



Distr. LIMITED

UNEP(DEPI)/CAR WG.45/INF.18
7 April 2025

Original: ENGLISH

Eleventh Meeting of the Scientific and Technical
Advisory Committee (STAC) of the Protocol
Concerning Specially Protected Areas and Wildlife
(SPA)W) in the Wider Caribbean Region

Panama City, Panama
30 June – 3 July 2025

**CONSERVATION AND MANAGEMENT
RECOMMENDATIONS FOR THE WHALE SHARK (UPLISTED
IN ANNEX II), GIANT MANTA RAY (UPLISTED IN ANNEX II)
AND HAMMERHEAD SHARKS (ANNEX III) IN THE WIDER
CARIBBEAN REGION**

A REPORT OF THE SPAW SPECIES WORKING GROUP

This meeting is being convened hybrid. Delegates are kindly requested to access all meeting documents electronically for download as necessary.



Summary

The SPAW COP 12 adopted the recommendation of the 10th meeting of the Scientific and Technical Committee (STAC) to uplist the whale shark (*Rhincodon typus*) and the giant manta ray (*Mobula birostris*) from Annex III to Annex II and invited STAC10, through the species working group, to develop conservation and management recommendations for those species to be presented to the 11th meeting of the Scientific and Technical Advisory Committee in 2025

The species working group experts aimed to create three sets of prioritized action-oriented recommendations for the conservation and management of the Whale Shark, Giant Manta Ray and Hammerhead Sharks. The high priority actions are highlighted in the first section of this document.

Recommendations are prioritized as follows:

- Building capacity, awareness and improve information on sharks and rays listed on Annexes II and III,
- Meeting Annex II obligations to protect Whale Shark (*Rhincodon typus*) and Giant Manta Ray (*Manta birostris*).
- Meeting obligations for Annex III listed Hammerhead sharks species

Furthermore, the working group has detailed in the appendix of this document species-specific recommendations to assist Contracting Parties in the implementation of priority conservation actions, taking into account the species knowledge, threat assessment, and in order to provide a comprehensive approach to these species conservation.

The Annex also frames the context for each species/species group, providing a summarized account of regional distribution, ecology, threats and conservation challenges.

ACRONYMS

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CFMC	Caribbean Fishery Management Council
CRFM	Caribbean Regional Fisheries Mechanism
FAO	Food and Agriculture Organization of the United Nations
ICCAT	International Commission for the Conservation of Atlantic Tunas
IUCN	International Union for the Conservation of Nature
MOU	Memorandum of understanding
MPA	Marine Protected Areas
OSPESCA	Organization of the Fisheries and Aquaculture Sector of the Central American Isthmus
RAC	Regional Activity Center of the SPAW protocol
SPAW	Specially Protected Areas and Wildlife protocol
SSG	Shark Specialist Group
STAC	Scientific and Technical Advisory Committee of the SPAW protocol
UNEP	United Nations Environment Programme
WECAFC	Western Central Atlantic Fisheries Commission

Conservation and management recommendations for the whale shark (uplisted in Annex II), giant manta ray (uplisted in Annex II) and hammerhead sharks (Annex III) in the Wider Caribbean

Authors

**Olga Koubrak,
Jaime Bolanos Jiménez
Nuno Barros
Kristen Koyama**

With the contribution of
**Océane Beaufort
Sonja Fordham,
Courtney Vail
Jeffrey Bernus
Julia Horrocks
Andrea Polanco Fernandez
Milena Benavides Serrato**

Chair and secretariat: SPAW RAC

Context

1. Article 10 of the 1990 Protocol to the Cartagena Convention concerning Specially Protected Areas and Wildlife (SPAW Protocol) specifies that Parties “carry out recovery, management, planning and other measures to effect the survival of [endangered or threatened] species” and regulate or prohibit activities having “adverse effects on such species or their habitats”. Article 11 declares that each Party “shall ensure total protection and recovery to the species of fauna listed in Annex II”.
2. Whale sharks have been listed since October 2023 as part of the Annex II of SPAW [Protocol](#) of the Cartagena Convention. Giant manta ray (*M. birostris*) has been listed since October 2023 as part of the Annex II of SPAW protocol of the Cartagena Convention following a [proposal](#) from the Kingdom of Netherlands and France. The endangered (EN) giant manta ray (Tavares, et al., 2024) is the larger of 9 species of mobulid rays (manta and devil rays). Three species of hammerhead sharks — the [great hammerhead](#) (*Sphyrna mokarran*) critically endangered (CR), scalloped hammerhead (*Sphyrna lewini*) critically endangered (CR), and [smooth](#)

[hammerhead](#) (*Sphyrna zygaena*) vulnerable (VU) (Tavares, *et al.*, 2024) — are currently listed on Annex III of the SPAW [Protocol](#).

