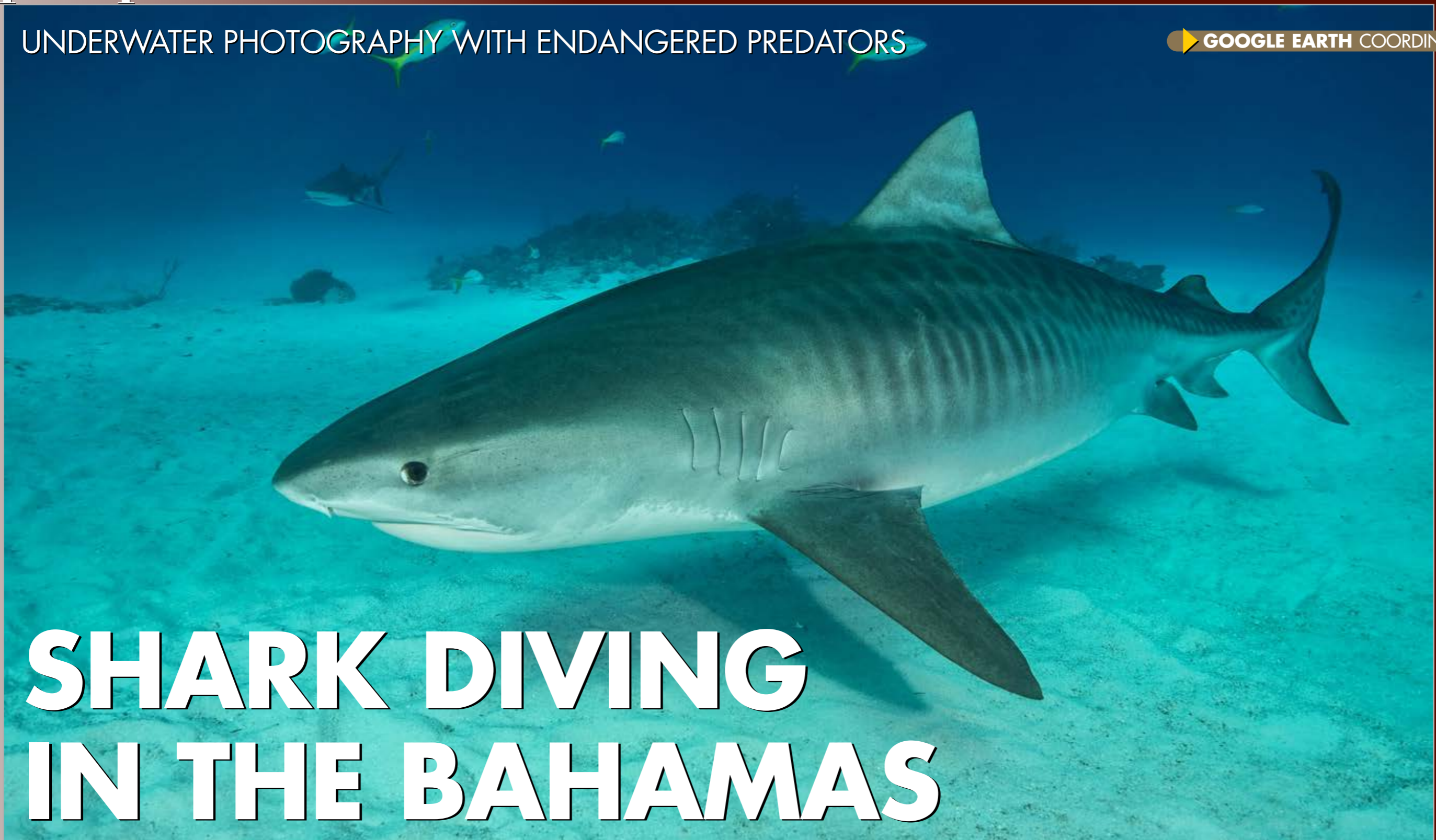


Trip Report

UNDERWATER PHOTOGRAPHY WITH ENDANGERED PREDATORS

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SHARK DIVING IN THE BAHAMAS

Should we accept the controversial idea of baiting large marine animals to be able to watch and photograph them? Probably yes - if it can promote their conservation



Tiger Shark *Galeocerdo cuvier*

The Tiger shark *Galeocerdo cuvier* (also featured on the opening spread) is the largest predatory fish in tropical seas. This impressive species gets its common name from the dark, vertical stripes found mainly on juveniles, which - as the animal matures - start to fade and almost disappear completely later on.



