

Inclusion of Whale Shark *Rhincodon typus* in Appendix II. Proponent: India and Philippines.

Summary: The Whale Shark *Rhincodon typus* is the world's largest fish (15 m in length) and eats only plankton. It occurs in warm, tropical and temperate waters of the Atlantic, Pacific and Indian Oceans. It is highly migratory between ocean basins and national jurisdictions, but returns to the same sites annually. Little is known of its biology. It is thought to be long-lived (100 years), late maturing (9-30 years) and gives birth to live young in alternate years; it is possibly relatively fecund, as females have been recorded with 200-300 eggs/embryos in different stages of development. The Whale Shark is naturally uncommon and numbers are thought to fluctuate spatially and seasonally in response to plankton blooms. Declines in sightings and in fisheries catches have been recorded over short periods in five geographic areas, but few long-term data are available. Conversely, an anecdotal report from an area where the species is protected suggested that numbers increased dramatically for several years, but in 2002 the sharks and other fish failed to aggregate as usual. Most harvest is thought to be from coastal waters and so not subject to introduction from the sea provisions, although the species may also be taken in pelagic fisheries. The species is in international trade, and demand is mainly for meat; the fins are not considered to be of high quality. Currently Taiwan POC comprises the main meat market, and there is little evidence of international trade to other destinations. Taiwan POC instituted a catch recording and market monitoring system in 2001 which does not yet appear to be fully operational. Illegal trade has been reported. A lucrative ecotourism trade has been reported for a number of range States. The species is protected through various means in a number of range States and recent fisheries in the Philippines and India have been closed. The FAO Committee on Fisheries recognised the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA – Sharks), endorsed by the FAO Council in 2000. However, there has been little tangible progress with implementation of the IPOA in the two years since its adoption. The species is proposed for inclusion in Appendix II under Resolution Conf 9.24 Annex 2a criteria Bi) on the basis that it is known, inferred or projected that harvesting has, or may have, a detrimental impact on the species by exceeding, over an extended period, the level that can be continued in perpetuity. Although not proposed for inclusion in Appendix I, the proponent maintains that the species meets criteria C for inclusion in Appendix I on the basis of a population decline.

Analysis Following Resolution Conf. 9.24, the available evidence suggests that the Whale Shark may meet the criteria for inclusion in Appendix II (Bi) on the basis of localised catch declines and that international trade supplies the demand for meat and, to a lesser extent, fins. However, the paucity of available data makes it difficult to separate population declines from natural short-term variation in local abundance, although the species appears to be extremely vulnerable to exploitation due to its longevity and presumed low productivity. The fin identification guide prepared by Australia should aid implementation. In the meantime, Whale Shark products are generally readily recognisable as their value stems from the fact they are marketed as Whale Shark.

Supporting Statement (SS)	Additional information
	<u>Taxonomy</u>
The SS includes a variety of synonyms for this species.	
	<u>Range</u>
124 range States are included in Annex 1 of the SS.	
	<u>IUCN Global Category</u>
VU A1bd+2d	

Biological and trade criteria for inclusion in Appendix II**A) Trade regulation needed to prevent future inclusion in Appendix I**

According to the SS, the Whale Shark meets both the observed and inferred decline criteria for inclusion in Appendix I. A fishery in the Philippines reportedly declined at a rate of 27% per year over an unspecified time frame. In seven years catches in

The CITES guideline for an observed decline is that the species has declined by 50% over two generations (estimated at 48 years for this species). Although vulnerable due to its biology, it is unclear that the species as a whole meets this criterion.

Supporting Statement (SS)	Additional information
<p>Taiwan POC appear to have declined by 60-70%.</p> <p>Numbers off South Africa have reportedly declined since counts began in 1994.</p>	<p><i>Information from Chen and Phipps (in press) suggests that there may have been under-reporting of catches in Taiwan POC in 2001/2002, so the seven year decline may not have been as great as reported in the SS.</i></p> <p><i>The numbers of Whale Sharks aggregating at Gladden Spit in Belize were reported to have increased dramatically in recent years according to local fishers and dive guides (Heyman et al., 2001). However, in 2002, Whale Sharks did not aggregate as usual for seven consecutive days during the peak snapper aggregation period, nor did the normal fish aggregation take place, possibly due to disturbance from ecotourism (Graham, 2002).</i></p> <p><i>As the highest population numbers in the South African study were recorded in 1994, the first year of the study, it is possible that 1994 was the abnormal year and that numbers were higher than usual that year (see Gifford and Compagno, in prep).</i></p> <p><i>According to Uchida (1995, quoted by Isihara, 2002), the population of Whale Sharks in Japanese waters was stable to 1993, as there was no targeted fishery for the species.</i></p>

B) Harvesting for international trade has, or may have, detrimental impact on population

(i) exceeds sustainable yield; (ii) reduces population to potentially threatened level

Although widely distributed, Whale Sharks are infrequently recorded except in favoured areas where they may be seen in tens to hundreds during a few months of the year in response to zooplankton abundance.

