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Tenth 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

Virtual, 30 January – 1 February 2023

**CO-PROPOSAL OF THE KINGDOM OF THE NETHERLANDS AND THE
REPUBLIC OF FRANCE FOR LISTING THE GIANT MANTA RAY
(*MOBULA BIROSTRIS*) ON ANNEX II OF THE SPAW PROTOCOL**

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

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1. Overview

1. This nomination concerns an Annex II listing of the giant manta ray (*Mobula birostris*). The species division between the giant manta ray and reef manta ray (*Mobula alfredi*) was only agreed in 2009, furthermore a new species (Caribbean manta ray (*Mobula cf. birostris*)) will most likely be officially described in the coming year. Since the classification of giant manta ray and reef manta ray as separate species is relatively recent, by default, all information on manta rays from before 2009 is aggregated. Furthermore, it is in general not very well known outside of scientific circles that different species of manta rays exist, therefore sightings and fisheries data tends to be collectively of *Manta* spp. The similar overall appearance leads to confusion in identifying catch and sightings at species level.
2. The Manta Rays are the largest genus of rays with an extremely slow life history. Age at first maturation is estimated at 12 years old and the giant manta ray appears only to have 4 to 7 pups over its entire lifespan. This gives them one of the lowest maximum rates of population increase of all elasmobranchs. The slow life cycle and low reproduction renders manta rays vulnerable to depletion, even if they are only caught as bycatch and not targeted in fisheries in the Wider Caribbean region. Moreover, despite evidence for long migrations, regional populations appear to be small, sparsely distributed, and fragmented.
3. Both species of Manta Ray (Giant Manta Ray and Reef Manta Ray) have recently been reassessed for the IUCN Red List in 2019 and based on the most recent information on population decline the giant manta ray is now classed as endangered. Giant Manta rays are listed on Appendix I and II of the Convention on Migratory Species (CMS), and both the Giant Manta ray and Reef Manta ray are listed in Appendix II of the Convention on International Trade of Endangered Species (CITES). Listing of the Giant Manta ray in Annex 2 of SPAW would thus be consistent with international agreements and would be compliant with criteria 4 (IUCN), 5 (CITES) and 6 (regional cooperation).

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| <p>4. <i>In summary, listing of the Giant Manta Ray under SPAW Annex 2 (II) would be justified based on the criteria 1 (decline in population), 2 (precautionary approach) 4 (IUCN red list status), 5 (CITES and CMS listing) and 6 (the importance of regional cooperation to protect the species).</i></p> |
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2. Species information

2.1 Scientific and common names of the species

5. 1.1 Class: Chondrichthyes (Subclass: Elasmobranchii)
6. 1.2 Order: Rajiformes
7. 1.3 Family: Mobulidae
8. 1.4 Genus and species: Genus *Mobulae*, species *M. birostris* .
9. 1.5a. Scientific synonyms: *Manta hamiltoni* (Hamilton & Newman 1849); *Raja birostris* (Donndorff, 1798)
10. 1.6 Common names:
 - English: Oceanic Manta Ray, Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray
 - Spanish: Manta Comuda, Manta Diablo, Manta Gigante, Manta Raya, Manta Voladora.
 - French : Diable de mer, raie manta, raie manta géante

2.2 Estimated population of species and its geographic ranges

11. The Giant Manta Ray *M. birostris* occurs in tropical, sub-tropical and temperate waters of the Atlantic, Pacific and Indian Ocean.
12. The reef Manta *M. alfredi* is found in tropical and subtropical waters of the Pacific and Indian Ocean (Marshall et al., 2009; Kashiwagi et al., 2011; Couturier et al., 2012). A probable new species *Manta cf birostris* appears to be a regional endemic with a reported distribution throughout the Gulf of Mexico, the Caribbean, and along the eastern coast of the United States (Hinojosa-Alvarez 2016; Pate & Marshal 2020). This putative species "Caribbean Manta Ray" appears to occupy a similar niche to the Reef Manta Ray and although it occurs allopatric with Giant manta rays in some areas they do not seem to mix. It is suspected that this new species deviated from the original manta stock through a similar allopatric speciation process as *M. alfredi*.
13. The Giant Manta Ray is the largest living marine ray species attaining a maximum size of 700 cm disc width (DW) with males maturing at 350–400 cm DW and females at 380–500 cm DW (White et al. 2006). *M. birostris* are viviparous and are known to only give birth to one pup at a time (Uchida et al. 2008). Female age-at-maturity is estimated as 8.6 years of

