MEMORANDUM OF UNDERSTANDING ON THE CONSERVATION OF MIGRATORY SHARKS

14 July 2023

COMMENTS FROM THE SHARKS MOU ADVISORY COMMITTEE ON SCC-SC6 AGENDA ITEMS RELEVANT TO SHARKS AND RAYS

(Prepared by the Advisory Committee of the Memorandum of Understanding on the Conservation of Migratory Sharks – Sharks MOU)

1. This document provides input from the Sharks-MOU Advisory Committee (AC) for eight of the Meeting documents submitted to the Sixth Meeting of the Sessional Committee of the Scientific Council (ScC-SC6) that have relevance to sharks and rays. The documents referred to in this document are:

   a) Bycatch (UNEP/CMS/COP14/Doc.27.1.1)
   b) Fish Aggregating Devices (UNEP/CMS/COP14/Doc.27.1.2)
   c) Effects of Marine Pollution on Migratory Species (UNEP/CMS/COP14/Doc.27.2.1)
   d) Vessel Strikes (UNEP/CMS/COP14/Doc.27.2.3)
   e) Seagrass Ecosystems (UNEP/CMS/COP14/Doc.27.4.3)
   f) Taxonomy and Nomenclature (UNEP/CMS/COP14/Doc.31.1)
   g) Proposal for a Concerted Action for the oceanic whitetip shark (*Carcharhinus longimanus*) already listed on Appendix I of the Convention (UNEP/CMS/COP14/Doc.32.3.6)
   h) Proposal for a Concerted Action for the blue shark (*Prionace glauca*) already listed on Appendix II of the Convention (UNEP/CMS/COP14/Doc.32.3.7)

Bycatch (UNEP/CMS/COP14/Doc.27.1.1)

2. Members of the AC worked with the Secretariat and the COP Appointed Councillors for Bycatch and Marine Fish to refine the scope of the study to encompass “fisheries-induced mortality” rather than using the term ‘bycatch’. The latter is an imprecise term and, given that some bycatch is landed, it would not be feasible to separate various data sets into ‘target’ and ‘bycatch’.

3. The AC would also reiterate that there is ‘no silver bullet’ for bycatch mitigation. The most effective bycatch mitigation needs to be established on a case-by-case basis and requires collaboration between fisheries scientists and relevant sectors of the fishing community (gear manufacturers, fishers etc.). The introduction of bycatch mitigation needs to consider impacts on other aquatic species and habitats, the fleets (catch

composition, profitability, expenses for new gears), potential changes to fisher and fleet behaviour and any potential subsequent ecosystem impacts.

Fish Aggregating Devices (UNEP/CMS/COP14/Doc.27.1.2)

4. Fish Aggregating Devices (FADs) are used extensively in certain fisheries, including some tuna fisheries. Some drifting FADs have sheets of netting, in which some sharks, including CMS-listed species, can become entangled (Filmalter et al., 2013). The AC would note that some relevant tuna RFMOs have already taken steps to move to non-entangling FADs (e.g., Moreno et al., 2018). For example, ICCAT Recommendation 22-01 (which was based on earlier Recommendations) indicates that

> "*CPCs shall*
> *(i) Ensure that all FADs deployed are non-entangling in line with the guidelines under Annex 5 of this Recommendation, in accordance with previous ICCAT Recommendations;*
> (ii) *Endeavour that as of January 2021 all FADs deployed are non-entangling, and constructed from biodegradable materials, including non-plastics, with the exception of materials used in the construction of FAD tracking buoys*".

5. The AC would indicate that the management of FADs in fisheries is largely under the auspices of the relevant Regional Fisheries Management Organisations (RFMOs), and some important fishing nations that are not Contracting Parties to CMS are members of the RFMOs. Hence, whilst further work on FADs is required, including monitoring and reporting, the AC would suggest that this is largely the competence of the relevant RFMOs and their expert groups, and that closer cooperation between CMS and the tuna RFMOs could usefully be developed.

Effects of Marine Pollution on Migratory Species (UNEP/CMS/COP14/Doc.27.2.1)

6. The AC recognises the potential impacts of contaminants (and other sources of marine pollution) on those sharks and rays listed on CMS. Given that many of the listed sharks and rays are long-lived species, various contaminants can bioaccumulate in their tissues. Several of the listed sharks are also at high trophic levels and can also biomagnify contaminants.