Basic reproductive parameters are unknown, but Whale Sharks are thought to have a very low productivity with an intrinsic rate of increase (r_m) of 0.08/year. It is thought to be long-lived (100 years), late maturing (9-30 years) and gives birth to live young in alternate years; it may be relatively fecund, as females have been recorded with 200-300 eggs/embryos in different stages of development.

The Whale Shark has been fished for its products in at least ten countries, with a recent market developing in Taiwan POC during the 1990s.

Population size, status and the impacts of past and existing fisheries are unknown. However, due to concern, fisheries have recently been shut in the Philippines and India. Declining catches have been recorded from China in the 1960s, from the Maldives during the 1980s, from Taiwan POC in the late 1980s, from Philippines in 1993 and from India in 1999.

International trade in Whale Shark meat has been recorded from India and Philippines to Taiwan POC, Singapore, Hong Kong SAR and Japan.

On the basis of an age at maturity of 8.9 years, Fishbase calculates the intrinsic rate of increase (r_m) to be 0.22/year. However, recent observations of growth (Graham, 2002), and analysis of vertebral growth rings (Wintner, 2000) suggest that age of sexual maturity is closer to 20-30 years than to 9 years.

Reported measurements indicate that individual Whale Sharks landed in 2000/2001 in Taiwan POC were in general much smaller than those reported from the fishery in Indian waters in 1999/2000 (Chen and Phipps, in press). The average length was 4.65 m, and the species is thought to average 7.7 m at maturity.

Frozen skin and meat have reputedly been traded from India to Taiwan POC, China, Hong Kong SAR and Philippines, whilst dried cartilage is exported to the USA and dried fins to Hong Kong SAR, USA, Taiwan POC and Singapore (Hanfee, 2001).

It appears that the reported reduction in price in Taiwan POC may be due to an increasing

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<p>In Taiwan POC the volume of meat in the domestic market doubled between 1998 and 2000 and greatly exceeded that reported in catch statistics from 2000 (suggesting under reporting of either catches or imports). Whilst the volume of meat in trade had doubled, the price decreased by two thirds. Wholesale prices for meat fell from TWD 232/kg in 1998 to TWD 71/kg in 2001; mean retail prices fell during the same period by 20%. In Taiwan POC fins are not considered to be of high quality.</p> <p>Illegal trade from Philippines to Taiwan POC and Hong Kong SAR was intercepted in 2000.</p>	<p><i>percentage of the market being supplied by less favoured frozen meat (TRAFFIC East Asia, 2002).</i></p> <p><i>Hong Kong SAR traders claim that Whale Shark fins are not particularly valuable and a set of small fins were sold at auction in November 2000 for USD 12.85/kg (Clarke, 2002).</i></p> <p><i>Ishihara (2002) reports that mortality of the species in captivity in oceanaria is high and that animals are replaced from the wild on a regular basis.</i></p>

Other information

Threats

The species is probably susceptible to over-exploitation due to its longevity, delayed maturation and low fecundity.

The species is reportedly taken as bycatch (Compagno, in prep).

Conservation, management and legislation

The species is afforded varying levels of protection in the waters of Australia, Belize, Honduras, India, Maldives, Philippines, Thailand and the USA. Meanwhile South Africa is considering protection. The species is covered by the Bonn Convention and the UNCLOS Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks.

In May 2002, Mexico enacted legislation to fully protect the species from fishing (Andrade, 2002; Dowdell, 2002).

Individual recognition and tagging programmes are being undertaken by a number of range States to gain some insights into population dynamics.

The Whale Shark fishery and trade in Taiwan POC are regulated by the Fisheries Law, the Wildlife Conservation Law and the Foreign Trade Act. Measures specific to Whale Shark are the Whale Shark Harvest reporting System and the Monitoring system for International Trade Quantities. Under this legislation, catches of Whale Sharks and various measurements and other data must be reported to the Fisheries Administration. In addition, a catch limit of 80 Whale Sharks was instituted for the 2002/2003 period. Seven categories of customs codes for Whale Shark products have also been created for use in Taiwan POC customs records. The catch reporting and new customs codes came into force in 2001, but implementation does not yet appear to be fully effective (Chen and Phipps, in press).

In 2001, Taiwan POC instituted a Whale Shark Harvest recording programme and also developed customs codes to record trade in Whale Shark products. Taiwan POC has assigned commodity codes to Whale Shark products so as to monitor international trade in the species.

Similar species

Australia has developed a fin identification guide. The muscle fibres for this species are very large and hence the meat is reputedly easy to identify.

When the fins are skinned, they may be confused with Basking Shark fins (Chen and Phipps, in press).

Shivaji et al. (2002) have recently described development of a new genetic method for identifying shark products.

Other comments

The FAO Committee on Fisheries recognised the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA – Sharks), endorsed by the FAO Council in 2000. However, there has been little tangible progress with implementation of the IPOA, which is a voluntary measure, in the two years since its adoption. Inclusion of the species in Appendix II

Supporting Statement (SS)	Additional information
would require monitoring of international trade and its impacts and could help to collect the data necessary to start implementation of the IPOA.	

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