

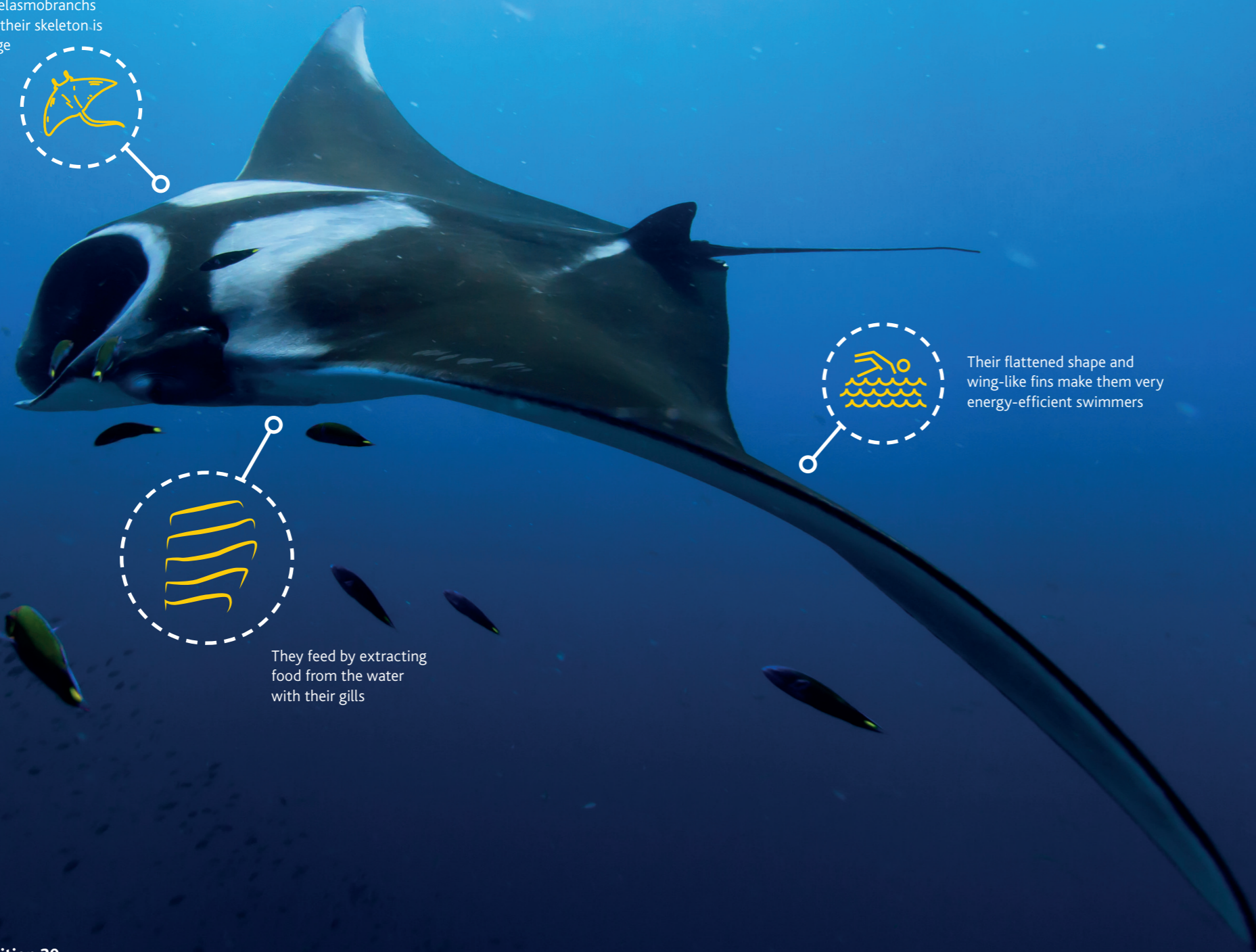
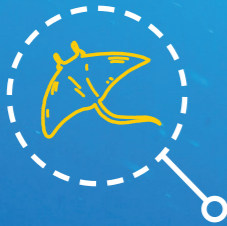
# Using science to save manta rays

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Gliding like ghosts through the oceans...manta rays are fascinating, mysterious creatures but these captivating animals are under threat and populations across the world have plummeted over recent years. However, their story shows how scientific research can be a powerful force to protect species as we learn more about them.

Manta rays are elasmobranchs – meaning that their skeleton is made of cartilage



Their flattened shape and wing-like fins make them very energy-efficient swimmers



They feed by extracting food from the water with their gills

## What are manta rays?

Like sharks and rays, mantas are elasmobranchs – meaning that their skeleton is made of cartilage. They belong to the family Mobulidae, which contains two genera: mobula and manta. For the mantas, there are two main species: reef mantas and oceanic mantas. Reef mantas are the smaller species (with a wingspan of 3 to 3.5m) and are found in shallow waters on coastal reefs or around islands.

