

PRESENT

GIANT MANTA RAY

Mobula birostris

The Mexican Pacific is home to one of the largest populations of giant manta rays. This charismatic species has become a favorite among tourists hoping to dive with these curious animals. Although they are protected in Mexico, globally their numbers are decreasing which is why they are considered endangered. Scientists continue to learn about the giant manta ray and work to improve conservation measures.

TAXONOMY

Kingdom: Animalia
Phylum: Chordata
Class: Elasmobranchii
Order: Myliobatiformes
Family: Mobulidae
Genus: *Mobula*
Species: *M. birostris*



Conservation status:
• Nom 059 – Pr
(Special Protection)
• IUCN – EN
(Endangered)



Distribution: Almost in all seas, between 60° North and 60° South.



Diet: This species is a filter feeder, and its main prey is zooplankton.



Reproduction: They reach sexual maturity between the ages of 8 and 10 years. They are viviparous and have no placenta.



Predators: orcas (*Orcinus orca*) and some shark species, like the tiger shark (*Galeocerdo cuvier*).

CONSERVATION TIMELINE



1980's: The first commercial fishing landings of giant manta rays are recorded in the Gulf of California.



1990's: The Gulf of California giant manta fishery collapses. The populations become rare and sporadic.



2005: The last sightings of giant mantas in La Reina are recorded. This seamount was famous worldwide in the 80's among divers looking to interact with these animals.



2006: Mexico prohibits fishing of Giant mantas in the NOM-029-PESC-2006.



2011: The species is included in the Convention on the Conservation of Migratory Species of Wild Animals (CMS).



2013: Giant mantas are added to Appendix II of the International Union for Conservation of Nature's Red List of Threatened Species.



2019: This and another six mobulid species are included in the NOM-059-SEMARNAT-2010 under special protection.



2020: Even with conservation efforts underway, the giant manta is recategorized from vulnerable to endangered in IUCN's Red List.

ANATOMY

As with sharks, rays and chimeras, the giant manta ray's skeleton is made of cartilage.

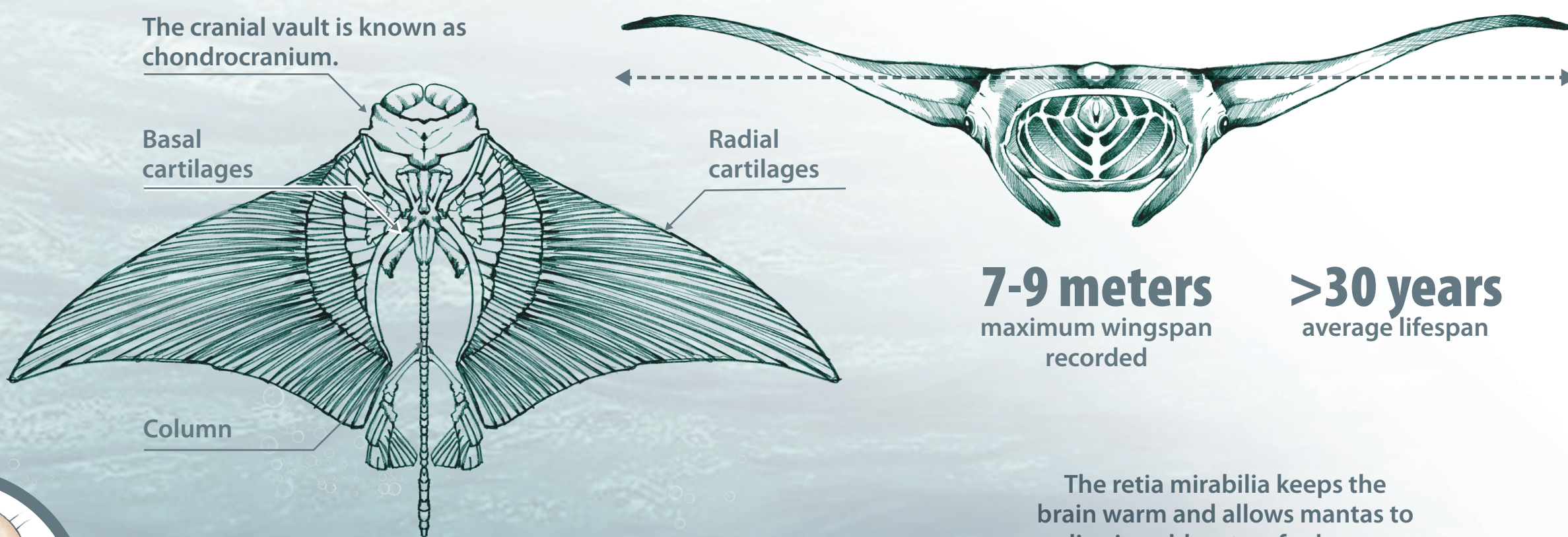
4.5 - 6 meters
The average estimated size