Tiger Shark *Galeocerdo cuvier*
Large specimens of this species can grow to as much as 20 to 25 feet (6 to 7.5 meters) in length and weigh more than 1,900 pounds (900 kilograms).

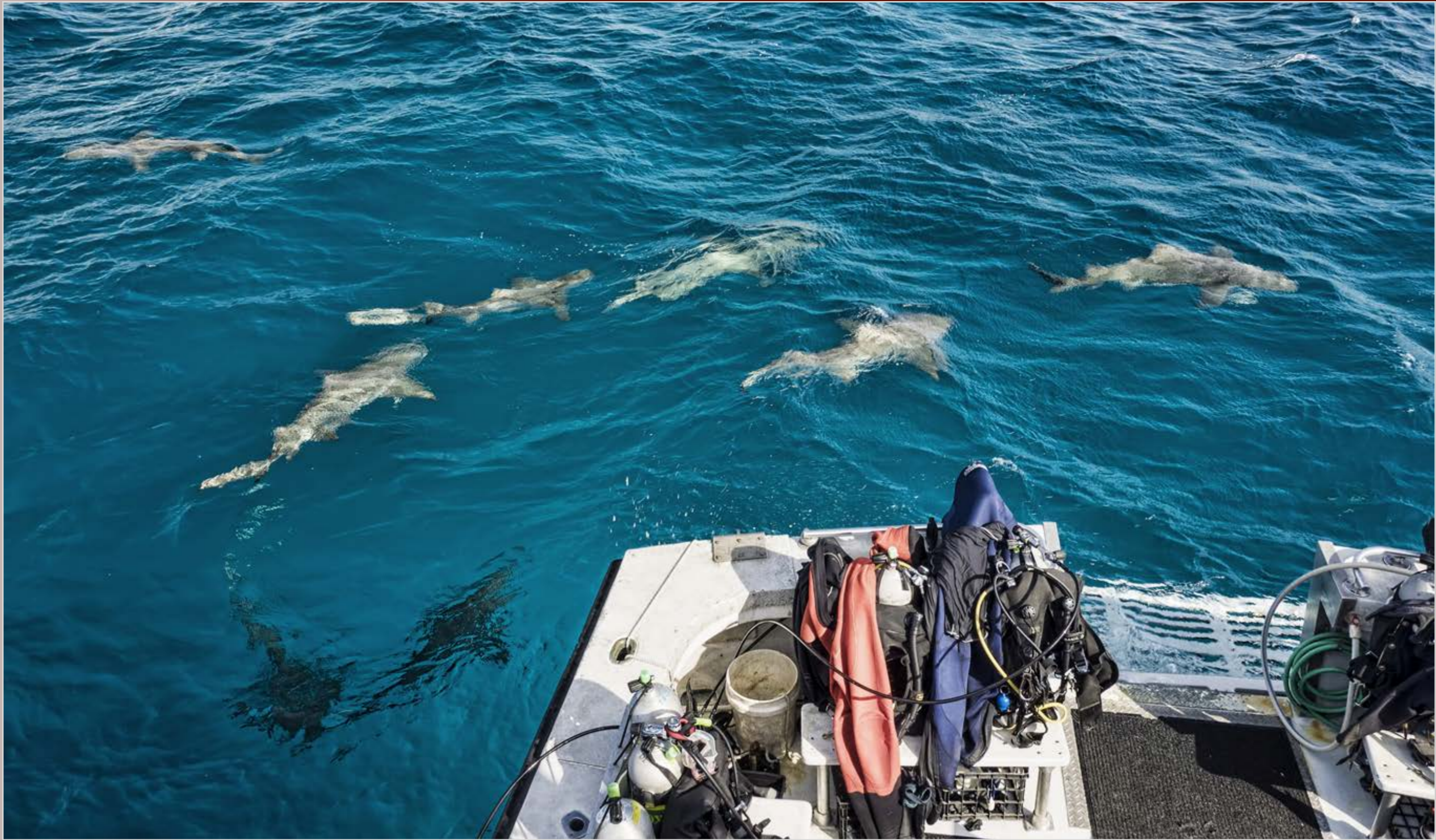
TEXT AND PHOTOS
BY DON SILCOCK

*F*ew creatures can provoke the almost instant primeval fear within us the way that sharks do. Perhaps it's because they inhabit an environment that is three-dimensional and largely alien to us and one they seem to be the complete master of. Or possibly because when they do eat, they consume their prey with such apparent feral intensity that we automatically associate their name with personal danger. Maybe it's both and there is little doubt that the mass-media has had a significant role in propagating this extremely negative perception of sharks, leveraging as they have the fear and loathing that emanated from Peter Benchley's seminal movie *Jaws* into cheap but effective headline news whenever an attack does happen. But the sad reality is that the twin scourges of long-lining and gill-netting have decimated the global shark population so much that in statistical terms deaths from shark attacks are somewhere between badminton and lawn bowling fatalities. Or as someone famously once said (quoting health department records...) sharks bite fewer people each year than New Yorkers do! The rise of the rich and the super-rich in China, plus the country's burgeoning middle class, has created an almost insatiable desire for shark fins – the signature ingredient for the soup of the same name - the consumption of which is an excellent way of signaling that you have arrived and are an integral part of the new