Oceanic mantas are larger (up to 7m across) and tend to be found in the open ocean. Their natural lifespan is thought to be around 50 years, or even longer. Mobula rays are smaller cousins of mantas and there are currently thought to be nine species of these. Like mantas, they are found in tropical and sub-tropical oceans but are more shy and elusive, so much less is known about them.



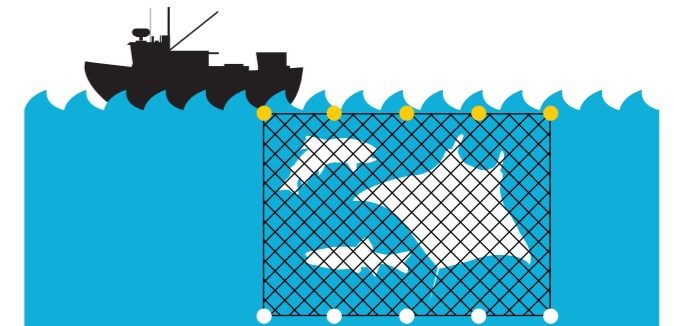
Their main food source is zooplankton

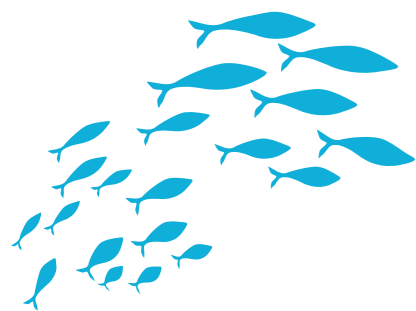
Both mantas and mobulas are filter feeders and their main food source is zooplankton – tiny animals such as shrimps and copepods (tiny crustaceans) – which they extract from the water with their gills. Mantas have one of the largest brain sizes relative to their body and are highly intelligent, social creatures. Their flattened shape and wing-like fins make them very energy-efficient swimmers. They have elaborate courtship rituals and often show a real interest when they encounter human divers.

## Why are they endangered?

Manta and mobula populations have plummeted over recent years and in certain regions their populations have completely crashed. One reason for this is that every year thousands of mantas and mobulas are caught as by-catch to feed our growing demand for seafood. By-catch are fish that are caught unintentionally by commercial fishermen due to capture methods that aren't specific to the target species.

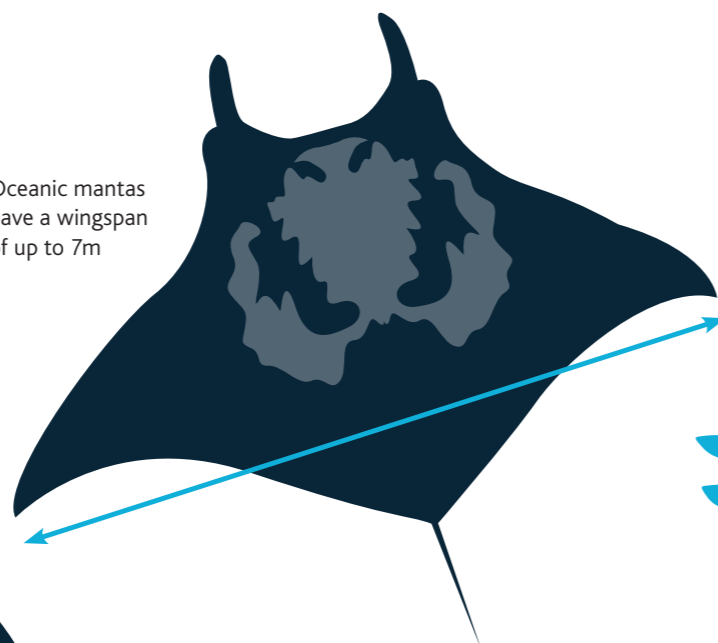
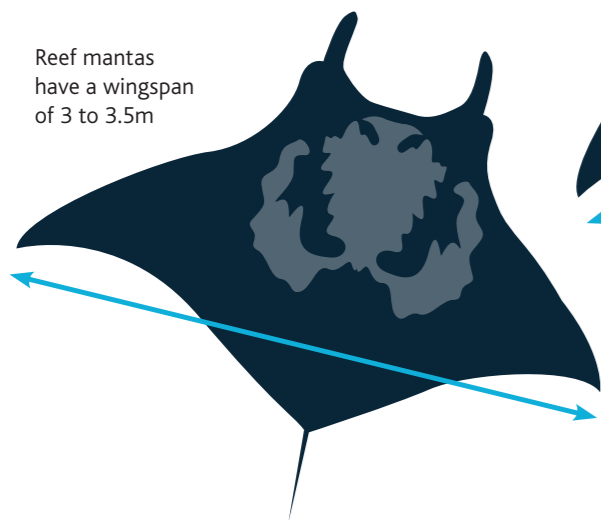
Mantas often fall victim to destructive fishing techniques – such as purse seine nets and longlines – that catch all sorts of sea life besides the target species. Mantas are particularly vulnerable to being caught up in lines as they cannot swim backwards and free themselves. Most by-catch is ultimately discarded, dead, over the side of the fishing vessel. It is estimated that 13,000 mobulids are caught as by-catch each year from tuna purse seine fisheries alone.