40 km/hr
The maximum estimated speed

1-2 tons
The maximum estimated weight

DISTRIBUTION MAP

Giant manta rays live mostly in tropical and subtropical waters, with local resident populations around the world. In Mexico, scientists have identified resident populations in the Gulf of California, the Mexican Pacific and the Caribbean.



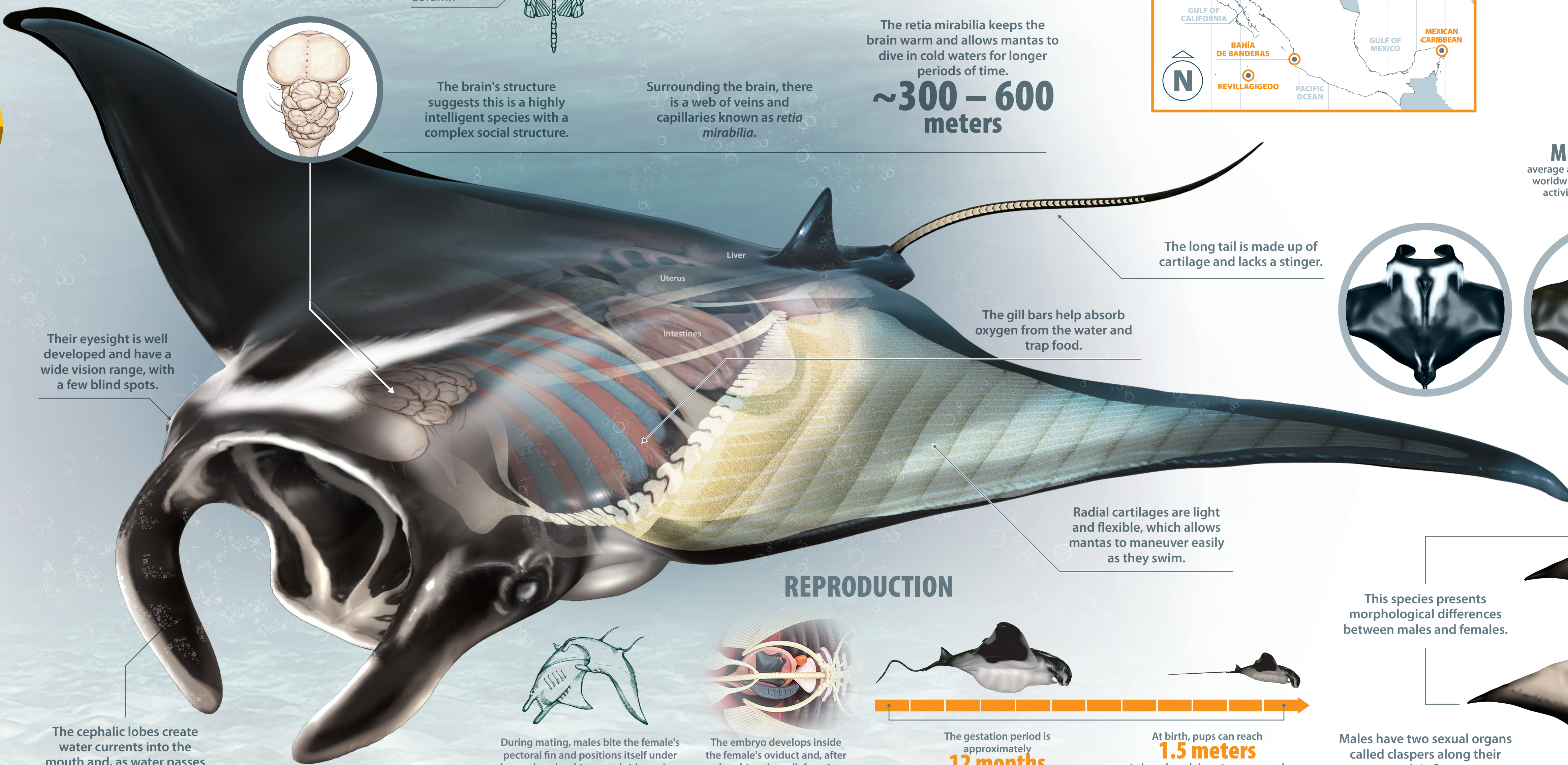
7-9 meters
maximum wingspan recorded

>30 years
average lifespan

The retina mirabilia keeps the brain warm and allows mantas to dive in cold waters for longer periods of time.
~300 – 600 meters

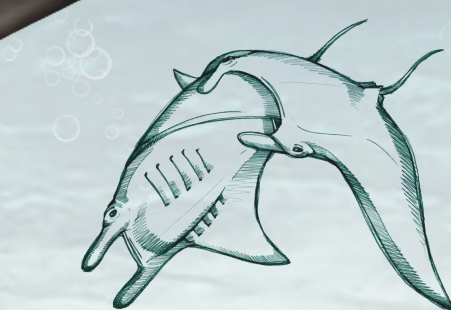
The brain's structure suggests this is a highly intelligent species with a complex social structure.

Surrounding the brain, there is a web of veins and capillaries known as *retia mirabilia*.

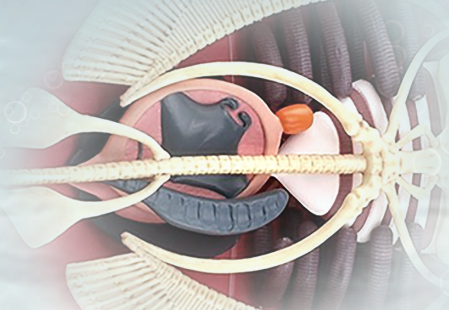


Their eyesight is well developed and have a wide vision range, with a few blind spots.

The cephalic lobes create water currents into the mouth and, as water passes the gills, food is filtered and then swallowed.



During mating, males bite the female's pectoral fin and positions itself under her and pushes his ventral side against her. He then inserts one of his claspers into her cloaca.



The embryo develops inside the female's oviduct and, after absorbing the yolk from its egg case, it relies on milky secretions.



The gestation period is approximately **12 months** and females can produce one pup every two years.