economy in that most populous of countries. Gone are the days when the Short-Fin Mako Shark was a relatively common sight in the Mediterranean, or Silky Sharks were abundant in the Gulf of Mexico – the shark-finders having decimated those populations by 70% and 86% respectively. It's a similar story in the north-west Atlantic Ocean, where the Hammerhead Shark population has plummeted 89%, and the Central Pacific where there has been a 90% decline of the Oceanic White Tip. The numbers involved are simply absurd, with an estimated 200,000 sharks being caught each day, or put another way about 73 million sharks are removed from our oceans every year. The results of that slaughter are equally incredible with 75% of oceanic sharks and rays and 30% of all sharks and rays threatened, or near-threatened, with extinction! All driven by the incredible demand for a soup that has to be flavored artificially because it's principal ingredient adds little more than a specific texture to the broth...But so-what... does it really matter if these shark populations are being decimated? Ask the average guy in the street and the answer would probably be a resounding no - because in the mind of the general public the only good shark is a dead one!

But what is the role of the shark in the sea and just how dangerous are they to man? Hard to say when so many have been

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Jumping into the Shark Ring

This is the sight meeting divers and underwater photographers once the boat gets at destination. A number of sharks - accustomed to divers and especially to being fed - circle on the surface in expectation. Despite what most people would think, accidents on such occasions have been rare - although they do have indeed taken place.



Tiger Shark *Galeocerdo cuvier*

The perfect predator/scavenger, with superb senses of sight and smell and an almost limitless menu of diet items with the stomach contents of captured sharks revealing stingrays, sea snakes, seals, birds, squids, and even license plates and old tires. Tiger sharks are to be found in tropical and sub-tropical waters throughout the world.