7. The AC would highlight that several published studies have reported relatively high levels of mercury in listed shark species (Nicolaus et al., 2016; Biton-Porsmoguer et al., 2018), including levels that exceed health guidelines for seafood consumption. There is, however, seemingly no standardised data collection to monitor longer-term trends in contamination of such species, and limited understanding of the potential effects of some of these contaminants on population-level processes (e.g., Gelsleichter et al., 2005).

Vessel Strikes (UNEP/CMS/COP14/Doc.27.2.3)

8. The AC acknowledges the impact, or potential impact, of vessel strikes on those larger-bodied sharks and rays that spend a relatively high proportion of their time in surface waters, including whale shark (Womersley et al., 2022), basking shark and mobulid rays.

9. Whilst some areas of high abundance of these species may be utilised on a regular basis, the AC also noted that some of the oceanographic features to which such fauna can associate may vary over time (inter-annually). The AC would also note that the effectiveness, practicalities and potential 'unintended consequences' of some of the recommended actions in Annex 2 require appropriate deliberation, on a regional basis. Some measures would be easier to adopt and enforce (e.g., reduce speed in core zones for whale shark). If whale shark core zones are designated as 'Areas To Be Avoided (ATBAs) under IMO' and this leads to displaced vessel activity, then are their unintended consequences? Would shipping companies be reluctant to share information on vessel strikes if there was the potential for those shipping lanes to be designated as ATBAs?

10. When identifying any areas for speed restrictions (or ATBAs), it may also be desirable to consider diel changes in the vertical distribution (e.g., whether the species are higher or lower in the water column during the day/night).

Seagrass Ecosystems (UNEP/CMS/COP14/Doc.27.4.3)

11. UNEP/CMS/COP14/Doc.27.4.3 states that "*Seagrass ecosystems are of critical* importance *for many migratory marine species, including dugongs, marine turtles and sharks*". The AC would clarify that several of the sharks and rays listed on CMS are pelagic and oceanic species, and seagrass habitats will have no, or very limited, direct influence on these species. Of the shark and ray species listed on CMS, the species known to occur in inshore waters and potentially utilise seagrass habitats include angelshark *Squatina squatina* (Ellis et al., 2020), sawfish (Pristidae; Poulakis and Seitz 2004; Wiley and Simpfendorfer, 2010; Papastamatiou et al., 2015) and other Rhinopristiformes (Moore 2017), and juvenile hammerheads, including great hammerhead *Sphyrna mokarran* (Roemer et al., 2016). Based on our current knowledge of the species, they don't appear to be obligate users of seagrass meadows. They may be using these habitats, or if found in proximity to seagrasses, this might be due to them predating on the teleost fish and invertebrates that may be more closely associated with seagrasses. The relative importance of seagrass habitats to sharks and rays, in comparison to other inshore habitats is unknown.

Taxonomy and Nomenclature (UNEP/CMS/COP14/Doc.31.1)

12. UNEP/CMS/COP14/Doc.27.4.3 summarised changes to taxonomic names, including changes to the manta rays (Mobulidae) and spiny dogfish (*Squalus acanthias* and *Squalus suckleyi*).

13. The taxonomy of the Mobulidae has changed, with all species now within the genus *Mobula* (*Manta alfredi* has become *Mobula alfredi,* and *Manta birostris* has become *Mobula birostris*), some species being synonymised (*Mobula japonica* being synonymised with *Mobula mobular,* and *Mobula rochebrunei* being synonymised with *Mobula hypostoma*) and reclassified (*Mobula eregoodootenkee* becoming *Mobula eregoodoo*). Noting the changing taxonomy (and that further updates could be made), discrepancies between various online sources, and that all species are listed on CMS, the AC notes that for those taxa with ongoing taxonomic revisions and uncertainties there could be benefits of management being established at the family level (Mobulidae).

