

FACT SHEET

LADY ELLIOT ISLAND

Manta Rays

Manta rays are solitary gentle giants inhabiting temperate to tropical waters throughout the world's oceans. Manta rays range among the largest fishes in the ocean, growing up to approximately 7 metres disc width (from wing tip to wing tip). Despite their large size, manta rays feed upon some of the smallest creatures in the ocean: microscopic plankton.

Lady Elliot Island (LEI) is a major hotspot for manta rays in eastern Australia and has recently been the focus of intensive scientific research aiming to uncover various aspects of their secret lives.

GENERAL FEATURES

Manta rays are the largest of all rays. They can be easily recognised by their overall diamond-shaped body, wide mouth, and their horn-like 'cephalic lobes' located at the front of the head. Manta rays are typically grey to black on their dorsal (upper) surface, and their ventral (underside) surface is white. A less common, black colour morph also occurs in some sub-populations. Manta rays bear unique patterns of blotching on their ventral surface. These patterns are consistent through time and can be used to identify each individual.



Until recently, manta rays were believed to be represented by a single species. However, research conducted off southern Mozambique, Africa, revealed the existence of at least two species: the giant oceanic manta ray *Manta birostris* (reaching up to 7m disc width) and the inshore reef manta ray *Manta alfredi* (< 5m disc width). While *Manta alfredi* appears to be more resident to coastal, tropical and subtropical waters, *Manta birostris* is thought to be a more oceanic and migratory species since it also occurs at a few offshore island groups and oceanic seamounts. *Manta alfredi* is the main species present along the east Australian seaboard, with only a few occasional sightings of the larger species recorded.

GENTLE GIANTS

Despite their size, manta rays are harmless giants. Their tail is short and they do not have a stinging barb. Moreover, manta rays only possess a narrow band of minute teeth that are only used as part of their courtship and mating behaviour. As a result, manta rays typically rely on their large size and swimming abilities as a principal means of defence.

Manta rays have the largest brain to body size ratio of any living fish and are very aware and interactive with divers. Their inquisitive nature makes them very popular among the diving community, with stories of breathtaking underwater encounters.

LIFE & REPRODUCTION

Manta rays appear to be relatively long-lived and have a very conservative life history. Although their actual longevity remains unknown, long-term monitoring programs have re-sighted individuals for up to 30 years. Females have a low fecundity (they only have 1 pup every 2–3 years) and are believed to reach sexual maturity at 8–10 years of age. A female will typically give birth to her live pup after a 12 month gestation period. The manta ray pup is born at a size of around 1.5m and appears to have a relatively slow growth rate.

This said, major knowledge gaps remain with regards to how fast manta rays grow and how old they get. Natural mortality in manta rays is thought to be low, despite frequent sightings of individuals bearing scars and injuries. Main predators for manta rays include orca and some shark species.

Manta rays exhibit a fascinating mating behaviour. A female ready to mate will be followed by several males, all trying to match her every move. This phenomenon is referred to as a 'courtship train' and has been observed to last for several days. During this time, the female will test the males by disrupting the train and checking which male is best at getting back into formation. Once she has chosen one male, the female will present her belly to the male. The male will then approach 'belly-to-belly' and hold onto the female's left pectoral fin using his mouth. At this stage, copulation will take place for a few seconds before both rays let go and disperse.

DIET

Despite being some of the largest fishes in the ocean, manta rays feed upon the smallest creatures - microscopic zooplankton - which drift along with the ocean currents. Zooplankton distribution in the ocean is very diffuse and highly influenced by environmental conditions. Manta rays have the ability to sense the water and detect where and when zooplankton will concentrate in dense patches. When this happens, manta rays will show up in numbers and start feeding.



Manta rays in a courtship train



Manta rays at a cleaning station



Feeding manta ray



Cleaning manta ray

Manta rays feed by using their cephalic lobes to funnel water into their wide mouth and through their gills. Specialised structures on their gills, called 'gill rakers', will help sieve zooplankton from the water. Depending on the abundance and type of zooplankton, manta rays will show different feeding behaviours.

The most common behaviour is called 'ram-feeding', this is when a manta swims against the current with an open mouth. Other behaviours include looping, near-bottom feeding and cyclone feeding (circling upwards).

THREATS & CONSERVATION

While natural mortality in manta rays is low, increasing numbers of individuals are observed bearing scars and signs of interactions with human activities, including fishing line and net entanglements, fishing hooks and prop cuts. Manta rays are incidentally caught as by-catch products in both large-scale fisheries and small netting programs such as shark control bather protection nets. More importantly, targeted manta ray fisheries have increased in intensity over the years. What was once a subsistence fishery in remote and poor regions of the world has now developed into an international trade. This is mainly due to increasing demand for manta ray gill rakers, which are dried and sold in the Asian market for use in traditional medicine. As a result, manta rays are being caught in unsustainable numbers in most regions of the world where such fisheries occur, and local population declines have already been observed.

Manta rays were classified in 2011 as 'Vulnerable' on the International Union for the Conservation of Nature's *Red List of Threatened Species*. Major concerns were raised by the scientific community with regards to the future of most regional manta ray sub-populations. As a result, manta rays are now protected in Hawaii, Mexico, Ecuador, the Maldives, the Philippines, Yap, Western Australia (within Marine Parks only) and New Zealand.

More recently (2012), giant manta rays were classified under the *Convention on Migratory Species*, which aims to conserve terrestrial, aquatic and avian migratory species throughout their range.

Because of their smaller home ranges and more 'localised' movements, the smaller inshore manta rays *M. alfredi* remain unprotected in most countries, including most of Australia. Increasing research efforts in many regions of the world are now focusing at filling knowledge gaps about manta rays, including local and global population statuses, life history traits, distributions, movement capabilities and common migratory routes.

MANTA RAYS OF LADY ELLIOT ISLAND

Lady Elliot Island has proven a major hotspot for manta rays in eastern Australia. Manta rays can be found all year round here, with numbers peaking during the winter season (mid-May to mid-August). At Lady Elliot, these gentle giants are commonly encountered while diving popular 'cleaning stations' around the reef, but also offer amazing memories for snorkellers who happen to be in the water during 'feeding frenzies' - it is very common to see large groups of manta rays feed at the surface around the island when the conditions are favourable and plankton is abundant.

WHAT YOU CAN DO TO HELP MANTA RAYS

In eastern Australia, manta rays are the focus of an ongoing research and monitoring program called **Project Manta**. By monitoring individual occurrences, the **Project Manta** team are learning a lot about their life history, distribution and movements. **Project Manta** relies on the help of the diving community to report manta ray sightings along the east Australian seaboard and monitor individual occurrences, mass aggregations and seasonal migrations. You can help **Project Manta** by:

- Reporting mantas sighted in east Australian waters. Email the **Project Manta** team at project.manta@uq.edu.au and send your manta photographs (underbelly side) as well as any relevant information about the sighting (your name, location, date, number of manta rays observed, behaviour). If it is a new individual to the database, you get to name your manta!
- **Be responsible when snorkelling or diving with manta rays by following these 6 simple rules:**
 1. Enter the water quietly so you don't scare them away
 2. Leave plenty of open space for the manta to manoeuvre (taking into account your bubbles if you are diving)
 3. Stay calm and be patient - do not chase a manta ray, stay still and let it come to you. If diving, control your buoyancy and stay low, close to the seafloor
 4. Do not disturb their feeding behaviour - position yourself on the edge of the current line and let the mantas swim past you
 5. Do not touch a manta ray, even if close enough. Touching a manta may remove the protective mucus on its skin and the manta may become prone to infection and disease
 6. Never hold on to or ride a manta