Caribbean reef shark *Carcharhinus perezii*

This elegant, stocky species is found on the east coast of the USA, ranging southwards down to the Caribbean and as far as Brazil.

butchered that it is now really quite rare to see sharks in large numbers and so, to form any kind of opinion, you have to travel to where they are protected as they simply don't come to you anymore. Thankfully there are countries that have realized that sharks are extremely important to their seas and fish stocks, plus the growth of shark tourism means that live ones are immensely more valuable than the dead and definned variety! One of the first such countries was the Bahamas - an island nation in the Caribbean, not far from Florida on the east coast of the United States, which is famed for its picturesque beauty and crystal clear waters. The Bahamas was never really at the absolute bleeding edge of the conservation movement having suffered from over-exploitation of its fish stocks over the years and in places over-development of tourist resorts in ecologically sensitive areas. But there is no major industry in the country and its people generally have a deep and visceral understanding of the importance the health of their surrounding waters is to their long-term prosperity.

Therefore the establishment of the Bahamas National Trust in 1959 to manage the first marine protected area in the world – the 112,640 acre Exuma Cays Land & Sea Park - can now be viewed as an incredible piece of foresight! The Bahamas have since added another 26 national parks covering

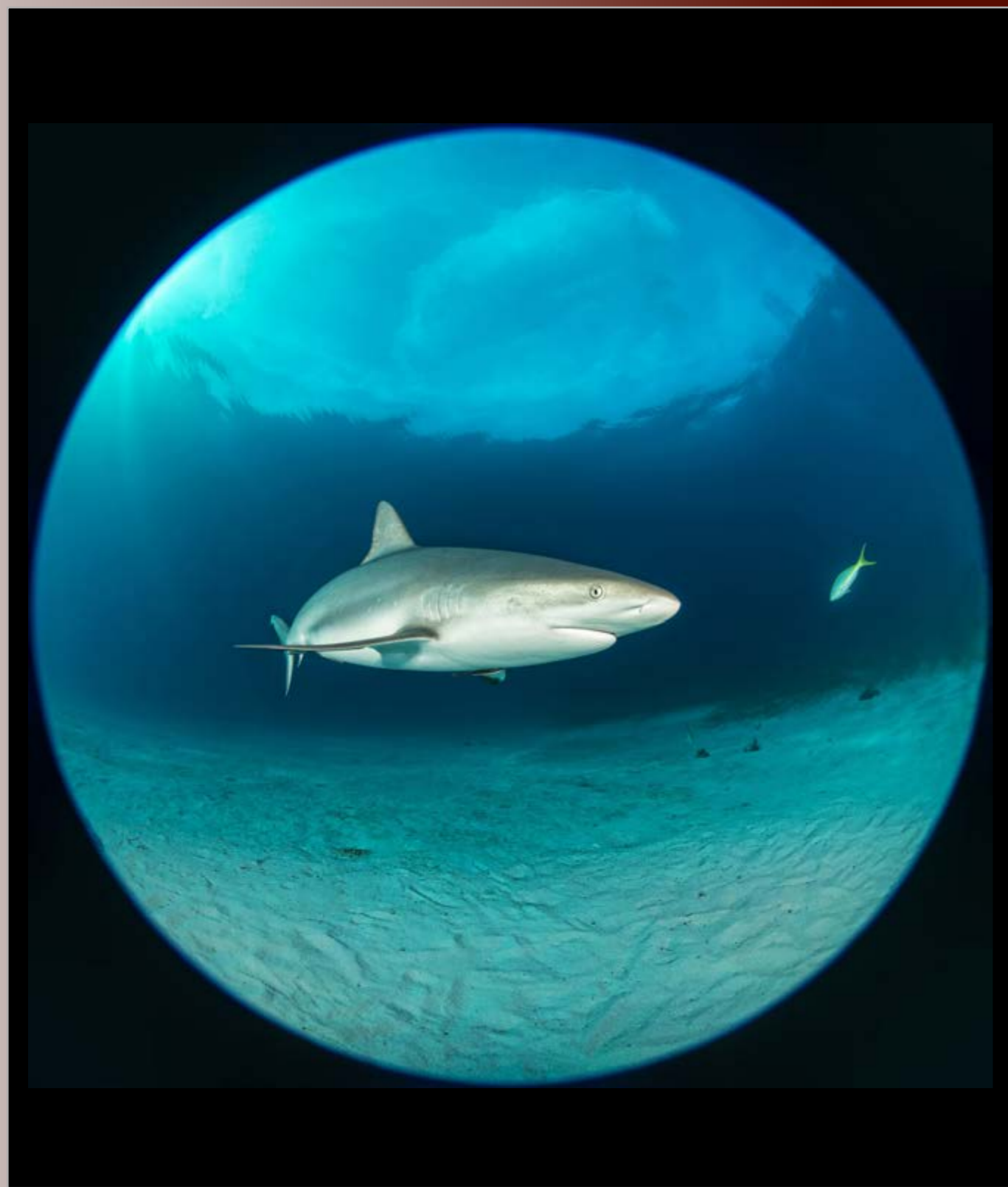
over 1 million acres of land and sea, together with enacting substantial supporting environmental legislation, including in 1986 making Exuma Cays a no-take marine reserve. Then in 2011 the government went one step further and became the 4th country in the world to establish a shark sanctuary by formally protected all sharks in Bahamian waters. Tacit recognition of the significance of sharks to the overall health of its fisheries and the cold hard fact that a live shark is worth a lot more in tourist dollars than a dead one – with “shark interactivity” said to worth an estimated \$50m a year to the country's economy...So in January 2015 I embarked on the epic three-day journey from my home in Bali to experience what are now said to be some of the richest waters on the planet.