14. Spiny dogfish *Squalus acanthias* and Pacific spiny dogfish *Squalus suckleyi* were synonymised as *Squalus acanthias* for much of the second part of the 20th Century. Pacific spiny dogfish was resurrected as a valid species name in 2010 (Ebert et al., 2010). The original proposal to list *Squalus acanthias* on CMS (COP9 II/11) included information for what was then perceived as a stock in the Western North Pacific, highlighting that "*The IUCN Red List categorises this stock as at least Endangered, noting that it may prove to be Critically Endangered once a full regional review can be undertaken*". Hence, this 'stock' (currently regarded as a distinct species) was a contributing factor at the time of listing and this should be reflected in Appendix II, as noted in UNEP/CMS/COP14/Doc.27.4.3.

15. The AC would also highlight that the most recent IUCN assessment for Pacific spiny dogfish is Least Concern (Bigman et al., 2016). Hence, interested Parties could consider the more recent information relating to 'conservation status' and, where deemed appropriate, potentially propose the species to be de-listed.

Proposal for a Concerted Action for the oceanic whitetip shark (*Carcharhinus longimanus*) already listed on Appendix I of the Convention (UNEP/CMS/COP14/Doc.32.3.6)

16. The main aim of this Concerted Action is that "*CMS Parties are requested to provide to the CMS Secretariat information on their domestic and regional management measures for the oceanic whitetip shark – clarifying how they meet the objectives of the CMS Appendix I listing*". The AC recognise the importance of this action but would raise a couple of points.

17. A range of sharks and rays are listed in Appendix I, as detailed below, and if CMS Parties are to provide information on their domestic measures, it may be usefully considered to review all the sharks and rays listed in Appendix I, namely:

- Whale shark *Rhincodon typus*
- White shark *Carcharodon carcharias*
- Basking shark *Cetorhinus maximus*
- Oceanic white-tip *Carcharhinus longimanus*
- Angelshark *Squatina squatina*
- Common guitarfish *Rhinobatos rhinobatos* (Mediterranean population)
- Sawfish (Pristidae)
- Manta and devil rays (Mobulidae)

18. In relation to Appendix I-listed fish that interact with fisheries, there should be a general recognition that such species may interact with commercial fisheries (under which prohibitions may be enacted, so that commercial fisheries cannot fish for, retain, tranship, land the species), but some of these species may also interact with, for example, recreational fisheries. Depending on the Party, some of the domestic prohibitions may only apply to commercial fisheries, and so there can be a rationale for some species to also have species-level protection, where relevant. The interactions between oceanic whitetip and recreational fisheries would be expected to vary regionally, depending on proximity of suitable habitat.

19. The AC would also note that the main tuna RFMOs in tropical and subtropical seas have Recommendations to prohibit the retention and landing of oceanic whitetip shark. The efficacy of such measures to facilitate population growth are predicated on the degree of mortality (at-vessel and post-release mortality), and fisher behaviour (in terms of how oceanic whitetips are released). Hence, improved data collection and reporting, including through observer programmes, are required, and such work could usefully be promoted through the relevant RFMOs or other relevant Regional Fisheries Bodies (RFBs).

Proposal for a Concerted Action for the blue shark (*Prionace glauca*) already listed on Appendix II of the Convention (UNEP/CMS/COP14/Doc.32.3.7)

20. The AC considered this to be a laudable proposal but would stress that much of the available data would be collected under the auspices of the main tuna RFMOs, with a wealth of experience in the relevant expert groups. Such groups could also likely facilitate the appropriate, coordinated collection of scientific samples. Consequently, appropriate engagement with fishery scientists working within RFMO expert groups should be strongly encouraged.

21. The proposal states that "*Although TACs have been adopted in ICCAT, these have not yet been* allocated *to fishing States in the form of quotas*", though the AC would note that this is not wholly correct, as some nations have allocated TACs, including various EU Member States and the UK.

22. The proposal states that "*This CA is of particular importance given that the Sharks MOU Signatories have not yet listed the blue shark in the Annex 1 of the MOU*". The Signatories of the Sharks MOU did not include blue shark on Annex 1, as it was indicated by the AC that blue shark did not meet the criterion for being in an 'unfavourable conservation status'.

