyMission 360 4K Action Camera, which is waterproof to 30m (100ft) without a housing. The new camera is capable of capturing spherical video in UHD 4K at 24p and stills in a 29 megapixel resolution. Reviews have been less than rosy; both images and video as well as software is reported to be subpar and it does not do a great job in low light. The stitching of images is also said to produce black lines. That said, we have not tested the camera ourselves at this juncture but aim to do so. NikonUSA.com

360 Rig for GoPro

Another approach to filming 360-degree videos is to put six GoPros in a housing, and that is exactly what the Kolor Abyss Underwater 360 Rig is for. Made in Switzerland, out of anodized aluminum alloy, the Kolor Abyss has mineral glass lenses designed specifically to record videos without any distortion. The seven legs protect the domes from damage. The rig fits GoPro Hero 3, Hero 3+ and Hero 4. However, we have not been able to verify whether it will also fit the Hero 5. It is depth-rated to 150m (497ft) and will set you back (as of January 2017) US$ 5,450 or € 4,457. It comes delivered with a waterproof Pelican case. Kolor.com
Alexa de los Reyes

PORTFOLIO
In mind-bending, eye-popping portraits, American artist Alexa de los Reyes has created a series of oils on canvas, which capture the abstract effects of refraction and reflection of water on the human form. X-Ray Mag caught up with the artist to find out more about her artistic process, inspiration and perspectives—discovering a deeper meaning and symbolism underlying her artworks.

Text edited by Gunild Symes
All artwork and photos by Alexa de los Reyes

X-RAY MAG: Tell us about yourself, your background and how you became an artist.

ADLR: For as long as I can remember, I have drawn and painted. I started painting seriously a few years after graduating from college, where I studied history and literature. I always thought I would be a writer, and I am employed largely as an editor, but I discovered that I feel much freer expressing myself through paint rather than words. The impulse for painting comes from the same place, however—the desire to examine, interpret and share my perception of the world. My approach to painting is influenced by literary concepts and constructs—metaphors, analogies and symbolism—but my medium is visual.

I got my bachelor’s degree in History and Literature at Harvard in 1996. I put visual art aside while in college, then I took it up again when I moved to South America after graduation. I have taken art classes throughout my life in various cities and institutions, including Massachusetts College of Art, School of Visual Art in New York City, La Liga de Arte in Puerto Rico and Washington Studio School in Washington, DC.

I am originally from Boston, Massachusetts, of Ashkenazi Jewish descent. My husband is of Cuban-Puerto Rican descent, and we live in Washington, DC, where he is a professor of business ethics, with our two boys (ages ten and seven). I have lived in many places: Spain, Chile, Argentina, Puerto Rico—and in the United States in Brooklyn, New York; Philadelphia, Pennsylvania; and now Washington, DC.

As a creative child, I was naturally drawn to painting. Both my maternal grandmother and great-grandmother painted with watercolor. I’ve played around with different media, but I like to work with blended layers, which watercolors and acrylics do not permit. While living in Puerto Rico, I used acrylics, because in that humid environment, the oil paint would never dry (my first underwater paintings were in acrylic).

When I became pregnant with my first child in 2005, I started using water-soluble oil paints to avoid harsh fumes, and I continue to use them. For many of my paintings, I use photographic source materials, because I find so many gorgeous and compelling subjects in the real world that I want to share.

In painting the images, I choose which

Watchtower, 2011, by Alexa de los Reyes. Oil on canvas, 16 x 12 inches

PREVIOUS PAGE: Surface Tension, 2011, by Alexa de los Reyes.
Oil on canvas, 16 x 20 inches

Turbulessence, 2015, by Alexa de los Reyes. Oil on canvas, 24 x 30 inches
portfolio

aspects to enhance, highlight or omit, in order to present the essence of what I find most captivating. I almost always imagine my paintings to be massive, bigger than life-size. But for now, the physical constraints of my studio and budget don’t allow it.