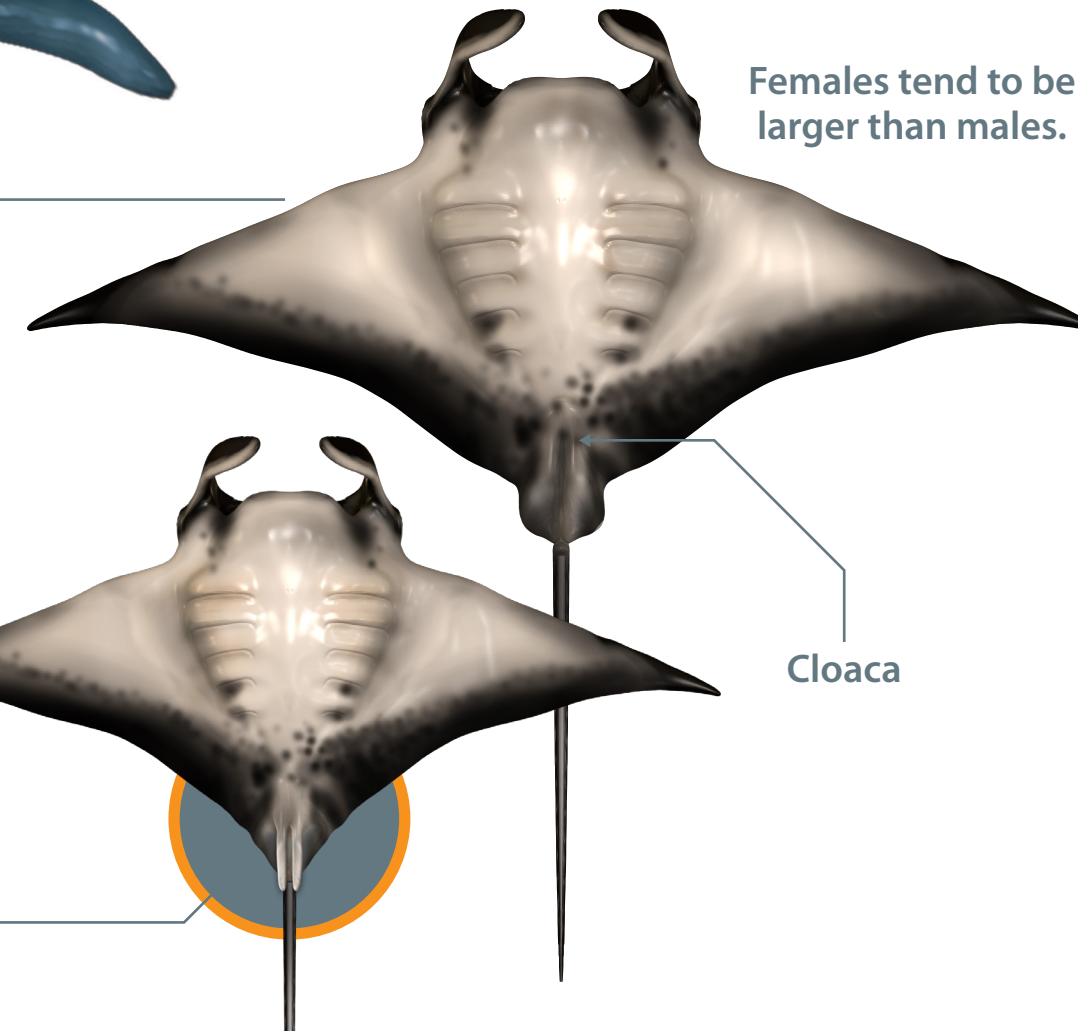
At birth, pups can reach **1.5 meters** in length and there is no parental care after birth.

SEXUAL DIMORPHISM



This species presents morphological differences between males and females.

Males have two sexual organs called claspers along their pelvic fins.



COLORATION:
Does not vary between sexes. There are two main types of coloration: chevron and black.



140 MILLION USD
average annual revenue generated worldwide by diving and snorkel activities with giant mantas.



14 MILLION USD
average annual revenue generated by diving activities with mantas in Revillagigedo.

THREATS

Fishing and bycatch are the current main threats.



COLLISIONS WITH SMALL BOATS
in high-traffic areas.



16-23 USD/kg*
average price of dry meat of giant manta
*2012 prices



115-140 USD/kg*
average price of giant manta gills in the black market
*2012 prices

WITH INFORMATION FROM:

PROYECTO MANTA - MEXICAN PACIFIC

SOURCES:
Acobas et al (2016) The history and characteristics of the Mobula ray fishery in the Bohol Sea, Philippines. *PloS One*.
<https://doi.org/10.1371/journal.pone.0161444>

Alexander (1996). Evidence of brain-warming in the mobulid rays, *Mobula tarapacana* and *Mobula birostris*.
<https://doi.org/10.1111/j.1095-8649.2012.03224.x>

Couturier et al. (2012). Biology, ecology and conservation of the Mobulidae. <https://doi.org/10.1111/j.1095-8649.2012.03264.x>

Manta Trust. Fisheries and bycatch. <https://www.mantatrust.org/fisheries-and-bycatch>. Consultado: 27/08/2021

O'Malley et al. (2013). The global economic impact of Manta ray watching tourism. *PloS One*.
<https://doi.org/10.1371/journal.pone.0065953>

Rios-Seaman, (2015). Estimación del valor económico total y catálogo de foto-identificación de la Manta gigante (*Mobula birostris*) en el archipiélago de Revillagigedo.

Stewart et al. (2016) Spatial ecology and conservation of Manta birostris in the Indo-Pacific. *Biological Conservation*.
<https://doi.org/10.1016/j.bioccon.2016.05.016>