age but first pregnancy can be delayed depending upon food availability (Rambahinarison et al. 2018) with an estimated time of 4 to 5 years between births. These factors combined make that Giant Manta Rays are estimated to only have 4 to 7 pups during their lifespan, one of the lowest rates of population increase in the elasmobranch family, making them extremely vulnerable to overexploitation.

14. In the IUCN assessment of 2020 Marshall et.al note that there are no global estimates of the overall Giant Manta Ray population size, however, the population sizes at known aggregation sites appear to be small (less than 1,000 individuals) with minimum estimates based on photo-identification ranging from 42 to 500 individuals with over almost a decade of monitoring in most locations sampled.
15. *M. birostris* are thought to be seasonal visitors along productive coastlines with regular upwelling, in oceanic island groups, and near offshore pinnacles and seamounts. They visit cleaning stations on shallow reefs, are sighted feeding at the surface inshore and offshore, and are also occasionally observed in sandy bottom areas and seagrass beds (Marshall et al., 2011). Although giant manta rays are considered more oceanic and solitary than reef manta, they have been observed congregating at cleaning sites at offshore reefs and feeding in shallow waters during the day (O'Shea et al. 2010; Marshall et al. 2011).
16. *M. alfredi* is commonly sighted inshore but is also observed around offshore coral reefs, rocky reefs, and seamounts. This species is often resident in or along productive near-shore environments, such as island groups, atolls, or continental coastlines, and may also be associated with areas or events of high primary productivity (e.g., upwelling) (Homma et al., 1999; Dewar et al., 2008; Kitchen-Wheeler, 2010; Anderson et al., 2011; Deakos et al., 2011; Marshall et al., 2019). *Manta cf birostris* exhibits similar habitat preferences to *M. alfredi*.
17. The Giant Manta Ray is a migratory species, A global investigation of major aggregation sites revealed that the Giant Manta Ray may be a more oceanic and a more migratory species than the Reef Manta Ray (A. Marshall et al. 2020). Rare or seasonal sightings of the Giant Manta Ray at locations such as northern New Zealand (Duffy and Abbott, 2003), southern Brazil (Luiz et al., 2009) and Uruguay (Milessi and Oddone, 2003), the Azores Islands, the Similan Islands, Thailand (Marshall et.al 2019) and the eastern coast of the United States (Bigelow and Schroeder, 1953), suggests that this species undergoes significant seasonal migrations. Giant Manta Ray are known to aggregate; within the Wider Caribbean region aggregations occur in the Gulf of Mexico, of the coast of Surinam and French Guiana and of the coast of Brazil. Overall, aggregation sites are widely separated and the lack of genetic sub-structuring indicates occasional large-scale movements have occurred. Despite this data, preliminary satellite tracking studies and international photo-

identification matching projects have suggested a high degree of fragmentation between regional populations of this species, suggesting that movements across ocean basins may be rare. Satellite tracking results have been able to reveal that the Giant Manta Ray is capable of large migrations (over 1,100 km straight line distance) and have monitored individual movements across international borders, across large bodies of water, and into international waters (Marshall et al., 2020). This species is capable of deep dives and has been both seen at depth and tracked down to depths exceeding 1,000 meters (Marshall et al. 2011).

18. Lawson et al. (2016) made shows the Extent of Occurrence (EOO) and Area of Occupancy (AOO) of *M. birostris* based on current knowledge of the species' distribution.