3. SPAW COP12 invited the STAC, through the Species Working Group, to develop conservation and management recommendations for the Whale Shark, Giant Manta Ray and Hammerhead Sharks to be presented to STAC11.
4. This document offers recommendations for conservation and management of the Whale shark, Giant manta ray uplisted in Annex II and Hammerhead sharks listed in Annex III in the SPAW protocol, as mandated by SPAW COP 12 as well as general recommendations applicable for all listed shark and ray species and followed by those specific to Annex II and Annex III obligations.
5. Considering that the measures for Annex II and Annex III are general with respect to the targeted species, it would be appropriate to apply them equally to all shark species listed in Annex II and Annex III, such as the silky shark and the Oceanic whitetip.
6. The species working group experts aimed to create an action-oriented, and a realistic document to identify gaps and suggest concrete conservation recommendations for Contracting Parties towards the conservation of SPAW-listed shark and ray species. The high priority actions for the conservation of the Whale Shark, the Giant Manta Ray and the Hammerhead Sharks are highlighted in the first section of this document.
7. Complementary to the high priority actions highlighted in the first section of this document, the working group has detailed in Annex more recommendations for Contracting Parties. To each species, the document providing a summary of regional distribution, ecology, threats and conservation challenges. Recommendations are detailed by species and are prioritized, taking into account the species knowledge and risk assessment, in order to provide a comprehensive and in-depth approach to its conservation.

Recommendations

8. Building upon the *Shark action plan 2023* from WECAFC and Bridging the Gaps that Hinder Shark Conservation from an analysis of ICCAT Parties' policies for CITES-listed Atlantic elasmobranchs and based on expert analyses, we propose the following actions, to prevent extinction and promote recovery of Caribbean whale shark, Giant Manta Ray and hammerhead sharks:

9. ***To build capacity, awareness and improve information on sharks and rays listed on Annexes II and III, Parties are encouraged to;***
 - Train fishers on safe release methods for whale sharks, Giant manta ray, Hammerhead Sharks;
 - Host capacity building workshops to share knowledge of low-cost, effective data collection (such as telemetry, photo ID) to identify key habitats and migration routes;
 - Collect catch data (animals retained, discarded dead, and/or released alive);
 - Report data to relevant fishing organizations such as ICCAT and WECAFC;
 - Collaborate regionally to share data and harmonize data collection protocols;
 - Promote stakeholder engagement in gathering historical data and conducting field surveys;
 - Grow communication tools to raise awareness on those species conservation (social media campaigns; video tools for effective storytelling).

10. ***To meet Annex II obligations to protect Whale Shark (*Rhincodon typus*) and Giant Manta Ray (*Manta birostris*), Parties are encouraged to;***
 - Ensure that legislation, regulations, and/or policies are in place to prohibit retention, sale, trade, and minimize incidental catch;
 - Train relevant personnel in species identification and enforcement of associated restrictions;
 - Develop/adopt the Protocol's best practice guidelines on disentanglement from fishing nets
 - Prevent disruptive interactions through promotion of best practices for sustainable tourism and associated, targeted educational tools that impact the community on different levels;
 - Submit exemption report to the Secretariat as requested by Art. 19 from the SPAW Protocol, report implementation as requested by Art. 11(2) from the SPAW Protocol and request assistance from the SPAW Secretariat where needed.

11. ***To meet obligations for Annex III listed Hammerhead sharks species, Parties are encouraged to;***
 - Regulate fishing through catch limits, closed seasons and/or closed areas based on scientific advice and the precautionary approach;
 - Publish CITES Non-detriment findings;
 - Minimize waste and enhance species-specific data collection by requiring all sharks be landed with fins naturally attached;
 - Prohibit international trade/or retention (for ICCAT Parties);

12. Parties are encouraged to integrate this work with related activities aimed at implementing shark and ray commitments under other agreements, particularly, WECAFC, ICCAT, CMS and the CMS Sharks MOU, and to consider bilateral agreements to protect shared populations.

13. Parties are also encouraged to report to SPAW with assessments of their management and conservation measures. If substantial progress has not been made, the STAC should ask the species working group to propose additional recommendations to address implementation issues.

14. For a better use of the specific-species section for stakeholders, we duplicate the general and highest prioritized recommendation before proposing complementary measures.