The Bahamas have long been on my personal “to-do” list as I had heard great stories about the vibrancy of its shark population and the principal objective of my trip was to check out the veracity of those stories. But if the truth is told, I guess in reality I was mentally ticking off the Bahamas from my personal “bucket list” of places I must dive before I die...I certainly was not expecting to have an epiphany while there, but I have to say that as someone with a deep (no pun intended...)

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Caribbean reef shark *Carcharhinus perezii*
This could be defined as a truly "typical" shark species because of its distinctive robust and streamlined shape, coloration, large eyes and short but rounded snout.



Caribbean reef shark *Carcharhinus perezii*
 Caribbean reef sharks grow up to 3m long and can weigh up to 70kg.

interest in the marine environment being amongst so many healthy sharks for the first time had a quite profound impact on me. Basically for the first time in over 30 years of diving it finally dawned on me just how and why sharks are so important to the world's oceans and therefore to us - the people who collectively extract so much from those waters! Let me explain...

The marine environment is a complex and multi-faceted thing, but if there is one global truism it is that everything has its place in the greater scheme of things and 400 million years of evolution have produced what could be referred to as a "fine balance". Sharks are a very necessary part of that fine balance and can be thought of as the masters of their ecosystems, whether that be a reef or open ocean. Their role at the top of the marine food chain means that they clean up the oceans with ruthless efficiency - ironically, the very thing about them which scares us so much. Without sharks the dead, the dying, the diseased and the dumb of the oceans can pollute and degrade the health of those ecosystems and the genetic quality of its inhabitants. The many species of sharks are there for a reason and they have evolved superbly, in true Darwinian fashion, to execute their mission. Remove the sharks and disruption occurs, something marine scientists refer to

rather prosaically as "trophic cascades" – think of the shark as the first in a long line of finely balanced dominos and if it is tipped over the rest start to go down as well.

The impact of shark finning in the Caribbean illustrates the impact of such cascades extremely well, for when the shark population declined it removed one of the natural limitations on the number of groupers in those waters. Groupers have voracious appetites and also breed rapidly, but a healthy shark population would keep overall numbers in check and maintain that fine balance. But as the number of sharks declined it allowed the number of groupers to increase, who subsequently consumed a disproportionate number of reef fish, which meant that the naturally occurring algae was no longer being consumed and so the reefs started to die.

There is no quick fix for these events because sharks grow slowly, mate intermittently, have long gestation periods and do not mass produce their young. Sharks therefore are basically an incredibly important part of our marine ecosystems and removing them en-masse, like the long-liners have done, results in immense disruption to our oceans.