Figure 1: Extent of Occurrence (EOO) & Area of Occupancy (AOO) of *M. birostris* (Lawson et al. 2016)

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19. The EOO is defined as: “the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon” and the AOO is defined as “the area within its 'extent of occurrence' that is occupied by a taxon for each country. The AOO measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may, for example, contain unsuitable habitats or be beyond the maximum depth distribution.”

[2.3 Ecological interactions with other species and specific habitat requirements](#)

20. Manta rays are filter feeders that primarily feed on planktonic organisms such as euphausiids, copepods, mysids, decapod larvae and shrimp, but some studies have noted their consumption of small and moderate-sized fishes as well. Where it was previously thought that they mainly feed at the surface during daytime recent studies have show that they have a more complex foraging pattern where their main source of food is found in

deeper waters and they only use the near-surface food sources opportunistically (NOAA, 2017).

3. Threats to the species, its habitats and associated ecosystems

21. In 2020 the IUCN by Marshall et.al. re-assessed the red list status of both manta ray species (Giant Manta Ray and Reef Manta Ray). Giant Manta Ray was reviewed as one of the species displaying a strong decline especially in areas with heavy fishing pressure and was sored down from **vulnerable** to **endangered**. Rapid local declines have been noted in sightings records and landings where they are targeted or caught as bycatch; these range from 71 to 95% declines over 13- to 21-year periods (all less than one generation length of 29 years) (Marshall et al. 2020). It is suspected that the Giant Manta Ray has undergone a population reduction of 50–79% over the past three generation lengths (87 years) and a reduction in area of occupancy due to suspected local and regional extinctions. The assessors note that in areas where Giant Manta Ray are protected the sighting trends appear stable.
22. Manta rays are caught in both targeted fisheries and as bycatch worldwide. According to Lawson et al. (2016), manta ray catches have been recorded in at least 30 large and small-scale fisheries covering 25 countries, with the majority of catches concentrated in the Pacific and Indian Ocean. The majority of fisheries that target mobulids are artisanal (Croll et al. 2016), with mobulids traditionally targeted for their meat; however, since the 1990s, a market for mobulid gill rakers has significantly expanded, increasing the demand for manta ray products, particularly in China. The gill rakers of mobulids are used in Asian medicine and are thought to have healing properties, from curing chicken pox to cancer, with claims that they also boost the immune system, purify the body, enhance blood circulation, remedy throat and skin ailments, cure male kidney issues, and help with fertility problems. The use of gill rakers as a remedy, which was widespread in Southern China many years ago, has recently gained renewed popularity over the past decade as traders have increased efforts to market its healing and immune boosting properties directly to consumers. As a result, demand has significantly increased, incentivizing fishermen who once avoided capture of manta rays to directly target these species (Croll et al. 2016).
23. In January 2021 a review paper was published in *Nature* which analyses the trends in 16 pelagic shark and ray populations over the past 50 years. The authors found clear evidence of decline for all species studied which led them to conclude that the global abundance of oceanic sharks and rays has declined by 71%, the decline is directly linked to an increase in fishing pressure specifically an increase in long line and purse seine fisheries (Pacoureau et al. 2021).

24. Manta rays forage in nearshore habitats which puts them at of risk interacting with man-made pollutants and waste. For example, Essumang (2010) found platinum levels within *M. birostris* samples taken off the coast of Ghana that exceeded UK dietary intake recommendation levels. As filter feeders they are one of the few elasmobranch species that can be vulnerable to ingestion of plastic pollution, there are also instances known of manta rays getting entangled in lost gear and other marine debris floating at the surface.
25. Giant manta rays reproduce by histotrophy, a type of viviparous reproduction where females feed their embryo with lipid-rich histotroph (sometimes called uterine milk) (Alcock 1892; Amoroso 1960). Due to direct link between the mothers' nutrition and the "uterine milk" and the nourishment of the embryo, health of the mother can impact fetal development (Maluramo et al. 2020).
26. Diving or snorkeling with manta rays is a highly sought after attraction at known aggregation sites, and while this is of course far less detrimental to than the impact of fisheries poorly managed manta ray tourism can have negative impacts. NOAA 2017 reference a study by Osada (2010) that found that a popular manta dive spot in Kona, Hawaii, had fewer emergent zooplankton and less diversity compared to a less used dive spot, and attributed the difference to potential inadvertent habitat destruction by divers. Tour groups may also be engaging in inappropriate behavior, such as touching or chasing the mantas.

