

Whale Shark, *Rhincodon typus*

Report Card assessment	Depleted		
IUCN Red List Australian Assessment	Refer to Global Assessment	IUCN Red List Global Assessment	Endangered
Assessors	Pierce, S.J. & Norman, B.		
Report Card Remarks	Marked declines globally and now protected in many areas but still caught in some countries and fisheries		

Summary

The Whale Shark is a cosmopolitan species and is the world's largest living shark. There are two distinct subpopulations: Indo-Pacific and Atlantic Ocean. Its life history is poorly understood, but it is known to have large litters and to migrate extremely large distances. Directed fisheries and significant bycatch in fisheries have targeted areas where high densities of Whale Sharks occur, leading to rapid reductions. Populations are estimated to have declined by 63% in the Indo-Pacific and >30% in the Atlantic over the last three generations (75 years). While many commercial fisheries for the species closed during the 1990–2000s due to introduction of protections, Whale Shark products remain valuable and the species is still caught in some countries. Serious injury and inferred mortality through vessel strike is a threat to several globally significant aggregations, as is bycatch in net fisheries. Whale sharks that occur in Australian waters are part of a wider regional population that has been depleted. It is listed as Vulnerable under the *Environment Protection Biodiversity Conservation Act 1999* and is protected by state and federal legislation. It is listed on Appendix II of Convention of Migratory Species (CMS) and Appendix II of Convention on International Trade in Endangered Species (CITES). Therefore, the species is assessed as Vulnerable (IUCN) in the Atlantic and Endangered (IUCN) in the Indo-Pacific, and in Australia, Overfished (SAFS).



Distribution

The Whale Shark is found in all tropical and warm temperate seas except the Mediterranean (Rowat and Brooks 2012). In Australia, the species occur mainly off Queensland, Northern Territory and northern Western Australia. There are isolated records from New South Wales, Victoria and South Australia (Last and Stevens 2009).

Stock structure and status

It is estimated, based on genetics, that there are between 103,000 to 238,000 breeding adults across the globe, though these are preliminary and should be used with caution (Castro et al. 2007, Schmidt et al. 2009). Genetic data indicates that there are two separate major subpopulations; Indo-Pacific

and Atlantic Ocean (Vignaud et al. 2014). Based on counts, modelled population estimates and habitat availability, it is inferred that approximately 75% of the global Whale Shark population occurs in the Indo-Pacific, and 25% in the Atlantic (Vignaud et al. 2014). In the Indo-Pacific, a population reduction of 63% is inferred over the last three generations (75 years), and in the Atlantic a population reduction of more than 30% is inferred (Sequeira et al. 2013, Sequeira et al. 2014). Combining data from both regions, it is likely that the global Whale Shark population has declined by >50% over the last 75 years.

Fisheries

The main global threats to the Whale Shark are fishing (target and bycatch) and vessel strikes. They are now protected in many areas of the world, including Australia where they are not taken in any Australian fisheries. The species is fished in southern China where the take appears to be increasing (Li et al. 2012) and it is also fished in Oman (D. Robinson, pers. comm). Prior to protection during the 1990s and 2000s, Whale Sharks were targeted for their meat, liver oil or fins in various regions of the world, such as India, the Philippines, Taiwan and the Maldives (Anderson and Ahmed 1993, Alava et al. 2002, Rowat and Brooks 2012). Broader-scale subpopulation reduction caused by these fisheries was raised as a possible driver of declining sightings in Western Australia (Bradshaw et al. 2008). Tuna are often associated with Whale Sharks and while the majority of Whale Sharks taken as bycatch in the purse-seine fisheries are released alive, the post-release mortality is unknown (Harley et al. 2013, Capietto et al. 2014, Clarke 2015). Vessel strikes from commercial shipping and military vessels are a significant threat, including in Australian waters, as they can cause serious injury and death to Whale Sharks (Speed et al. 2008). As Whale Sharks feed at the surface, where shipping lanes are close to Whale Shark feeding areas the risk of vessel strikes is increased. Propeller injuries are commonly recorded during monitoring programs (Rowat et al. 2006, Speed et al. 2008, Fox et al. 2013). It is likely that fast-moving, large ships do not register or report impacts, and as Whale Sharks will typically sink upon death, these are unlikely to be documented (Speed et al. 2008). Another threat to Whale Sharks is uncontrolled tourism. This may may be an indirect threat to Whale Shark in some circumstances, for example from interference, crowding or provisioning. Regulated tourism interactions would reduce the risk of this threat and ensure the interactions are controlled.

Habitat and biology

The Whale Shark occurs in coastal, oceanic and epipelagic waters (Last and Stevens 2009). Whale Sharks spend the majority of time in surface waters but dive to at least 1,928 m in depth (Tyminsky et al. 2015). Maximum size is at least 1200 cm total length (TL) with reports of up to 2000 cm TL (Chen et al. 1997). Size at maturity is estimated as 700-920 cm TL for males and approximately 900 cm TL for females (Norman and Stevens 2007, Ramírez-Macías et al. 2012, Acuña-Marrero *et al.* 2014, Rohner et al. 2015). There are tentative estimations that the species lives for 60 to 100 years (Pauly 2002, Wintner 2000). One pregnant female has been recorded with approximately 300 pups (Joung et al. 1996). The Whale Shark is one of only three species of shark that filter feeds, the other two being the Megamouth and Basking Shark (Compagno 1984).

Longevity and maximum size	Longevity: estimated 60-100 years Max size: 2000 cm TL
Age and/or size at maturity (50%)	Males: 700-920 cm TL Females: ~900 cm TL

Link to IUCN Page: <http://www.iucnredlist.org/details/19488/0>

Link to page at Shark References: <http://www.shark-references.com/species/view/Rhincodon-typus>

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