The ultimate impact of all this is still far from understood, but the worst case scenarios are indicating a total global collapse of fisheries stock by 2048.

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Tiger Shark *Galeocerdo cuvier*

The broad, blunt nose and the significant girth of this impressive species give it a commanding presence. Moreover, Tiger sharks have a reputation as man-eaters and are said to be second only to the Great White *Carcharodon carcharias* in attacking people, although this could be said of the Bull Shark *Carcharhinus leucas* too.



Caribbean reef shark *Carcharhinus perezii*

Although considered dangerous to humans, Caribbean reef sharks do not really have a history of unprovoked attacks on humans and are generally passive towards divers, snorkelers and swimmers. They can however become aggressive in the presence of food.

To begin to really understand the relationship between sharks and man in the sea you need to witness them in their natural environment and that was the incredible impact my trip to the Bahamas had on me. For the first time I was able to see a large number of different sharks all congregated in one location with a single common interest – the source of the aroma from the bait-boxes...The boxes used are plastic milk-crates packed with fileted fish carcasses and then “sealed” with a thick plastic top held in place with numerous cable ties. In the water the scent of the dead fish that percolates out from the bait boxes attracts any sharks in the area, but does not whip them into the frenzy that shark-feeding tends to do. They are positioned in the current so that the scent of the dead fish is carried downstream and the sharks swim in to the current up the “runway” to the bait-box. While it could be argued that the bait-boxes create an artificial stimulus, my opinion is that it is probably the closest you can get to seeing how a healthy shark population would react when a large creature such as a whale or manatee dies. Over a period of 5 days we repeatedly entered the water where a large number of sharks were patrolling – Caribbean reef sharks, sand tigers, lemon sharks and on

Tiger Shark *Galeocerdo cuvier*



Tiger Shark *Galeocerdo cuvier*

several occasions the incredible tiger shark. Not once did I have cause to be really frightened... awed, inspired, wary and slightly intimidated for sure, but actually scared and concerned about my overall welfare – not once! It sounds almost trite and to a degree self-serving to say that you were surrounded by dozens of large sharks ranging in size from about 1.5m to, in the case of some of the larger tiger sharks, over 4m in length and were not scared. But it is true, and it's possible... because we humans are simply not a principal food-source for the sharks that were present. Those sharks are more like scavengers than predators and humans underwater are basically in the "too hard" basket because we are large, make a lot of noise and generally do not send the right signals to stimulate their highly evolved hunting instincts! This is particularly so in the Bahamas where that fine balance has largely been restored by the creation of the marine protected zones and the sharks have plenty of their "normal" food sources.

The best place in the Bahamas to experience sharks is Tiger Beach – which quite contrary to its name is nowhere near an island. First dived back in the early 1990's, when the area was known as Dry

Bank and had a strong reputation amongst big-game fishermen for shark action, it was christened Tiger Beach because the sandy bottom and shallow waters in the first shark photographs made it look like one... The Bahamas are said to take their name from Baja Mar - Spanish for "shallow seas" because the archipelago of 29 main islands and roughly 700 cays that form the country reside on top of two main limestone carbonate platforms called the Bahama Banks. The Great Bahama Bank covers the southern part of the archipelago and Little Bahama Bank covers the northern part, with incredible channels as deep as 4000m separating the two. Those channels are flushed with the clean rich waters of the Atlantic Ocean as the Gulf Stream makes its way through the Caribbean and then up the Florida coast. It is the combination of those rich waters and the shallow, sheltered cays and reefs of the Bahama Banks that make the area so prolific. Tiger Beach is located on the western edge of Little Bahama Bank, about 30km west of the town of West End on the north Bahamian island of Grand Bahama. The satellite tagging of tiger sharks in Bermuda since 2009 has revealed two really interesting facets of their behaviour – firstly they spend a lot of time at the surface, which is believed to be related to feeding and

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Tiger Shark *Galeocerdo cuvier*

Tiger sharks have extremely low repopulation rates and long gestation periods, which make them highly susceptible to fishing pressure. Listed as near threatened throughout their range, they are being nevertheless slaughtered in large numbers everywhere for their fins, skin, meat and liver, which is rich in oil and vitamin A.