4. Status of legal protection (with reference to relevant national legislation or regulation)

4.1 International Legislation and Management

CITES

27. The Convention on International Trade in Endangered Species (CITES) is a trade treaty that regulates the international trade in threatened and endangered species. The whole genus *Manta* spp. was listed on Appendix II of CITES in 2013. This means that all transboundary trade has to be licensed, based on an analysis of the effects of the removal from the wild through a Non-Detriment Finding. For international trade an export permit or re-export is required which is to be issued by the Management Authority of the State of export or re-export. This export permit may be issued only if the specimen was legally obtained and if the export will not be detrimental to the survival of the species. (www.cites.org)

International Plan Of Action (IPOA) for Sharks

28. The IPOA-Sharks is a voluntary international instrument, developed within the framework of the 1995 FAO Code of Conduct for Responsible Fisheries, that guides nations in taking

positive action on the conservation and management of sharks and their long-term sustainable use. Its aim is to ensure the conservation and management of sharks and their long-term sustainable use, with emphasis on improving species-specific catch and landings data collection, and the monitoring and management of shark fisheries. The Code sets out principles and international standards of behavior for responsible fishing practices to enable effective conservation and management of living aquatic organisms while considering impacts on the ecosystem and biodiversity. The IPOA-Sharks recommends that FAO member states 'should adopt a national plan of action for the conservation and management of shark stocks (NPOA-Sharks), if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries'.

29. To date 10 countries in the SPAW region have a National Plan of Action for Sharks: Antigua & Barbuda, Belize, Brazil, Colombia, Costa Rica, Cuba, Mexico, Panama, Venezuela and The United States. As the French islands are part of the EU the EU's Community Plan of Action for the conservation of sharks applies here. In 2019 The Netherlands adopted an International Shark Strategy which has specific objectives for shark and ray conservation in the Caribbean.

CMS & CMS Sharks MoU

30. The Convention on Migratory Species (the full name is the Convention on the Conservation of Migratory Species of Wild Animals) is an environmental treaty under the aegis of the United Nations Environment Programme (UNEP). CMS brings together the States through which migratory animals pass, the Range States, and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range. SPAW Contracting Parties that are also parties to CMS are: Cuba, Dominican Republic, Republic of France, the Netherlands, Honduras, Panama, and Trinidad and Tobago.
31. The basis for management under CMS is formed by two types of lists (appendix I and II), Appendix I list endangered species that are directly threatened with extinction throughout all or a significant portion of their range. Appendix II includes migratory species with an unfavorable conservation status or those that would significantly benefit from international cooperation. Range States have to enter into auxiliary agreements with each other to protect these species.
32. *M. birsotris* was included on Appendix I of CMS in 2011, *M. alfredi* in 2014 which signifies that: "Parties that are a Range State shall endeavor to strictly protect them by: prohibiting the taking of such species, with very restricted scope for exceptions; conserving and where appropriate restoring their habitats; preventing, removing or mitigating obstacles to their migration and controlling other factors that might endanger them."

33. The Memorandum of Understanding on the conservation of migratory sharks (Sharks MoU) of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) is a legally non-binding instrument of the CMS and the first global instrument for the conservation of migratory shark species. The Sharks MoU entered into force on 1 March 2010 with the aim to sustainably manage and protect migratory shark species, in particular the species included in appendices I and II of the CMS. The MoU now has 39 signatories; these are 38 national governments including the US and the European Union. In 2016 Manta rays were listed on the annex of the MoU.

