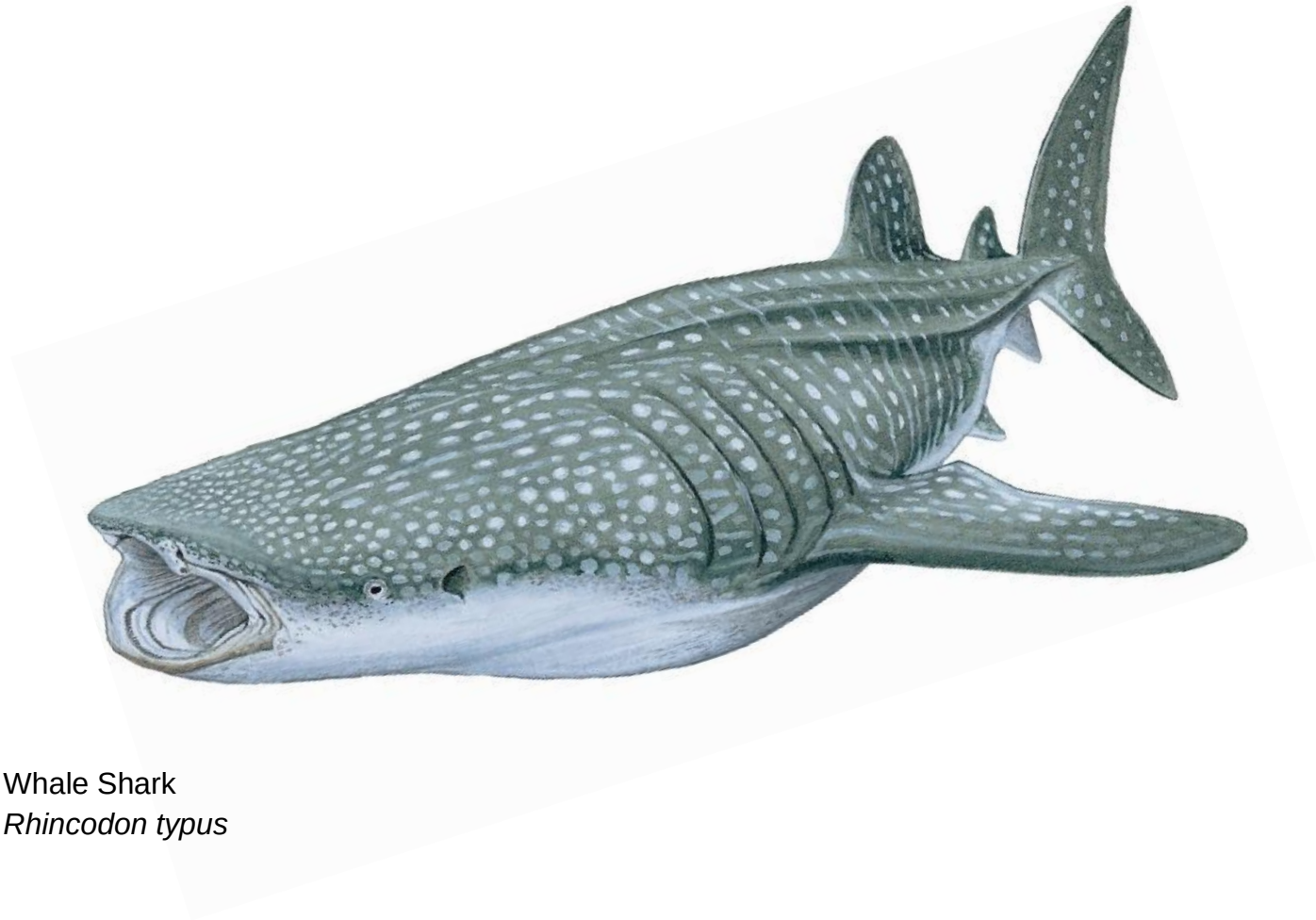
Memorandum of Understanding on the Conservation of Migratory Sharks

Fact Sheet

WHALE SHARK
REQUIN-BALEINE
TIBURÓN BALLENA



Whale Shark
Rhincodon typus

WHALE SHARK

Class: *Chondrich*thyes
Order: *Orectolobiforme*
Family: *Rhincodontidae*
Species: *Rhincodon typus*

This fact sheet was produced by the Advisory Committee of the Memorandum of Understanding on the Conservation of Migratory Sharks (Sharks MOU).