15. *Appendix 1 - Recommendations by species*

16.1. *Whale Shark (Rhincodon typus)*

17. 1.1. *Summary of current status and gaps*

18. Whale sharks have been listed since October 2023 as part of the Annex II of SPAW [Protocol](#) of the Cartagena Convention. The species can be found in all states having tropical or warm-temperate marine coasts and particularly the contracting Parties to the Protocol, which are 17 countries from the Caribbean region: Bahamas, Barbados, Belize, Colombia, Cuba, Dominican Republic, France (Guadeloupe, Fr. Guiana, Martinique, Saint-Barthélemy, Saint-Martin), Grenada, Guyana, Honduras, Netherlands (Aruba, Bonaire, Curaçao, Saba, Sint-Eustatius, Sint Maarten), Panama, Saint-Lucia, St Vincent and the Grenadines, Trinidad and Tobago, United States (States bordering the Gulf of Mexico; U.S. Virgin Islands; Puerto Rico), and Venezuela.
19. **The global whale shark population was inferred to have declined by $\geq 50\%$ over the last three generations (75 years), resulting in an Endangered global listing on the IUCN Red List (Pierce & Norman, 2016, Tavares, *et al.*, 2024).**
20. The whale shark is highly migratory and has been documented within the Caribbean region (Hueter *et al.*, 2013; Hoffmayer *et al.*, 2021). Whale sharks are likely to be important transporters of nutrients from productive coastal waters, and offshore frontal regions, to nutrient-poor areas, such as most tropical oceanic habitats. Assessment of the whale sharks' contribution to ecosystem processes is at an early stage, but they are thought to contribute to the resilience of tropical marine systems.
21. Whale sharks are also closely associated with tuna in many areas, which may represent a mutually-beneficial interaction with these important oceanic predators. Unfortunately, by this association, they are a common bycatch in tuna purse-seine fisheries. While the whale sharks are usually released, a few are accidentally killed where poor release practices are used.
22. Furthermore, the perceived value of whale shark fins for display purposes appears to have increased over the years, which could lead to increased targeted fisheries and trade (Li *et al.*, 2012; Steinke *et al.*, 2017).
23. Based on 222 interviews in 17 fishing villages all along the Venezuelan coast, Sánchez *et al.* (2020) documented 142 sightings and 21 deaths of whale sharks during the period 2014-2017. In most cases, individuals found are juveniles (c. 7 m total length) and, occasionally, up to 10 individuals were observed at the same time, and during several months (Sánchez *et al.*, 2020). These authors reported a sharp decline in whale shark takes in Venezuela in response to their implementation of awareness activities (Sánchez *et al.*, 2020).

24. Some records show whale sharks may seasonally frequent more inshore areas near estuaries and river mouths. Their habitat may be affected by oil spills and 'Red tides,' caused by toxic blooms of *Karenia* spp. dinoflagellates and cause mortality (Campagna et al., 2011; Frias-Torres and Bostater 2011; Hueter et al., 2013; Brand and Compton, 2007).
25. Whale shark mortalities from plastic ingestion have been reported in several countries (Matsumoto et al., 2017; Lee 2019; Abreo et al., 2019; Haetrakul et al., 2009). Entanglement, particularly in discarded or lost fishing gear, is also a likely source of mortality (Wilcox et al., 2016; Parton et al., 2019).
26. Whale sharks are exposed to the threat of vessel strikes due to their frequent surface feeding behaviour and during tourism activity, but the total scope of this issue remains largely unexplored (Pierce et al., 2021; Rowat et al., 2021, Ramírez-Macías et al., 2012; Fox et al., 2013).
27. While Whale shark tourism is growing in popularity, near six weeks of whale shark tourism in Belize was estimated to be worth US\$3.7 million to the country (Graham 2003). Too much anthropogenic disturbance of whale sharks or their spawning fish prey, despite restrictions on boats and dive depths, might deter whale sharks, and spawning fish from sites (Graham, pers. comm.)
28. Recent work on Mexican whale sharks suggests that foraging bouts generally last several hours (Cade et al., 2020), and that interruptions to foraging during critical feeding periods may represent a substantial energetic cost.

29. 1.2 Highest priority recommendations

To build capacity, awareness and improve information on sharks and rays listed on Annexes II and III, Parties are encouraged to:

- Train fishers on safe release methods for whale sharks, Giant manta ray, Hammerhead Sharks;
- Host capacity building workshops to share knowledge of low-cost, effective data collection methods (such as telemetry, photo ID) to identify key habitats and migration routes;
- Collect catch data (animals retained, discarded dead, and/or released alive);
- Report data to relevant fishing organizations such as ICCAT and WECAFC;
- Collaborate regionally to share data and harmonize data collection protocols;
- Promote stakeholder engagement in gathering historical data and conducting field surveys;
- Develop communication tools to raise awareness on those species conservation (social media campaigns; video tools for effective storytelling).

To meet Annex II obligations to protect Whale Shark (*Rhincodon typus*) and Giant Manta Ray (*Manta birostris*), Parties are encouraged to:

- Ensure that legislation, regulations, and/or policies are in place to prohibit retention, sale, trade, and minimize incidental catch;
- Train relevant personnel in species identification and enforcement of associated restrictions;
- Develop/adopt best practice guidelines on disentanglement from fishing nets;
- Prevent disruptive interactions through promotion of best practices for sustainable tourism and associated, targeted educational tools that impact the community on different levels;
- Submit exemption report to the Secretariat as requested by Art. 19 from the SPAW Protocol, report implementation as requested by Art. 11(2) from the SPAW Protocol and request assistance from the SPAW Secretariat where needed.

