

Conservation Photography in the Maldives

by Tom Burd

I'm sure at some point on a dive you've experienced a mask leak from grinning in wonder at a particular breath-taking spectacle... Perhaps as that mythical school of hammerheads glided serenely overhead, or when you first saw a cuttlefish cascading its hypnotic colours. These magical underwater moments are truly the reason we dive, and thankfully the oceans never cease to reveal to us new phenomena.

My first such moment happened in the Azores, as I marvelled at a huge oceanic manta ray leading a twisting ballet of mobulas under our boat, in a display of simple playfulness and curiosity. Their grace, intelligence and sheer majesty was utterly stunning, and I was instantly captivated by these incredible animals.

A few years down the line, I've been lucky enough to find myself researching them in the Maldives, on behalf of the British charity, Manta Trust.

Long known as one of the world's most reputable locations to encounter manta rays, the Maldives' 1192 coral islands attract over a million visitors each year, and it's not hard to see why. If the picturesque white sandy beaches and shallow turquoise lagoons weren't enough to entice you in, then the sheer wealth of colourful and diverse



A fly-by of 6 huge mantas in Ari Atoll. Nikon D7000, Nauticam Housing, Tokina 10-17mm Fisheye at 14mm, 2x Sea and Sea YS-D1, ISO 500, f8, 1/250.

marine life on offer surely couldn't fail to do so.

As the manta ray tourism boomed, the Manta Trust founded the Maldivian Manta Ray Project in 2005. The goal was to monitor the local population of rays and gain insight into factors such as number of individuals, migration patterns, reproduction cycles and anthropogenic threats.

A team of researchers from the Trust are now dotted around the atolls, working in conjunction with local communities and resorts to collect data

and educate about this large enigmatic. The global awareness of the project has been fundamental in helping to establish multiple Marine Protected Areas throughout the country, as well as in granting all ray species national protection in 2014. The latter was a huge success, hopefully ensuring a sustainable future for what is thought to be the world's largest population of reef manta rays (*Manta alfredi*), estimated between 5000-6000 individuals.

Reef mantas have a pretty hefty disk width



A manta feeding just beneath the surface. Nikon D7000, Nauticam Housing, Tokina 10-17mm Fisheye at 17mm, ISO 320, f13, 1/125.

(the distance between both wing tips) of up to 5m, but this is nothing compared to their rarer and larger relatives, the oceanic manta rays (*Manta birostris*), which have been recorded a whopping 7m wide. That's not far off the length of a London bus!

In order to give you an idea of how little we actually know about these beauties, it was only in 2009 that the two species were declared distinct. In fact, whilst writing this article, new research has emerged supporting a complete taxonomic reshuffle

of manta and mobula rays. Mobulas have always been thought of as the mantas' smaller cousins and are affectionately known as "mini mantas", but the recent study suggests that mantas are probably "massive mobulas" instead!

The fact that we still have so much to learn about one of the biggest fishes in the ocean is astonishing, and their survival in this rapidly changing world partly depends on us gaining a greater understanding of their lives.



Researchers diving down to obtain ID photos. Nikon D7000, Nauticam Housing, Tokina 10-17mm Fisheye at 13mm, ISO 125, f8, 1/125.

The 26 atolls of the Maldives each roughly resemble an oval ring of islands and fringing reefs, resulting in a wide variety of dive sites. From shallow hard-coral pinnacles to immense caverns brimming over with sea fans and a plethora of tropical fishes, there is something for everyone here.

Some of the most exiting dives occur in the channels of the outer reefs, known as "Kandus". The daily ebb and flow of tides force enormous

quantities of water through these channels, creating powerful currents which are much loved by a wide variety of large marine life, such as grey-reef sharks, eagle rays and of course mantas.

Kandus are also often home to “cleaning stations” - built up sections of the reef which act as a car wash service for local marine life. Various fishes regularly visit these stations to have parasites removed from their bodies by a group of tiny fish known as cleaner wrasse. These little guys can’t swim very far and rely on their parasitic food to be brought directly to them on a platter, with manta rays being some of their most reliable and scrumptious customers.

