

4th Meeting of the Sessional Committee of the CMS Scientific Council (ScC-SC4)

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AQUATIC WILD MEAT

(Prepared by the Scientific Council and its Aquatic Wild Meat Working Group)

Summary:

This document reports on progress in implementation of Decision 12.45 by the Scientific Council, and Decision 12.46 by the Aquatic Wild Meat Working Group of the Scientific Council.

It is accompanied by two annexes:

- Annex 1. Harvest of CMS Appendix I-Listed Sharks and Rays as Aquatic Wild Meat.
- Annex 2. Determining the Extent of Interplay between Bycatch and Aquatic Wild Meat Harvests.

AQUATIC WILD MEAT

Background

1. At its 12th meeting (COP12, Manila, 2017), the Conference of the Parties adopted three Decisions on Aquatic Wild Meat. Decision 12.44 was directed to the Secretariat and is reported in UNEP/CMS/COP13/Doc.26.2.4. Decision 12.45 was directed to the Scientific Council and Decision 12.46 was directed to the Aquatic Wild Meat Working Group of the Scientific Council, as follows:

12.45 Directed to the Scientific Council

The Scientific Council should:

- a) *Invite participation of Councillors and external experts, including from across the CMS Family, into the thematic Working Group dealing with aquatic wild meat, to ensure that all affected CMS-listed species are considered;*
- b) *Report on the activities of the Working Group to each meeting of the Conference of the Parties.*

12.46 Directed to the Aquatic Wild Meat Working Group

The Aquatic Wild Meat Working Group should undertake the following tasks:

- a) *Establish an online repository of papers and other information (knowledge base) on aquatic wild meat to support CMS Parties to reach Targets 2, 5, 6, 11, 13 and 14 of the CMS Strategic Plan for Migratory Species 2015-2023;*
- b) *Serve as an expert resource that CMS Parties, the Scientific Council and the Secretariat can avail themselves of, if they wish to contribute to the bushmeat/wild meat discussions within the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological Diversity (CBD), the International Whaling Commission (IWC) and the CPW, or when international coordination and cooperation is required;*
- c) *Collect and present information about seabird harvests, for consideration by Parties at the 13th Meeting of the Conference of the Parties to CMS;*
- d) *Facilitate a discussion about the possibility of adding CMS Appendix I-listed sharks and rays to the scope of the Working Group, and form a recommendation for consideration by the Scientific Council;*
- e) *Share information with IWC and, subject to funding availability, participate in future Small Cetacean Sub-committee meetings with a focus on aquatic wild meat;*
- f) *Assist the Secretariat in preparing contributions to the development of the Abidjan Convention Action Plan to Combat Trade, Direct Consumption, Illegal Logging, and Other Uses of Endangered, Threatened or Protected Coastal and Marine Species;*
- g) *Develop an action plan for supporting Range State Parties, to reduce the impact of aquatic wild meat harvests, for consideration by the Scientific Council; and*
- h) *Report on its activities to each meeting of the Scientific Council.*

Implementation of Decision 12.45

2. All Scientific Councillors were invited to join the newly formed Aquatic Wild Meat Working Group in early 2018, and a list of external experts were also approached over the same period. The Working Group currently has a dynamic and participatory group of 33 Councillors and expert members covering all the relevant taxa and many of the important regions. A current list of member names, expertise and regions is maintained in the Working Group online workspace. [<https://workspace.cms.int/node/655>] Additional regional experts are still being sought for Asia, the Pacific Islands, and Latin America.
3. Reporting on Working Group activities (Decision 12.45b) will be completed through document UNEP/CMS/COP13/26.2.4.