SMILE! STAY CALM AND MEET YOUR CAMERA SUBJECTS

Tiger shark *Galeocerdo cuvier*.



Tiger shark *Galeocerdo cuvier*.

TIGER SHARK

The Tiger shark *Galeocerdo cuvier* is the largest predatory fish in tropical seas and gets its name from the dark, vertical stripes found mainly on juveniles, which as they mature start to fade and almost disappear completely. Their large blunt-nose and significant girth gives them a commanding presence and they have a reputation as man-eaters and are said to be second only to great whites in attacking people. But because they have a near completely undiscerning palate, they are not likely to swim away after biting a human, as great whites frequently do. They are the complete scavenger, with superb senses of sight and smell and an almost limitless menu of diet items with the stomach contents of captured sharks revealing stingrays, sea snakes, seals, birds, squids, and even license plates and old tires. Tiger sharks are to be found in tropical and sub-tropical waters throughout the world. Large specimens can grow to as much as 20 to 25 feet (6 to 7.5 meters) in length and weigh more than 1,900 pounds (900 kilograms). They are hunted extensively for their fins, skin, and flesh plus their livers contain high levels of vitamin A, which is processed into vitamin oil. Tiger sharks have extremely low repopulation rates and long gestation periods which make them highly susceptible to fishing pressure and as a result they are listed as near threatened throughout their range.

Caribbean reef shark *Carcharhinus perezii*



CARIBBEAN REEF SHARK

The Caribbean reef shark *Carcharhinus perezii* (photo at left) is almost the shark “from central casting” because of its distinctive robust and streamlined shape, coloration, large eyes and short but rounded snout. Found on the east coast of the USA and southwards down as far as Brazil, Caribbean reef sharks grow up to 3m long and can weigh up to 70kg. Although considered dangerous to humans, they do not have a history of attacks on humans and are generally passive towards divers, snorkelers and swimmers. They can however become aggressive in the presence of food and if threatened, they will exhibit threatening behaviour by zigzagging while dipping the pectoral fins at intervals of 1-2 seconds. Adults begin to mate once they reach between 1.5 to 2m in length but the reproduction cycle is long because females only get pregnant every other year and the gestation period is another 12 months. Caribbean reef sharks are viviparous and the usual litter size is four to six pups which are about 0.5m long when born.



Lemon shark *Negaprion brevirostris*.

LEMON SHARK

The Lemon shark *Negaprion brevirostris* (photo at left) is one the best known and most researched sharks because they are able to handle captivity for extended periods of time, thereby providing scientists with extensive opportunity to observe their behaviour. Adult lemon shark often reach up to 3.5 meters in length and about 190 kilograms in weight, making it one the larger sharks. Named for its bright yellow or brown pigmentation and is found in tropical and subtropical waters in coastal areas of the Atlantic and Pacific Oceans, usually in moderately shallow water no deeper than 80 meters. Lemon sharks are a social species and are often seen in groups which have a structured hierarchy system based on size and sex, and are known for migrating from area to area, often over hundreds of kilometres to reach mating locations. They are viviparous and females give birth to 15 to 20 live pups after a gestation period of around 12 months. Lemon sharks rarely if ever demonstrate any aggressive behaviour to each other or towards humans and there has never been a recorded fatality from one of them attacking.



Caribbean reef shark *Carcharhinus perezii*

When facing a possible aggressor or trespasser in its own territory this species will exhibit threatening behaviour by zigzagging and arching its back while dipping the pectoral fins at intervals of 1-2 seconds, a behavior it has in common with several other "grey reef" sharks. These warning signs should never be ignored by divers.