30. 1.3 Conservation and management recommendations for Contracting Parties

Improve knowledge for evidence-based decision-making	
Recommendation	Priority
Increase reporting of ship strikes including by cruise ships	High
Use citizen science programs to record sightings	High/Medium

Implement international commitment	
Recommendation	Priority
Adopt area-based protection measures for critical habitats, such as foraging and nursery grounds and migration routes e.g through establishment of (sister) sanctuaries	Medium
Regulate activities at shark watching sites (e.g. reduce number of boats and swimmers, restrict boat speeds)	Medium/low

Minimize fisheries interactions and protect habitat	
Recommendation	Priority
Implement observer programs in fisheries known to interact with whale sharks e.g. tuna purse seine fisheries	High
Prohibit the retention on board in case of bycatch, transshipment, or landing of whale sharks and whale shark products, including gill rakers.	High

Mitigate marine pollution	
Recommendation	Priority
Increase efforts to control marine pollution (run off, sewage, plastics)	Medium (plastic) to Low

31. Giant manta ray (*Mobula birostris*)

32. 2.1. Summary of current status and gaps

33. Giant manta ray (*M. birostris*) has been listed since October 2023 as part of the Annex II of SPAW protocol of the Cartagena Convention following a [proposal](#) from the Kingdom of Netherlands and France,
34. The endangered (EN) giant manta ray (Tavares, *et al.*, 2024) is the larger of 9 species of mobulid rays (manta and devil rays), potentially reaching up to a disc width of 8 meters (Stevens et al. 2024). Its highly conservative life histories - namely low fecundity, slow growth and late maturation - renders it extremely vulnerable to depletion. Fishing-related threats (often powered by the demand in meat and gill plate trade) could therefore deplete a single population quite rapidly, with little chance of recovery.
35. The giant manta ray is a migratory species and the species is thought to be a seasonal visitor along productive coastlines with regular upwelling, in oceanic island groups, and near offshore pinnacles and seamounts. A study by Stewart et al. 2016, which incorporated tagging and stable isotope and genetic data, found evidence that *M. birostris* may actually exist as well-structured subpopulations that exhibit a high degree of residency and low migratory rates.
36. Giant manta ray (and a putative new species “Atlantic manta ray *Mobula* sp.”) occurs throughout the Wider Caribbean Region, being subject to several legally binding national and international conservation regulations. Nonetheless, population declines are steep in several locations studied worldwide and local extinctions are plausible (White et al. 2015, Lewis et al. 2015, Fernando & Stewart 2021).
37. Although usually observed alone or in small groups (Palacios et al. 2023), giant manta rays are known to aggregate. There are observations of 70+ individuals performing feeding behaviour in the Northern part of Yucatan peninsula, Mexico (K. Fuentes, pers. comm.). Within the Wider Caribbean Region, aggregations occur in the Gulf of Mexico and off the coasts of Suriname, French Guiana, Venezuela, Brazil and central Florida (ARocha et. al

- 2023; Braun et al 2024). This aggregation behaviour can make them vulnerable to even artisanal fisheries.
38. In the Wider Caribbean Region, giant manta ray fisheries-related mortality was found to exist in different degrees in some countries (Palacios et al. 2024), namely Colombia (discarded and retained bycatch - also documented by Pez-Angarita et al. 2021); the Caribbean coast of Mexico (retained bycatch and illegal targeted catch still present), USA (discarded bycatch - although a National Recovery Plan for the species is underway), Venezuela (landings - also documented by Ehemann et al. 2022 - as a result of retained bycatch and/or targeted catch and evidence of local consumption of meat).
 39. Other threats to this species are the inadequacy of fishing regulations, lack of enforcement of existing international protection and mismatches between databases (CITES; ICCAT; FAO) and the reality of landings, bycatch and discards.
 40. Other anthropogenic threats like entanglement and boat strikes also are of concern. Tourism-related impacts from interacting with marine megafauna should also be noteworthy (source missing).
 41. Knowledge gaps exist regarding the species distribution and abundance, widespread landings and general fisheries data, while poor levels of trade reporting, enforcement and awareness continue to exist.
 42. The most comprehensive post-release mobulid survival study to date (Stewart et al. 2024) has recently highlighted the importance of formally adopting robust [safe handling and release guidelines](#) and protocols for this endangered species to maximize its survival in case of bycatch, although further studies are still needed.
 43. Under the SPAW Protocol recommendations for conservation of giant manta ray (and Atlantic manta ray) should include improving knowledge for evidence-based decision-making; enforcing international regulations; promoting sustainable fisheries management and developing capacity building and awareness;