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1. Biology

The Whale Shark (*Rhincodon typus*) is the world's largest living fish (<20m), found globally in tropical and warm temperate waters (Rowat and Brooks 2012). Coastal feeding aggregations are known from these filter feeders, where they exploit seasonal productivity of pelagic invertebrates, fish spawning events, and small schooling fishes. Although encounters are rarely associated with surface temperatures below 21°C, Whale Sharks are capable of withstanding temperatures as low as 4.2°C during dives to up to 1,900 m (Colman 1997; Duffy 2002; Afonso et al. 2014; Tyminski et al. 2015). Their reproductive ecology is poorly understood but associated with slow growth and late maturity and therefore a limited reproductive capacity.

2. Distribution

Whale Sharks are distributed circum-tropically from approximately 30°N to 35°S with seasonal variations (Rowat and Brooks 2012; Sequeira et al. 2014). Several aggregation sites are distributed over all three ocean basins, with major subpopulations in the Atlantic Ocean and Indo-Pacific (Sequeira et al. 2013). Nonetheless, evidence of the connectivity of the Atlantic and Indo-Pacific subpopulations remains contradictory but are considered as functionally separated by the latest IUCN species assessment (Sequeira et al. 2013; Vignaud et al. 2014; Pierce and Norman 2016).

Figure 1: Distribution of Whale Shark (*Rhincodon typus*) [i].

[i] Map obtained from the International Union for Conservation of Nature (IUCN) on 20 November 2017.

3. Critical Sites

Critical sites of Whale Sharks are comprised of aggregation sites, typically dominated by specific age classes (juvenile males in coastal feeding aggregations, and adult sharks at seamounts and volcanic islands) and migration corridors. Thus, they are critical for the species and urgently need to be protected from targeted and incidental fisheries. Known sites, which are important feeding, pupping or mating grounds comprise inter alia.

4. Population Status and Trends

Two global-scale genetic studies on Whale Sharks have estimated genetic effective population size. Castro et al. (2007) used mitochondrial DNA to estimate current genetic effective population size to be 119,000 – 238,000 sharks. Schmidt et al. (2009) estimated genetic effective population size to be approximately 103,000. An estimated 75% Whale Sharks inhabit the Indo-Pacific, while 25% occur in the Atlantic. Overall, the global population experienced an estimated decline of 50% over the last three generations (75 years). (Pierce and Norman 2016). In addition to the decline in abundance, a decline in mean total length was also reported from a number of locations. The current IUCN Red List status[ii] for the global populations for Whale Sharks is 'Endangered' (Pierce and Norman 2016). More details of the population status and trends can be found in the IUCN assessment.

5. Threats

- **Fisheries:** Whale Sharks, incidentally captured in tuna purse seine or gillnet fisheries, are believed to have a predominant impact on a populations level than targeted fisheries (Pierce and Norman 2016). Although the current large-scale fisheries in southern China, where Whale Sharks are routinely captured and retained when sighted, are of major concern (Li et al. 2012).
- **International trade:** Recent surveys indicated that Whale Shark fins are demanding high prices, which could lead to increased targeted fisheries and trade (Li et al. 2012).
- **Ship strikes:** Whale Sharks are exposed to the threat of vessel strikes due to their frequent feeding behaviour close to the surface. Propeller injuries are commonly recorded during monitoring programs (Rowat et al. 2007; Speed et al. 2008; Fox et al. 2013). However, the total scope of this issue remains largely unexplored.
- **Climate change:** Climate change might have adverse effects on prey availability, ocean acidification and currents. The dimension of these effects and how Whale Sharks will manage to cope with them remains uncertain.

[ii] The IUCN Red List of Threatened Species uses a set of criteria to evaluate the extinction risk of species and subspecies. For more information see https://www.iucnredlist.org/.

- **Pollution:** Environmental pollution events occurring in Whale Shark hotspots, such as the Deepwater Horizon oil spill in the Gulf of Mexico could have population level impacts (McKinney et al. 2012). As filter feeding organisms, they are likely to be affected by high concentrations of microplastic pollution (Fossi et al. 2017).
- **Tourism:** Tourism activities may increase the risk of vessel strikes, local disturbance from interference, crowding or provisioning.