Cleaning station action normally has a distinctly British feel to it, with mantas queueing up in line, patiently waiting to be pampered! Aiming head into the current allows the mantas to hover effortlessly in position above the reef, with their huge mouths gaping wide open, signalling to the cleaner wrasse to get stuck in. Amazingly, these stations also seem to be crucial for wound healing processes, as mantas occasionally fall victim to attacks from large predators such as tiger sharks. These can leave huge sandwich-style bites of flesh missing from their pectoral fins, risking infection and reduced mobility. However, through regular

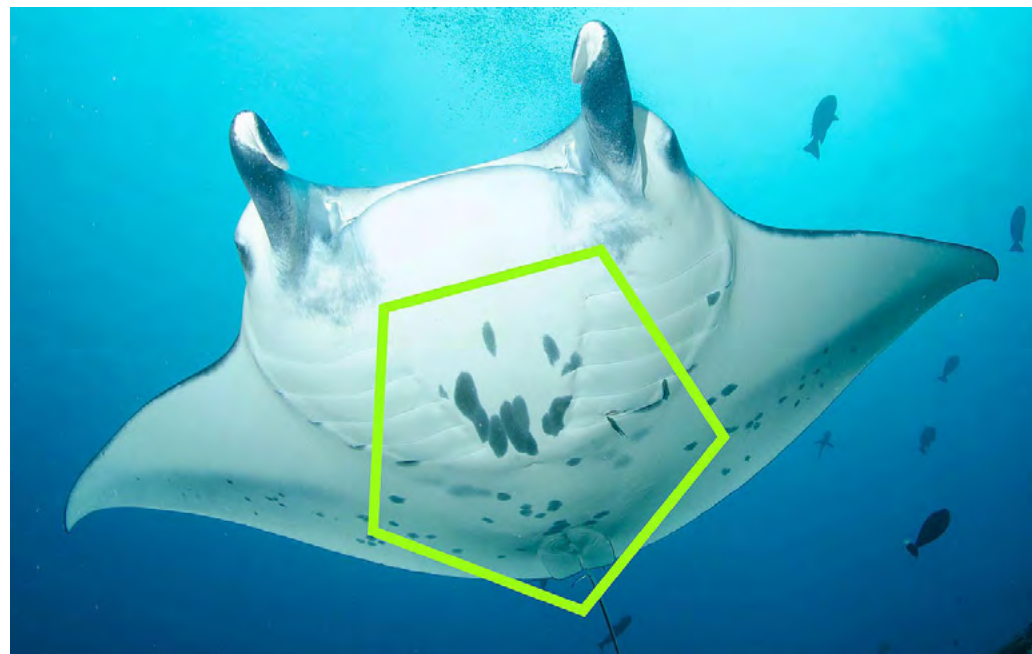
removal of decaying matter by cleaner wrasse and some mind-blowing innate ability, manta rays can actually regrow tissue to fill in these gaps and continue their lives unhindered.

The seasonal reliability of manta encounters at cleaning stations in the Maldives allows us to collect valuable information on such a large migratory species.

Underwater photography plays a key part in the research, as we need to keep track of which individual manta rays are seen. Thankfully each manta has a unique set of black spots covering their white underside, which act just like our fingerprints and allow them to be distinguished from one another. These patterns range from a single black dash to some pretty elaborate belly art, many of which are easily recognisable underwater.

Once we’ve got a photo we run it through Lightroom to be cropped to the desired area around the gills, white balanced and have the contrast boosted to make the spots stand out. It is then manually compared to similar mantas in the database catalogue, which currently stands over 4300 individuals strong! Excitingly, if the manta is nowhere to be found then it’s added as a newbie and is named by the observer.

All possible information is logged, such as sex, stage of maturity, injuries and location of the sighting.



Just like our fingerprints, these spots are used to recognise each manta ray. Nikon D7000, Nauticam Housing, Tokina 10-17mm Fisheye at 15mm, 2x Sea and Sea YS-D1, ISO 500, f13, 1/180.

Over the course of time, multiple sightings of the same individual reveal its movements throughout the Maldives, effectively turning this technique into a low cost tracking system. Most importantly, anyone with even the simplest of cameras is able to participate in the research, creating an incredibly widespread and rewarding citizen science project.

Divers and snorkelers are encouraged to send in any ID photos of mantas, along with the location and date to IDtheManta@mantatrust.org. This allows for much greater geographical and spatial coverage,

leading to important findings on migration patterns and habitat usage, which are key to ensuring effective protection for the species. We would also love to hear about mobula ray sightings, as we know even less about them than mantas.