44. 2.2 Highest priority recommendations

To build capacity, awareness and improve information on sharks and rays listed on Annexes II and III, Parties are encouraged to:

- Train fishers on safe release methods for whale sharks, Giant manta ray, Hammerhead Sharks;
- Host capacity building workshops to share knowledge of low-cost, effective data collection methods (such as telemetry, photo ID) to identify key habitats and migration routes;
- Collect catch data (animals retained, discarded dead, and/or released alive);
- Report data to relevant fishing organizations such as ICCAT and WECAFC;

- Collaborate regionally to share data and harmonize data collection protocols;
- Promote stakeholder engagement in gathering historical data and conducting field surveys.
- Develop communication tools to raise awareness on those species conservation (social media campaigns; video tools for effective storytelling).

To meet Annex II obligations to protect Whale Shark (*Rhincodon typus*) and Giant Manta Ray (*Manta birostris*), Parties are encouraged to:

- Ensure that legislation, regulations, and/or policies are in place to prohibit retention, sale, trade, and minimize incidental catch;
- Train relevant personnel in species identification and enforcement of associated restrictions;
- Develop/adopt best practice guidelines on disentanglement from fishing nets
- Prevent disruptive interactions through promotion of best practices for sustainable tourism and associated, targeted educational tools that impact the community on different levels.
- Submit exemption report to the Secretariat as requested by Art. 19 from the SPAW Protocol, report implementation as requested by Art. 11(2) from the SPAW Protocol and request assistance from the SPAW Secretariat where needed.

45. 2.3. Conservation and management recommendations for Contracting Parties

Improve knowledge for evidence-based decision-making	
Recommendation	Priority
Promote extensive data gathering of manta ray landings throughout the region through stakeholder engagement (interviews with fishers and community members to gather historical data) and field surveys of identified critical sites;	High
Create a standardized and centralized collection of scientific and empirical information on biology, ecology and habitat use of <i>M. birostris</i> and <i>Mobula sp.</i> throughout the Wider Caribbean Region, including fisheries data, nursery areas, aggregation sites and other critical areas;	High
Establish telemetry studies targeting <i>M. birostris</i> and putative Atlantic manta ray <i>Mobula sp.</i> and facilitating an open access data sharing repository;	Medium
Encourage research to better understand the interactions between the species and human activities (like entanglement and boat strikes);	Medium

Implement international commitment	
Recommendation	Priority
Work with SPAW Parties to improve implementation of obligations under the Protocol with regard to giant manta rays	High
Facilitate recovery of giant manta rays through enhanced engagement in the Convention on Migratory Species (CMS) and the CMS Sharks Memorandum of Understanding (MOU).	Medium
Ensure that SPAW Parties participate in the WECAFC/CITES/OSPESCA/CRFM/CFMC Working Group on Shark Conservation and Management;	Medium

Minimize fisheries interactions and protect habitat	
Recommendation	Priority
Encourage the use of existing MPAs with emphasis on the implementation of SPAW protected areas to protect the species, identify hotspots, and collaborate and develop partnerships and strategic planning among Parties	High
Collect and report available bycatch and discard data for manta rays at the lowest possible taxonomic level, ideally species level	High
Support the compliance and enforcement ICCAT's retention ban (if applicable)	High
Evaluate the potential utility and efficacy of time-area closures and/or protected areas in locations shown to have higher occurrences of giant manta rays and high fishing efforts (i.e., overlap between distribution and fishing activity) in order to reduce interactions with the species in artisanal/small-scale and commercial fisheries	High
Advocate for stock assessment with regional fisheries bodies of giant manta ray populations	Medium

Minimize fisheries interactions and protect habitat	
Recommendation	Priority
Conduct regional workshops with pertinent high-level government officials in priority areas about potential ways to minimize bycatch of giant manta rays	Medium
Launch pilot community-based fisheries management projects in identified priority fisheries sites/communities	Medium
Promote observer coverage and electronic monitoring for vessels operation in area	Medium
For artisanal fishing vessels that cannot support observers, encourage the deployment of alternative scientific monitoring that will collect data equivalent to the observer approach in a manner that ensures comparable coverage	Medium
Promote research incentives for alternative livelihoods	Medium

Build capacity and awareness	
Recommendation	Priority
Disseminate mobulid species and gill plate identification support material to government authorities and enforcement personnel;	Medium
Ensure transparency and inclusiveness through the participation of relevant stakeholders in manta conservation and fisheries management decisions;	Medium