X-RAY MAG: Why abstract underwater themes? How did you come to this theme and how did you develop your style of painting?

ADLR: While living in Puerto Rico with my husband in 2003, I was invited to participate in a group art show. At the time I was mainly painting commissioned portraits, but for the show I wanted to do a series of paintings reflective of my experience living there. I used to take evening walks along the harbor in Old San Juan, and one evening, it just struck me that I should paint people underwater. When creative ideas pop into my head out of the blue, I take them seriously. I bought a disposable underwater camera, like the kind tourists use on vacation, and asked some friends to do a photo session in a swimming pool, just to see what would happen. The process was much harder to control than I anticipated—everyone was floating around, it was hard to see. With the point-and-shoot camera it is impossible to know what is going to turn out, etc. But when I developed the pictures, I was surprised by how much I loved what had been captured on film. It was not what I expected, it was better. Later, when I began working on the paintings I realized how the imagery seemed like a perfect metaphor for the feeling of living in that foreign culture—disorienting, eerie, blissful, unfamiliar, distorting, transporting. Thirteen years later, I continue to be inspired by the mystery and beauty of these images.

X-RAY MAG: What is the backstory of the title of your underwater series, “Out of Our Element”?

ADLR: When I took the first series of underwater photos, I was fighting against the water—wanting to stay still, wanting my subjects to stay still, trying to see through bubbles. Instead of artfully composed portraits, as I was attempting, I got these crazy-looking refractions and reflections, which I quickly realized were a much more apt depiction of being in the water. I learned to relinquish control and allow the water dictate the photo-graph.

Several of these works are self-portraits (Kaleidoslexa, Continental Drift, Turbululence—the camera is underwater and my head is above the surface), and I am almost unrecognizable to myself. But that is what I look like through the lens of water. I know I “look” different to people in foreign cultures because they have a different cultural lens. I came up with the title because it refers to both the experience of being in water, a foreign element, and also the experience of living in Puerto Rico, as I described above.

X-RAY MAG: You mention “refractions and reflections” in the water... what do they mean to you?

ADLR: In many of my underwater photos, I see distinct images in the reflections—birds, fish, faces. I do not make them up, they just show up. My father is a psychiatrist (my grandfather was a Freudian psychoanalyst from Vienna), and I grew up being aware of the symbolism of our dreams; when I see these images, to me they are open to interpretation like dreams. One of my early paintings, Quickening, was a self-portrait I painted when I was about four months pregnant with my first child. In the photograph, I see what looks like the face of a fetus hovering in a funnel above me, as well as some ominous-looking shark and monster shapes over my shoulder. To me, it perfectly captured my psychological state at the time. The water creates a dream-like environment—the usual laws of physics do not seem to apply, so perhaps we are more open to messages from our subconscious.

X-RAY MAG: What are the steps in your artistic method or creative process?

ADLR: Over the years, I have several of these works are self-portraits (Kaleidoslexa, Continen-

Continental Drift, 2014, by Alexa de los Reyes. Oil on canvas, 30 x 24 inches

Asterion, 2016, by Alexa de los Reyes. Oil on canvas, 18 x 18 inches
taken many pictures of family and friends in different bodies of water—swimming pools, lakes, oceans. While I know which light conditions tend to create the images I find most interesting, for every roll of film I take (I still have not made the leap to digital), there might be only one or two images that surprise and captivate me.

Once I have chosen the image to paint, I try to replicate it exactly—for me, what is real is what is fascinating. I enjoy the process of looking closely and trying to puzzle out the reflections and refractions while also imagining that they are symbols that have been conjured up by someone’s subconscious.

X-RAY MAG: What camera and lighting gear do you use underwater?

ADLR: I do not use any gear aside from the disposable underwater cameras you can get in a drug store. For different lighting environments, I depend on the weather, time of day and body of water. I have considered getting better equipment, but as I am not trying to influence the environment but rather just capture what is there, the ease and spontaneity works for me. Through trial and error over the years, I have learned about the angles and lighting environments that tend to produce images I like, but I am often intrigued by unanticipated results.