23. Given that blue shark has important interactions with commercial fisheries, it may be more appropriate for any '*species management plan*', as suggested in UNEP/CMS/COP14/Doc.32.3.7, Annex, Activity 2, to be developed within the framework of a fishery management plan. Any management plan would benefit from the knowledge of those fishery scientists working within the network of RFMO expert groups.

References

Bigman, J.S., Ebert, D.A. and Goldman, K.J. (2016) *Squalus suckleyi*. The IUCN Red List of Threatened Species 2016: e.T195488A2382480. http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T195488A2382480.en

Biton-Porsmoguer, S., Bănaru, D., Boudouresque, C.F., Dekeyser, I., Bouchoucha, M., Marco-Miralles, F., Lebreton, B., Guillou, G. and Harmelin-Vivien, M. (2018) Mercury in blue shark (*Prionace glauca*) and shortfin mako (*Isurus oxyrinchus*) from north-eastern Atlantic: Implication for fishery management. *Marine Pollution Bulletin*, 127: 131–138.

Ebert, D.A., White, W.T., Goldman, K.J., Compagno, L.J., Daly-Engel, T.S., and Ward, R.D. (2010) Resurrection and redescription of *Squalus suckleyi* (Girard, 1854) from the North

Pacific, with comments on the *Squalus acanthias* subgroup (Squaliformes: Squalidae). Zootaxa, 2612: 22–40.

Ellis, J. R., Barker, J., McCully Phillips, S. R., Meyers, E. and Heupel, M. (2021) Angel sharks (Squatinidae): A review of biological knowledge and exploitation. *Journal of Fish Biology*, 98: 592–621.

Filmalter, J.D., Capello, M., Deneubourg, J.L., Cowley, P.D. and Dagorn, L. (2013) Looking behind the curtain: quantifying massive shark mortality in fish aggregating devices. *Frontiers in Ecology and the Environment*, 11: 291–296.

Gelsleichter, J., Manire, C.A., Szabo, N.J., Cortés, E., Carlson, J. and Lombardi-Carlson, L. (2005) Organochlorine concentrations in bonnethead sharks (*Sphyrna tiburo*) from four Florida estuaries. *Archives of Environmental Contamination and Toxicology*, 48: 474–483.

Moore, A.B. (2017) Are guitarfishes the next sawfishes? Extinction risk and an urgent call for conservation action. *Endangered Species Research*, 34: 75–88.

Moreno, G., Murua, J. and Restrepo, V. (2018) The use of non-entangling FADs to reduce ghost fishing. In 3rd Meeting of the FAD Management Options Intersessional Working Group. Majuro, Republic of the Marshall Islands.

Nicolaus, E.E.M., Bendall, V.A., Bolam, T.P.C., Maes, T. and Ellis, J.R. (2016) Concentrations of mercury and other trace elements in porbeagle shark *Lamna nasus*. *Marine Pollution Bulletin*, 112: 399–405.

Papastamatiou, Y.P., Grubbs, R.D., Imhoff, J.L., Gulak, S.J., Carlson, J.K. and Burgess, G.H. (2015) A subtropical embayment serves as essential habitat for sub-adults and adults of the critically endangered smalltooth sawfish. *Global Ecology and Conservation*, 3: 764–775.

Poulakis, G.R. and Seitz, J.C. (2004) Recent occurrence of the smalltooth sawfish, *Pristis pectinata* (Elasmobranchiomorphi: Pristidae), in Florida Bay and the Florida Keys, with comments on sawfish ecology. *Florida Scientist*, 67: 27–35.

Roemer, R.P., Gallagher, A.J. and Hammerschlag, N. (2016) Shallow water tidal flat use and associated specialized foraging behavior of the great hammerhead shark (*Sphyrna mokarran*). *Marine and Freshwater Behaviour and Physiology*, 49: 235–249.

Wiley, T.R. and Simpfendorfer, C.A. (2010) Using public encounter data to direct recovery efforts for the endangered smalltooth sawfish *Pristis pectinata*. *Endangered Species Research*, 12: 179–191.

Womersley, F.C., Humphries, N.E., Queiroz, N., Vedor, M., da Costa, I., Furtado, M. et al. (2022) Global collision-risk hotspots of marine traffic and the world's largest fish, the whale shark. *Proceedings of the National Academy of Sciences*, 119 (20), p.e2117440119.