46.3. Hammerhead Sharks (*Sphyrna lewini*, *Sphyrna zygaena*, *Sphyrna mokarran*)

47. 3.1. Summary of current status and gaps

48. Three species of hammerhead sharks — the [great hammerhead](#) (*Sphyrna mokarran*) critically endangered (CR), scalloped hammerhead (*Sphyrna lewini*) critically endangered (CR), and [smooth hammerhead](#) (*Sphyrna zygaena*) vulnerable (VU) (Tavares, *et al.*, 2024) — are currently listed on Annex III of the SPAW [Protocol](#). These large hammerhead sharks are similar in appearance, with the great hammerhead being the largest, reaching about 450 cm (Last and Stevens 2009). Due to their resemblance, they are often not differentiated in fisheries data.
49. All three species mature late; for example, the age at maturity for smooth hammerheads is estimated to be 9 years (Rosa *et al.*, 2017). Late maturity combined with low reproductive rates make the *Sphyrna* species particularly vulnerable to overexploitation (John D. Reynold *et al.* 2005).
50. These shark species use coastal and semi-oceanic waters throughout their life stages, with the smooth hammerhead being the most oceanic (Clarke *et al.* 2015). Juveniles tend to be found in the coastal zones and expand their range as they grow (Diemer *et al.*, 2011; Pikitch *et al.* 2005). This pattern of habitat use puts the species in contact with inshore artisanal, as well as offshore industrial fisheries throughout their lives.
51. Little information is available on the regional abundance of great hammerhead sharks in the Wider Caribbean Region. Many catch records do not differentiate between the *Sphyrna* species or shark species in general. All three species are captured in target fisheries and as bycatch, using various fishing gears such as longlines, gillnets, and trawls (Dudley and Simpfendorfer 2006, Zeeberg *et al.* 2006, Kolmann *et al.* 2017). The *Sphyrna* species are very vulnerable to stress and have high post-release mortality if incidentally captured (Gallagher *et al.* 2014).
52. All species of hammerheads have valuable fins, with those of the great hammerhead being in particular desirable due to their large size (Abercrombie *et al.*, 2005; Rose 1996). High prices for fins on the international markets significantly increase the risk of unsustainable fishing practices.

53. 3.2 Highest priority recommendations

To build capacity, awareness and improve information on sharks and rays listed on Annexes II and III, Parties are encouraged to:

- Train fishers on safe release methods for whale sharks, Giant manta ray, Hammerhead Sharks;
- Host capacity building workshops to share knowledge of low-cost, effective data collection methods (such as telemetry, photo ID) to identify key habitats and migration routes;
- Collect catch data (animals retained, discarded dead, and/or released alive);
- Report data to relevant fishing organizations such as ICCAT and WECAFC;
- Collaborate regionally to share data and harmonize data collection protocols;
- Promote stakeholder engagement in gathering historical data and conducting field surveys.
- Develop communication tools to raise awareness on those species conservation (social media campaigns; video tools for effective storytelling).

To meet obligations for Annex III listed Hammerhead sharks species, Parties are encouraged to:

- Regulate fishing through catch limits, closed seasons and/or closed areas based on scientific advice and the precautionary approach;
- Publish CITES Non-detriment findings;
- Minimize waste and enhance species-specific data collection by requiring all sharks be landed with fins naturally attached;
- Prohibit international trade/or retention (for ICCAT Parties).

Parties are encouraged to integrate this work with related activities aimed at implementing shark and ray commitments under other agreements, particularly, WECAFC, ICCAT, CMS and the CMS Sharks MOU, and to consider bilateral agreements to protect shared populations.

Parties are also encouraged to report to SPAW Secretariat with assessments of their management and conservation measures. If substantial progress has not been made, the STAC should ask the species working group to propose additional recommendations to address implementation issues.

54. 3.3. Conservation and management recommendations for Contracting Parties

Improve knowledge for evidence-based decision-making	
Recommendation	Priority
Require, collect and report fisheries data, particularly catches (to the species level whenever possible) – See WECAFC Data Collection Reference Framework for details.	High
Conduct research to identify key habitats such as: nursery areas and migration routes.	Medium
Develop bycatch reduction programs including experimentation and best practice mandates.	Medium

Implement international commitment	
Recommendation	Priority
Amend existing SPAW protected areas to include fishing closures for hammerhead sharks. Collaborate with other SPAW Parties to develop a network of protected areas to protect shared populations.	High
Adopt measures to combat illegal, unreported, and unregulated (IUU) fishing.	High
Participate in the WECAFC/CITES/OSPESCA/CRFM/CFMC Working Group on Shark Conservation and Management.	Medium
Conduct regional workshops to share best practices for enforcement and prosecution of fisheries infractions.	Low

Improve fisheries management and habitat protection	
Recommendation	Priority
Require all sharks to be landed with fins attached	High
Collaborate with fishers to identify pupping grounds and other important habitat areas	High