Caribbean reef shark *Carcharhinus perezii*

Caribbean reef sharks are viviparous, giving birth to live, autonomous progeny. The usual litter size is four to six pups, which are about 0.5m long when born.

hunting patterns. Secondly their migration patterns are very consistent, with 5-6 months of the northern spring and summer months spent in the open Atlantic Ocean to the north and west of Bermuda, followed by a migration south to the Bahamas where they spend the autumn and winter months. It is believed (but not yet proved) that the months in the open ocean are related to mating and feeding on the migratory loggerhead turtles that pass through at that time of year, while the time spent in the Bahamas is related to gestation as most of the tiger sharks observed at Tiger Beach are females and many of them are pregnant. Significantly the tagging also revealed that tigers, unlike the vast majority of sharks, are almost a "multi-mode" shark that behaves as an open-ocean pelagic during the warmer months and then like a reef shark in the colder ones.

Arriving for the first time at Tiger Beach is somewhat of a soul-searching experience because it's one thing to read and hear about the sharks that congregate there, but quite another to actually be there preparing for that first dive when there are up to a dozen 2-3m sharks circling the back of the boat and lots of others visible in the clear waters! The briefings provided on my trip were both extensive and exemplary, with everything clearly explained in a logical and non-sensational way from how to prepare to

go in the water, how to enter and what to do underwater plus we were closely watched and monitored throughout. But the fact of the matter is that waiting for a gap in the patrolling sharks and then carefully rolling in amongst them is not something you do on a daily basis...It was a little bit like that time I went sky-diving when my brain struggled to deal with why I was jumping out of a perfectly functional plane! Once underwater however, nerves settle and an awareness starts to form for the sharks and their behavior patterns – from the pushy way the Caribbean reef sharks approach and tend to work in a bit of a pack, to the sneaky way the large lemon sharks approach low to the bottom with a leery look straight out of one of those horror movies. But that new awareness fades to grey when the first tiger shark arrives. Tigers are large formidable creatures with a commanding presence that indicates they know their place at the top of the food chain. They move slowly and carefully, checking out what is going on and the other sharks clearly defer to them. The protocol at Tiger Beach is not to worry about the lemons and reef sharks, as the only real chance of being bitten is if you break the cardinal rule of getting too close to the bait box and even then a bite is unlikely to be life-threatening, but you should always know where the tigers are and you should always face them – literally keeping the eye of the

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Lemon shark *Negaprion brevirostris*

Adult lemon sharks often reach up to 3.5 meters in length and about 190 kilograms in weight, making this species one of the larger sharks. Named for its bright yellow or brown pigmentation, it is found in tropical and subtropical waters in coastal areas of the Atlantic and Pacific Oceans, usually in moderately shallow water.



Lemon shark *Negaprion brevirostris*

Lemon sharks are a social species and are often seen in groups which have a structured hierarchy system based on size and sex, and are known for migrating from area to area, often over hundreds of kilometres, to reach mating locations.

tiger in view at all times! Tiger sharks are intelligent and curious animals that tend to approach divers because their sensory systems pick up the tiny electrical and audible signals emitted from our instrumentation and photographic equipment. They will tend to bump with their snouts as they investigate the stimuli further and there is always the chance that will use their mouth and, as their jaws are so powerful, even a gentle nip would be life-threatening. So photographers are instructed to use their cameras as a shield, with the strict instruction to let go if a tiger decides to do a taste test. While everybody else is issued a long piece of 1" plastic pipe that should be held vertically Jedi-stick style to create a kind of psychological barrier. Yes, I know... plastic pipe for a tiger shark? But it works because all the tiger sees is a long vertical thing which is orientated in the wrong direction for its horizontal mouth and therefore turns away. Remember, it's not about hunger – they are simply curious. Tiger Beach is quite unique and something that should be on every divers bucket list. Where else can you get to experience such a variety of sharks and come eyeball to eyeball with one of the ocean's apex creatures? All in relatively shallow water with superb visibility! But if you go, do so with an open mind and prepare yourself to see those sharks in the role that nature intended for them, not the one the mass-media has conditioned us to look at them. ●

Don Silcock's images, articles and extensive location guides can be found on-line on his website www.indopacificimages.com