X-RAY MAG: What was unexpected in the underwater images you captured, or the underwater experience, personally?

ADLR: The images I use for the underwater paintings are taken straight from the real world, something we have all seen before. But without a camera, it is hard to see them. I could never predict the particular colors and forms that show up. But even if they are not what I could have imagined, they make perfect sense once I see them, because they are real. This “unexpected but true” aspect provides a jolt of energy. It is a challenge to our perceptions, which can be thrilling. For me, a work of art fails if it is predictable.

X-RAY MAG: What is your relationship to the underwater world and coral reefs? In your relationship with reefs and the sea, where have you had your favorite experiences?

ADLR: I have always had a love/terror relationship with water. I vividly remember my first real snorkeling experience in the Caribbean as a child when I encountered two barracuda and a stingray (near Virgin Gorda). It was exhilarating and enchanting, though I spent much of the time scanning the distance for approaching sharks and hatchling escape plans. I love swimming, and at the same time, I find being underwater to be very haunting. I think my paintings are informed by this combination of delight, awe and fear.

I have gone snorkeling off Virgin Gorda and Tortola and in many places around Puerto Rico. I do not think it is permitted anymore, but years ago, we swam at night in the bioluminescent bay in Vieques. Jumping into the bay in pitch darkness was almost too hard for me, but it was magical swimming through the glowing water.
On residing in another country, you have described the feeling of living in a foreign culture as “disorienting, eerie, blissful, unfamiliar, distorting, transporting”. Would you tell us more about this idea and how it influences your artwork?

ADLR: Like being underwater, living in a foreign culture stimulates our senses in new ways—different sights, smells, sounds. It creates a heightened awareness, like all traveling does, but day-to-day life in a foreign culture requires more sustained effort. It can be an emotional roller-coaster. I have lived in several Spanish-speaking countries, and though I speak Spanish fluently, there is still a cultural language barrier—I always had a feeling of not quite understanding other people and not being understood.

In Puerto Rico, I was not a natural physical fit—my Eastern European genes do not adapt well to tropical heat and humidity, I was constantly covered with mosquito bites, and I was a vegan on a pork-crazy island, with scarce fresh produce. So, I was, in many ways, “out of my element.” No matter how gorgeous or enjoyable the surroundings, and how gregarious and appealing the people, adapting to (or struggling with) the ways of eating, conducting business, dressing, getting around, communicating, making jokes, all require stepping outside your comfort zone. You gain a much deeper perspective into yourself in the process. My experiences living abroad have been truly essential and fundamental for making me into a more compassionate global citizen, with a critical eye.

X-RAY MAG: On residing in another country, you have described the feeling of living in a foreign culture as “disorienting, eerie, blissful, unfamiliar, distorting, transporting”. Would you tell us more about this idea and how it influences your artwork?

ADLR: The experience I try to share is one of mystery, intrigue and wonder.

Visit the artist’s website for more information or to order originals, limited edition archival giclée prints or commissions at: Lexrey.com or Etsy.com/shop/LexreyPaintings

I usually find most compelling, so that is where I tend to focus. But I do not manipulate the images.

ADLR: We all know how water distorts: when you stand or float in water and look down at your legs, they look tiny and bizarre. But until I got it on film, I would not have been able to describe how we look from under the water, looking up. Other than cropping images for impactful compositions, I do not do any manipulating—it is just what gets captured on the film.

ADLR: All of my painting series, representational and abstract, stem from experiencing awe in nature. Nothing man-made can evoke the wonder that comes from being immersed in a forest, on top of a mountain, or under the water. I aim to communicate this reverence through my art.

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X-RAY MAG: What do you think about placing your underwater paintings transcending into abstraction? Do you use special compositional techniques, lighting or angles?

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