When trying to take photos of mantas on a cleaning station, whether it be for ID shots or not, it’s important to be aware that they are actually in the middle of a crucial part of their daily routine and that we can easily get in the way unintentionally. Good practice is to stay still at the edge of the station, carefully hovering over



Cleaning stations get pretty busy in rush hour. Nikon D7000, Nauticam Housing, Tokina 10-17mm Fisheye at 12mm, 1x Sea and Sea YS-D1, ISO 400, f9.5, 1/250.

the reef and not venturing too close to where they are being cleaned. Mantas are curious and intelligent creatures, and will often come to investigate you and enjoy the jacuzzi effect of your bubbles overhead. I can guarantee you'll have a much more memorable encounter and get a better shot if you wait for the manta to make the first move.

Snorkelling with feeding manta rays is another unique experience to be had, which gives a completely different perspective on their lives, size and agility. For such large creatures, they actually feast upon a

soupy mixture of some of the smallest animals in the oceans: zooplankton. The search for this concoction of fish eggs, larvae, and small crustaceans is the reason why mantas seasonally migrate in the Maldives.

Monsoonal winds drive surface currents through the atolls, drawing up nutrient-rich water from the deep surroundings. These nutrients pass to the leeward side of the atolls through shallow waters, creating blooms of microscopic algae which in turn feed tons of zooplankton. As the monsoon changes, the winds reverse and the blooms change location, with the



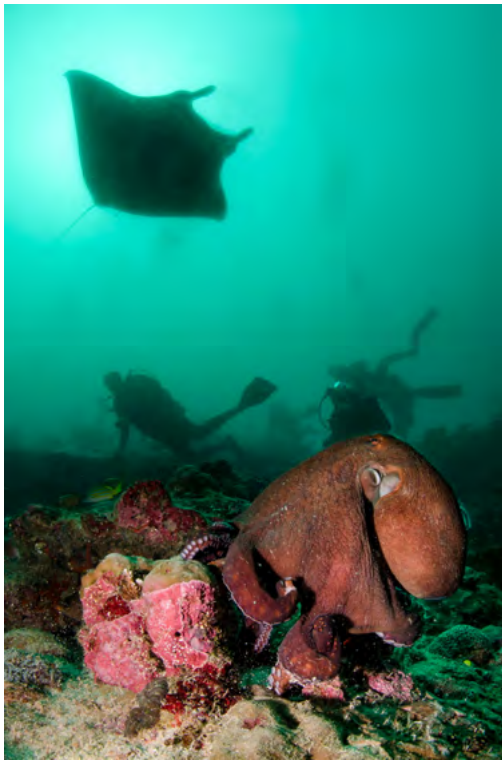
Up to 5m wide, mantas are an impressive sight close-up. Nikon D7000, Nauticam Housing, Tokina 10-17mm Fisheye at 10mm, ISO 160, f6.7, 1/180.

mantas following shortly behind. You should take this into account when visiting, by generally heading to the Western edges from November to March and the Eastern edges from April to October. Get your timing right time and with a bit of luck you'll be richly rewarded, as a manta ray barrel-rolling for food right in front of you is an unforgettable sight.

This spectacle happens just beneath the surface, where the plankton accumulates, providing perfect rippling light for photography and allowing for some cracking split-shots on a flat day. Again, the key to

getting the best images is to remain calm in the water. Stop swimming and let the mantas glide around you, as chasing them only results in tail shots which are swiftly deleted!

Whilst snorkelling in February we were lucky enough to witness 3 courtship events, called mating trains. This involves a female manta, who's generally larger than the males, releasing a scent trail into the water to attract the local guys. Once she's gained some interest she'll start to lead a high speed, dramatic procession along the reef, often rolling and even jumping clean from the water.



process itself has never actually been witnessed in the wild, so keep your eyes peeled, as photographic evidence of this would be hugely exciting for manta ray researchers!

Using photography to study and help protect such incredible animals has been a dream come true for me, as well as a reminder that as underwater photographers we can document important changes occurring beneath the waves. In addition, being able to paint a picture for non-divers of the incredible beauty underwater is a crucial part of conservation efforts. As our community of underwater artists blossoms, it's highly encouraging to see so many people putting their talents to good use and I would urge anyone to channel their passions into worthy causes such as these.

Checking out the visitors overhead!
Nikon D7000, Nauticam Housing,
Tokina 10-17mm Fisheye at 13mm, 1x
Sea and Sea YS-D1, ISO 250, f11, 1/90.

As the males eagerly try to stay as close as possible to the lady, the strain of this ordeal becomes too much for most and after 6-7 hours only a single male will be left standing! For mating to occur, he must then bite down upon her left pectoral fin to gain a good grip, whilst beating his fins to keep them buoyant in the water. A year later, a single manta pup is born measuring a sizeable 1.5-2m wide and needing no parental care. The birthing

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