4.2 Regional Management

ICCAT

34. The International Convention for the Conservation of Atlantic Tuna (ICCAT) is the Regional Fisheries Management Organisation (RFMO) that manages international fisheries on tuna and tuna-like species for the Wider Caribbean Region (FAO fisheries area) this also includes (by)catches sharks. The following SPAW countries are members: members: U.S, Brazil, Venezuela, Republic of Guinea, UK (overseas territories), EU, Mexico, Belize, Trinidad and Tobago, Panama, Barbados, Guatemala, St. Vincent and the Grenadines, Curacao, Guyana, Suriname, Grenada and Honduras.
35. Since Manta rays are not a target species in the ICCAT area this RFMO has not adopted fisheries measures for manta rays. ICCAT does recommend good practice measures to reduce unintended bycatch mortality of incidental bycatch of threatened species like manta rays.

4.3 National Legislation

USA

36. In 2018 NOAA Fisheries announces a final rule to list the giant manta ray (*Manta birostris*) as threatened under the Endangered Species Act (ESA). Under the ESA, NOAA Fisheries is required to develop and implement recovery plans for the conservation and survival of listed species. NOAA Fisheries has developed a recovery outline to serve as an interim guidance document to direct recovery efforts. Manta rays are also protected (no harvest allowed) in the state legislation of Florida and Hawaii.

Bahamas

37. The Bahamas have had a longline fishing ban since 1993 and consequently there has been no commercial shark fishing activity. This longline ban has effectively made the whole archipelago of the Bahamas a shark “no-take” zone. In July 2011 the Bahamas went a step further and legally banned all shark fishing. That law firmly turns all 630,000 sq km of

Bahamian waters into a shark sanctuary. The fines for shark fishing were raised from 3000 to 5000 USD per incident.

Venezuela

38. Towards implementing its Plan de Acción Nacional (PAN) de conservación for sharks, in June 2012 Venezuela joined the rest of the Americas in outlawing the finning of sharks in its waters and established a 3,730 km² shark sanctuary surrounding the touristic archipelago of Los Roques.

EU

39. The EU has a strict prohibition on all catches of mobulid rays under the EU TAC & quota regulation (COM(2021) 661 final 2021/0345(NLE):
40. *Article 28 - Mobulid rays*
41. *1. Union fishing vessels shall not fish for, retain on board, tranship, land, store, offer for sale or sell any part or whole carcass of Mobulid rays (Mobulidae family, including the genera Manta and Mobula), except where the fish caught are consumed directly by the fishers' families ('subsistence fishery').*
42. *By way of derogation from the first subparagraph, Mobulid rays that are unintentionally caught through artisanal fishing, using purse seines, pole and line, gillnet fisheries, handline and trolling vessels registered in the IOTC record of authorised vessels, may be landed for purposes of local consumption.*
43. *2. All fishing vessels, other than those engaged in subsistence fishery, shall promptly release Mobulid rays alive and unharmed, to the extent practicable, as soon as they are seen in the net, on the hook or on the deck, in a manner that will result in the least possible harm to the specimens in question.*

Republic of France

44. *M. birostris* is totally protected in the European Union by EU Regulation No. 2018/120 of 23 January 2018, this includes all the French waters under the range of the SPAW Protocol.

Kingdom of the Netherlands

Caribbean Netherlands (Saba, St Eustatius and Bonaire)

45. These three islands are special municipalities of the Kingdom of The Netherlands but not part of the European Union. In 2019 the Dutch government adopted an International Shark Strategy. The strategy sets out how the government which protective and management actions for sharks and rays are to be taken in all seas and oceans where the Netherlands has influence (the North Sea, international waters and the Dutch Caribbean).