6. Key Knowledge Gaps

The existing knowledge about basic facts concerning their life history traits, reproductive ecology or population size of the world's largest fish is still very limited, although significant progress has been made compared to other species of sharks. Great uncertainty can be found when looking at connectivity between populations and trends. Apart from biological knowledge gaps, the impact of threats, like harvest and trade level trends, frequency of vessel strikes, or impact of climate change and pollution need more science and fisheries-based attention.

7. Key Management and Conservation Gaps

- A number of Range States that are Signatories to the Sharks MOU and/or Parties to CMS[iii] do not provide legal protection for Whale Sharks or establish sufficient enforcement.
- Regional/multilateral cooperation is lacking.
- Some RFBs[iv] have not agreed on any measures for Whale Shark protection (e.g. ICCAT[v])
- Existing laws and measures for Whale Shark protection lack enforcement.
- Support for scientific research and monitoring is sparse.
- No mitigation for gillnets fisheries has been put in place by IOTC[vi].

[iii] Convention on the Conservation of Migratory Species of Wild Animals (CMS).
[iv] Regional Fishery Bodies (RFBs).
[v] International Commission for the Conservation of Atlantic Tunas (ICCAT).
[vi] The Indian Ocean Tuna Commission (IOTC).

8. Suggestions for Conservation and Management Action

a) Incorporate conservation measures for Whale Shark into national legislation of all Parties/Signatories (in compliance with the obligations of the for the Appendix I listed species of CMS and in line with the objectives of the Sharks MOU)

- Evaluate and revise the current implementation/compliance with CITES[vii] Appendix II obligations and RFBs/RFMO[viii] measures.
- Make effective enforcement a high priority.
- Adopt the Port State Measures Agreement and Implement port-state controls.
- Conduct market surveys and patrols.
- Patrol in protected areas.
- Prosecute exporters.

b) Improve the understanding of Whale Sharks through strategic research, monitoring and information exchange

- Investigate Whale Shark aggregation sites, seasonality, population connectivity and migrations to support development of spatial fisheries management.
- Assess the impacts of bycatch, climate change and pollution on Whale Sharks.
- Develop capacity in research, data collection and monitoring.
- Address data gaps in biological knowledge (life history parameters, reproductive ecology) of Whale Sharks.
- Conduct long-term monitoring of Whale Shark populations.
- Share research results and expertise with other stakeholders/Range States/Sharks MOU Secretariat.

c) Improve multilateral cooperation among regions and RFBs

- Communicate your actions to the public and other Range States.
- Increase awareness about the CMS Sharks MOU in the South-east Asian region by highlighting the benefits Whale Shark conservation brings to countries and communities.
- Engage neighboring countries, including non-Signatory Range States to protect Whale Sharks and encourage their integration in conservation approaches (e.g. via joint workshops).
- Cooperate with RFBs and RSCs[ix] on:
    - Developing and supporting proposals for minimum on board observer coverage on commercial shipping lines and fishing vessels to gain information on vessel strikes, bycatch and fisheries interactions.;
    - Collating information on bycatch and fisheries interaction to assess the level of impact.
    - Developing potential bycatch mitigation strategies.
    - Supporting the ban of setting of purse-seine nets around Whale Sharks by ICCAT.

[vii] Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
[viii] Regional Fisheries Management Organisations (RFMOs).
[ix] Regional Sea Conventions (RSCs).

d) Minimize interactions between fisheries and Whale Sharks

- Collect information on the scale of bycatch and fisheries interaction to assess the level of impact on Whale Sharks and any potential mitigation strategies.
- Introduce spatio-temporal gear restrictions around Whale Shark aggregation sites.
- Adopt and promote safe release and handling guidelines.
- Promote data reporting, safe release and prohibition requirements.
- Encourage IOTC to devise mitigation strategies for gillnet fisheries.
- Encourage ICCAT to develop a recommendation on the use of Fish Aggregation Devices (FADs), which would include recommendations for the entanglement of Whale Sharks.

e) Improve/implement national fisheries reporting

- Support proposals for Establish a reporting scheme for Whale Sharks.
- Standardize species-specific bycatch reporting scheme (national fisheries and RFMOs).
- Disseminate identification materials.
- Train observers (customs officers, scientists and NGOs).

f) Support development of alternate livelihoods for communities reliant on Whale Shark fisheries

- Develop and implement unified guidelines for sustainable Whale Shark tourism (support Philippines with Concerted Actions proposal).
- Promote non-consumptive usage, sustainable fisheries and aquaculture.
- Assist with raising capital for expenses of implementation.

g) Raise awareness about the threats to Whale Sharks and reduce the demand for fins

- Inform the public about the need of shark conservation via educational, social media and local outreach campaigns.
- Develop science-based campaigns for demand reduction.
- Highlight the threats posed to Whale Sharks and health risk of the consumer (heavy metals).