Improve fisheries management and habitat protection	
Recommendation	Priority
Limit hammerhead retention based on scientific advice, precautionary approach, and international obligations under SPAW, ICCAT, CITES and CMS, as appropriate.	High
Limit and reduce the use of fishing gears associated with high bycatch of hammerhead sharks (e.g., gill nets).	High
Establish and enforce area closures that prohibit fisheries with hammerhead take and/or protect habitats (aggregation grounds, migration routes) from multiple threats (fishing and other extractive activities, as well as development and pollution).	Medium

Build capacity and awareness	
Recommendation	Priority
Disseminate hammerhead identification guides support material to fishers, government authorities, and enforcement personnel.	High
Develop education and outreach programs specific to the conservation and regulatory status of hammerhead sharks.	Medium
Ensure transparency and inclusiveness through the participation of relevant Provide stakeholders with opportunities to participate in the fisheries decisions.	Medium

Bibliography

Abercrombie, D.L., Clarke, S.C., & Shivji, M.S. (2005). Global-scale genetic identification of hammerhead sharks: application to the assessment of the international fin trade and law enforcement. *Conservation genetics*, 6, 775–788.

Arocha, F.D., Narvaez, M. & Mendoza, J. 2023. Review of biological data, spatial distribution of the stocks and ecological connectivity between areas beyond national jurisdiction and exclusive economic zones in the Western Central Atlantic Fishery Commission region. Rome, FAO. Web Address: <http://www.fao.org/3/ca9136en/ca9136en.pdf>

Braun, Raquel & Wester, Julia & Macdonald, Catherine & Pate, Jessica. (2024). Perceptions regarding the recreational cobia fishery in relation to manta ray conservation. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 34. 10.1002/aqc.4147.

Clarke, S., Coelho, R., Francis, M., Kai, M., Kohin, S., Liu, K., Smart, J. (2015). WCPFC Report of Pacific Shark Life History Expert Panel Workshop, April 2015. WCPFC 11th SC.

Co-Proposal of the Kingdom of the Netherlands and the Republic of France for listing on SPAW Protocol Annex II three species of Hammerhead Sharks (Genus *Sphyrna*) - UNEP(DEPI)/CAR WG 43/INF 20

Co-Proposal of the Kingdom of the Netherlands and the Republic of France for listing Giant Manta ray (*Mobula birostris*) on SPAW Protocol Annex II - UNEP(DEPI)/CAR WG.43/INF.23

Diemer, K. M., Mann, B. Q., & Hussey, N. E. (2011). Distribution and movement of scalloped hammerhead *Sphyrna lewini* and smooth hammerhead *Sphyrna zygaena* sharks along the east coast of Southern Africa. *African Journal of Marine Science*, 33: 229–238.

Dudley, S., & Simpfendorfer, C. (2006). Population status of 14 shark species caught in the protective gillnets off KwaZulu-Natal beaches, South Africa, 1978-2003. *Marine and Freshwater Research* 57: 225-240.

Effective management of sharks and rays species listed in Annex III-STAC9- UNEP(DEPI)/CAR WG.42/INF.24 (STAC9)

Ehemann, Nicolás & Rodriguez Acosta, Edilia & Tagliafico, Alejandro & Pelletier, Nicole & Stevens, Guy. (2022). Manta and devil ray species occurrence and distribution in Venezuela, assessed through fishery landings and citizen science data. *Journal of Fish Biology*. 101. 213-225. 10.1111/jfb.15088.

Fernando D, Stewart JD (2021) High bycatch rates of manta and devil rays in the "small-scale" artisanal fisheries of Sri Lanka. *PeerJ* 9. <https://doi.org/10.7717/PEERJ.11994>

Fordham, S.V., Hood, A.R., Arnold, S.J., Kachelriess, D., and Lawson, J.M. 2023. [Bridging the Gaps that Hinder Shark Conservation](#): An analysis of ICCAT Parties' policies for CITES-listed Atlantic elasmobranchs. The Shark League. London.

Gallagher, A. J., Hammerschlag, N., Shiffman, D. S., & Giery, S. T. (2014). Evolved for extinction: the cost and conservation implications of specialization in hammerhead sharks. *BioScience* 64, 619–624.

Kolmann, M.A., Elbassiouny, A.A., Liverpool, E.A., & Lovejoy, N.R. (2017). DNA barcoding reveals the diversity of sharks in Guyana coastal markets. *Neotrop. Ichthyol.* 15(4), e170097.

Last, P. R., & Stevens, J. D. (2009). *Sharks and Rays of Australia*. CSIRO, Australia. 2nd Edition.