46. In Bonaire, all shark species are listed as protected species by means of Island Ordinance AB 2010, No. 15. All catches and landings are illegal.

Sint Maarten

47. St. Maarten issued a temporary moratorium on shark fishing in accordance with Art. 4 of the St. Maarten National Ordinance on Maritime Management (landsverordening Maritiem Beheer (PB 2007, No. 18) and Art. 5 of the National Fisheries Ordinance (Visserijlandsverordening (PB 1991, No. 74) which provides for temporary closures and moratoria. The shark fishing moratorium prohibits the take and landing of sharks and requires immediate release of incidentally caught sharks, under penalty of a maximum of 500,000 Antillean Guilders or 3 months in prison. This moratorium is currently under review.

Curacao

48. Curacao is in the process of adopting marine management and fisheries actions as part of their SDG14 strategy.

[4.4 MPAs and Shark Sanctuaries](#)

USA, Gulf of Mexico

49. In 2012 the Flower Garden Banks National Marine Sanctuary was established. Within the sanctuary regulations prohibit killing, injuring, attracting, touching, or disturbing rays or whale sharks, except for incidental catch by conventional hook and line gear.

Bahamas

50. The Bahamas created the first shark sanctuary in the Atlantic Ocean in 2011. Over 40 shark species reside in its 630,000 km² marine area. The Bahamian sanctuary was created by adding an amendment to the Fisheries Resources (Jurisdiction and Conservation) Act (Chapter 244) to prohibit commercial shark fishing along with the sale, importation and export of shark products.

Kingdom of the Netherlands

Caribbean Netherlands (Bonaire, Sint Eustatius and Saba)

51. In 2015, the Dutch government designated the Economic Exclusive Zones of Saba and Bonaire as the Yarari marine mammal and shark sanctuary, in 2017 the EEZ of St. Eustatius was added.

Curacao

52. Curacao has committed to protecting 30% of its waters by establishing nearshore protected areas and an offshore marine sanctuary. The protective regime for these is not developed yet.

Sint Maarten

53. Sharks are protected within the Man of War Shoal Marine Protected Area

Honduras

54. In June 2011 Honduras created the first shark sanctuary in America and declared all its marine waters in both the Pacific and Caribbean as a permanent shark sanctuary. This had been preceded in 2010 by a shark fishing moratorium and created the first shark sanctuary of the Americas amounting to about 240,000 km² of national waters, most of which lie along the 700 km-long Caribbean coast of the nation.

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Appendix: Criteria for SPAW listing

Criterion 1. Is the listing of the species warranted by the size of the population, evidence of decline, restrictions on its range of distribution, degree of population fragmentation, biology and behavior of the species, as well as other aspects of population dynamics, or other conditions clearly increasing the vulnerability of the species?

[If applicable] Criterion 2. Why is a precautionary approach necessary i.e., the lack of full scientific certainty about the exact status of the species is not to prevent the listing of the species on the appropriate annex?

Criterion 3. [In particular with respect to species proposed for Annex III], what are the levels and patterns of use and how successful are national management programs?

Criterion 4. Does the evaluation according to IUCN criteria, applied in a Caribbean context, i.e., the status of the population at the regional level, warrant listing of the species?

Criterion 5. Is the species subject to local or international trade, and is the international trade of the species regulated under CITES or other instruments?

Criterion 6. How important and useful are regional cooperative efforts for the protection and recovery of the species? [Include strengthening of existing cooperative efforts through global MEAs such as CMS]

Criterion 7. The species is not an endemic species [or there are specific reasons why cooperative action is important for its recovery].

Criterion 8. The species is not a sub-species.

Criterion 9. The status of the population at the regional level warrants listing, not only of a sub-population.

Criterion 10. Is the species essential to the maintenance of such fragile and vulnerable ecosystems/habitats, as mangrove ecosystems, seagrass beds and coral reefs and is the listing of the species felt to be an "appropriate measure to ensure the protection and recovery"?