9. Legal Instruments

Instrument:	Description:
Cartagena Convention Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region	**Annex III**: Parties may regulate the use of these species of flora and fauna in order to ensure and maintain their populations at the highest possible levels.
CCSBT Commission for the Conservation of Southern Bluefin Tuna	CCSBT encourages both Members and Cooperating Non-Members to comply with a variety of binding and non-binding measures in order to protect species ecologically related to Southern bluefin tuna, including sharks.
CITES Convention on International Trade in Endangered Species of Wild Fauna and Flora	**Appendix II**: Species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.
CMS Convention on the Conservation of Migratory Species of Wild Animals	**Appendix I**: Migratory species threatened with extinction; CMS Parties strive towards strictly protecting these species, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them. **Appendix II**: Migratory species that have an unfavorable conservation status and need or would significantly benefit from international cooperation; CMS Parties shall endeavor to conclude global or regional agreements to benefit these species.
FAO Food and Agriculture Organization	**IPOA Sharks:** International Plan of Action for Conservation and Management of Sharks based on which states should adopt and implement a national plan of action for conservation and management of shark stocks (NPO Sharks) if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries.
IATTC Inter-American Tropical Tuna Commission	**Res. C-16-01:** Amendment of resolution C-15-03 on the collection and analysis of data on fish-aggregating devices.

Instrument:	Description:
	Res. C-16-04: Amendment to resolution C-05-03 on the conservation of sharks caught in association with fisheries in the eastern Pacific Ocean. **Res. C-16-05:** Resolution on the management of shark species.
IOTC Indian Ocean Tuna Commission	**Res. 13/05:** On the conservation of Whale Sharks (Rhincodon typus). **Res. 13/06**: On a scientific and management framework on the conservation of sharks species caught in association with IOTC managed fisheries. **Res. 15/09:** On a fish aggregating devices (FADs) working group. **Res. 17/05**: On the conservation of sharks caught in association with fisheries managed by IOTC. **Res. 17/07:** On the prohibition to use large-scale driftnets in the IOTC Area. **Res 17/08:** Procedures on a FADs Management Plan including limitation on number of FADs, more detailed specifications of catch reporting from FAD sets, and development of improved designs to reduce incidence of entanglement of non-target species.
Sharks MOU Memorandum of Understanding on the Conservation of Migratory Sharks	**Annex 1**: Signatories should endeavor to achieve and maintain a favorable conservation status for these species based on the best available scientific information and taking into account their socio-economic value.
UNCLOS United Nations Convention on the Law of the Sea	**CMM 2008-04**: Conservation and management measures to prohibit the use of large sale driftnets on the high seas in the Convention Area. **CMM 2009-02**: Conservation and management measures on the application of high seas FAD closure and catch retention. **CMM 2010-07**: Conservation and management measures for sharks. **CMM 2012-04**: Conservation and management measure for protection of Whale Sharks from purse seine fishing operations.

Instrument:	Description:
	CMM 2014-05: Conservation and management measures for sharks.
WCPFC Western and Central Pacific Fisheries Commission	**CMM 2010-07**: CMM 2010-07: Porbeagles (south of 20°S) represent a key shark species and shall therefore be included in the annual reporting to the Commission of annual retained and discarded catches and fishing effort statistics by gear type. As well, fishers shall be required to fully utilize any retained catches of sharks and encouraged to release live sharks that are caught incidentally and are not used for food or other purposes.

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About the Sharks MOU

The Memorandum of Understanding on the Conservation of Migratory Sharks (Sharks MOU) is the first global instrument for the conservation of migratory species of sharks, rays, skates and chimaeras.

The Sharks MOU is an instrument of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) that engages all relevant stakeholders in addressing threats to migratory species in concert with all other aspects of wildlife conservation and management.

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