Oceanic mantas have a wingspan of up to 7m

Reef mantas have a wingspan of 3 to 3.5m



### Using research to protect these giants

In 2011, The Manta Trust was established to coordinate global efforts to save these iconic species through campaigning, education and research. Many aspects of the lives of mantas remain a mystery, including their movements and areas which are important for feeding and breeding. After years of photographically tracking and tagging individuals, researchers are beginning to unravel these secrets.

It's now known that reef mantas in particular return to specific sites year after year. These include 'cleaning stations': areas of reefs with populations of 'cleaner fishes', which feed on parasites and dead skin on the mantas' bodies. Feeding sites where the ocean currents create super-abundances of plankton are also important. These can attract dozens of mantas at a time and generate a 'feeding frenzy', with the mantas forming feeding chains to cooperatively harvest as much plankton as possible.

**The natural lifespan of oceanic mantas is thought to be around 50 years, or even longer.**



Recently, mantas and mobulas have also been specifically targeted by the Chinese medicine industry. Although they have never been a traditional part of Chinese medicine, a huge demand has developed for the feathery gill plates, which mantas use to filter plankton from the water. It is claimed that eating gill plates can help purify the blood of toxins and also combat diseases such as cancer, asthma and skin rashes – although there is no scientific evidence for this. Demand is now so high that gills can fetch up to \$500 per kg. According to the charity WildAid, an estimated 147,000 mobulas were killed in 2013 to supply the Guangzhou Chinese market.

Female mantas give birth to a single pup at a time after a gestation period of almost a year. It can take 10 to 15 years for a manta to reach maturity. This makes them a classic K species – as opposed to R species (such as rabbits), which typically produce multiple offspring that mature early, but have a short life expectancy. Elephants and humans are both examples of K species. Long-term studies conducted in the Maldives suggest that mature females only average one pregnancy every five to six years. This means that wild manta populations can only recover very slowly.



Hanifaru Bay

Knowing where these places are is the first step towards safeguarding them. A particular success story is Hanifaru Bay in the Maldives, a vital feeding ground for reef mantas. In 2009, this area was almost completely dredged to make way for a new airport – until The Manta Trust stepped in. Using scientific data and photographs collected by the Maldivian Manta Ray Project, they were able to demonstrate to the government how important it was to protect this unique area. As a result, the airport was relocated and Hanifaru Bay instead became the first Marine Protected Area (MPA) in the Maldives.

In Indonesia, The Manta Trust is collaborating with Conservation International to run community transition programmes, particularly in areas with a tradition of hunting manta rays. The aim is to help transition local fishers into scientific officers, using their fishing and seamanship skills to collect data on the marine animals and ecosystems in their region. By making live manta rays more valuable to local communities than dead ones, it is hoped that this will help safeguard their future.

### International protection

In 2013, The Manta Trust successfully campaigned for both species of manta rays to be listed on the Convention on International Trade in Endangered Species (CITES) – this aims to control the international trade of animal and plant species, where this threatens their survival. In 2016, The Manta Trust called for mobulas to also be added to CITES – given that most of the delegates at the conference had never heard of a mobula, the Trust knew they had a challenge on their hands. Using virtual reality headsets and captivating cinematography, they were able to give the delegates the experience of swimming underwater with these graceful creatures. This proved to be so compelling that mobulas were duly added to the CITES convention.

### Hope for the future

The case of the mantas and mobulas shows just how important a role research, education and awareness can play in protecting endangered species. As The Manta Trust has demonstrated, when this information is used to inspire the public and create arguments for legal protection, powerful change can happen. Hopefully this will help to safeguard the mantas for years to come so that future generations can also dream of swimming with these gentle giants.

**Female mantas give birth to a single pup at a time after a gestation period of almost a year.**

### Ways that you can help protect manta rays

The Manta Trust – learn more about manta rays and how The Manta Trust is working to save them.

[www.mantatrust.org](http://www.mantatrust.org)

WildAid – this organisation aims to end the trade in products from endangered animals by reducing the demand for these from consumers. Their strategies include campaigning for legal protection and producing compelling media messages.

[www.wildaid.org](http://www.wildaid.org)

Good Fish Guide – the Marine Conservation Society has created an online guide to sustainable fish, to help you eat responsibly.

[www.goodfishguide.org](http://www.goodfishguide.org)