Lewis, S. A., Setiasih, N., Fahmi, Dharmadi, D., O'Malley, M. P., Campbell, S. J., Yusuf, M., & Sianipar, A. B. (2015). Assessing Indonesian manta and devil ray populations through historical landings and fishing community interviews. <https://doi.org/10.7287/PEERJ.PREPRINTS.1334V1>

ØBridging the Gaps that Hinder Shark Conservation, An analysis of ICCAT Parties' policies for CITES-listed Atlantic elasmobranchs (shark league)

Palacios M.D., Stewart J.D., Croll D.A., et al (2023) Manta and devil ray aggregations: conservation challenges and developments in the field. *Frontiers in Marine Science* 10

Palacios, M.D., Wieand L., Laglbauer B.J., Cronin M.R., Fowler S., Jabado R.W., Ko Gyi T., Fernando D., De Bruyne G., Shea, S.K.H., Hilton, P., Gao Y., Stevens. G.M. W. (2024) Global assessment of manta and devil ray gill plate and meat trade: conservation implications and opportunities. *Environmental Biology of Fishes*

Pez-Angarita, Juliana & Villate, Melany & Diaz, Juan & Cubillos, Juan Camilo & Tilley, Alexander. (2021). Identifying nearshore nursery habitats for sharks in the Eastern Tropical Pacific from fisheries landings and interviews. 10.1101/2021.02.03.429561

Pikitch, E. K., Chapman, D. D., Babcock, E. A., & Shivji, M. S. (2005). Habitat use and demographic population structure of elasmobranchs at a Caribbean atoll (Glover's Reef, Belize). *Mar Ecol Prog Ser*, 302: 187–197.

Proposal for the uplisting of the great hammerhead shark *Sphyrna mokarran* from Annex III to Annex II of the Protocol concerning Specially Protected Areas and Wildlife (SPA Protocol), UNEP(DEPI)/CAR WG.42/INF.24 Add.4

Proposal for the uplisting of the smooth hammerhead shark *Sphyrna zygaena* from Annex III to Annex II of the Protocol concerning Specially Protected Areas and Wildlife (SPA Protocol), UNEP(DEPI)/CAR WG.42/INF.24 Add.5

Proposal by the Republic of France and the Kingdom of Netherlands for the uplisting of the whale shark *Rhincodon typus* from annex iii to annex II of the spaw protocol- UNEP(DEPI)/CAR WG 43/INF 19

Regional Plan of Action for the Conservation and Management of Sharks, Rays and Chimaeras in the WECAFC area (WECAFC)

Reynolds, D. John, Nicholas K. Dulvy, Nicholas B. Goodwin, & Jeffrey A. Hutchings, (2005). Biology of extinction risk in marine fishes, *Proc R Soc B* 272: 2337-2344.

Rosa, D., Coelho, R., Fernandez-Carvalho, & J., Santos, M.N. (2017). Age and growth of the smooth hammerhead, *Sphyrna zygaena*, in the Atlantic Ocean: comparison with other hammerhead species. *Marine Biology Research*, 13: 300–313.

Rose, D. A. (1996). Shark fisheries and trade in the Americas, Volume 1: North America. TRAFFIC, Cambridge, U.K.

Sánchez, L., Briceño, Y., Tavares, R. 2020. Decline of whale shark deaths documented by citizen scientist network along the Venezuelan Caribbean coast. *Orix*, 54(5): 601

Stevens, G. M. W, Barros, N., Laglbauer B.J., Dando M., Fernando, D & Norbartolo di Sciara G. (2024) Field Guide to the Manta and Devil Rays of the World. Wild Nature Press (pp. 1-100)

Stewart, J.D., Beale, C.S., Fernando, D., Sianipar, A.B., Burton, R.S., Semmens, B.X. and Aburto-Oropeza, O. 2016. Spatial ecology and conservation of *Manta birostris* in the Indo-Pacific. *Biological Conservation* 200: 178–183

Stewart, J. D., Cronin, M., R., Largacha, E., Lezama-Ochoa, N., Lopez J., Hall, M., Hutchinson, M., Jones, E.G., Francis, M., Grande, M., Murua, J., Vanessa Rojo, V., and Jorgensen, J. M. (2024). Get them off the deck: Straightforward interventions increase post-release survival rates of manta and devil rays in tuna purse seine fisheries. *Biological Conservation*, volume 299, 110794.

Tavares, R., L. E. Sánchez Criollo and F. Arocha (2024) Venezuela. Pages 567-585 In: R. W. Jabado, A. Z. A. Morata, R. H. Bennett, B. Finucci, J. R. Ellis, S. L. Fowler, M. I. Grant, A. P. Barbosa Martins and S. L. Sinclair, editors. The global status of sharks, rays, and chimaeras. IUCN, Gland, Switzerland.

White, E. R., Myers, M. C., Flemming, J. M., & Baum, J. K. (2015). Shifting elasmobranch community assemblage at Cocos Island-an isolated marine protected area. *Conservation Biology*, 00(0), 1–12. doi:10.1111/cobi.12478

Zeeberg, J.J., Corten, A., & de Graaf, E. (2006). Bycatch and release of pelagic megafauna in industrial trawler fisheries off Northwest Africa. *Fisheries Research*, 78: 186–19.