Implementation of Decision 12.46

4. The Working Group has coordinated a discussion paper about adding CMS Appendix I-listed sharks and ray species to the scope of the Working Group (Decision 12.46 (d)) and a thorough discussion process was undertaken through the online workspace and directly with additional experts through email. This discussion paper, *Harvest of CMS Appendix I-Listed Sharks and Rays as Aquatic Wild Meat* (Annex 1) recommends:
 - a) the incorporation of all Appendix I-listed sharks and ray species into the scope of the Working Group; and
 - b) to instruct the Working Group to develop a criterion for considering whether some Appendix II-listed sharks and rays are within the scope of the Working Group.
5. Members of the Aquatic Wild Meat Working Group have raised the need to better understand the interplay between bycatch and aquatic wild meat harvest (Decision 12.46b). A discussion paper, *Determining the Extent of Interplay Between Bycatch and Aquatic Wild Meat Harvests* (Annex 2), was commissioned under the joint direction of the Aquatic Wild Meat and Bycatch Working Groups which then coordinated a discussion process through the online workspace. Both Working Groups recommend that further analysis is needed of the extent of bycatch transitioning to aquatic wild meat harvest for the Scientific Council to provide clear recommendations to CMS Parties for CMS COP14.
6. A Working Group contribution was submitted to the CBD *Survey on Sustainable Wildlife Management* (Decision 12.46b). The submitted information highlighted the importance for the definition and understanding of wild meat to be broadened to include aquatic (especially marine) species. The harvest of these species has risen dramatically in the past decade, corresponding with coastal fisheries resources rapidly declining. As with terrestrial wild meat, there are serious health risks from butchering and consuming some of these species. The submission also commented on the pressures driving increased harvesting of aquatic wild meat, including overfishing by distant water fleets, land grabbing and the displacement of communities, as was articulated in documentation provided to CMS COP12 that underpinned Resolution 12.15: *Aquatic Wild Meat*. It seems prudent that the Aquatic Wild Meat Working Group seek opportunities for greater engagement with the Collaborative Partnership on Sustainable Wildlife Management (CPW).
7. Expertise has been sought to collect and present information about seabird harvest (Decision 12.46c), but more time is required to complete this task. It is likely that the work will be completed in cooperation with a similar review being conducted for ACAP. The Working Group recommends this direction is continued into the coming triennium.

8. Members of the Working Group participated in the first and third regional workshops of the IWC Small Cetacean Sub-committee *Workshop on Poorly Documented Takes of Small Cetaceans* (2018 and 2019) (Decision 12.46 (b) and (e)). Discussions included:
 - a) a request for expert contributions from the African region;
 - b) collaboration opportunities between the Working Group and IWC Small Cetacean Sub-committee;
 - c) contributions and/or sign-ons to the journal article on aquatic wild meat being prepared by the Working Group, and
 - d) requests for contacts of both seabird and shark experts from the region who may be able to contribute to the expanded focus of the Working Group.

9. The development of an online knowledge base as a repository of papers (journal articles, meeting documents etc) and other information related to aquatic wild meat is being explored (Decision 12.46a) to support CMS Parties to reach Targets 2, 5, 6, 11, 13 and 14 of the CMS Strategic Plan for Migratory Species 2015-2023. Its development has been the subject of discussion with several expert bodies who are also seeking to develop a similar resource. It seems prudent to combine this resource across several bodies, if possible, especially as the online knowledgebase on aquatic wild meat will require an investment of time and attention to secure publisher approvals and ensure maintenance of the information to remain current.

10. During the third IWC workshop, discussions about the online knowledge base on aquatic wild meat provided substantial scope for furthering this aim. Several suggestions were put forward that would see the online database housed and maintained by either individuals and/or independent organisations. To ensure complete transparency, non-bias and the longevity of the project, and considering the cross-taxa focus of the Aquatic Wild Meat Working Group, it was agreed that the most sensible solution would be to create an independent online knowledge base under the auspices of CMS. This requires further planning and a funding proposal is being developed. The Working Group recommends this work is continued into the coming triennium, in close collaboration with the IWC Small Cetacean Sub-committee.

11. The Working Group has provided ongoing support directly to the Abidjan Aquatic Wildlife Partnership, initiated to develop an *Action Plan to Combat Trade, Direct Consumption, Illegal Logging, and Other Uses of Endangered, Threatened or Protected Coastal and Marine Species* for the Abidjan Convention (Decision 12.46f). In addition, support by way of presentation preparations were provided for the CMS Secretariat for their participation in the *Abidjan Aquatic Wildlife Partnership Workshop* (23-25 July 2018) where the details of the draft Action Plan were developed. The Working Group recommends that it continues to support the Abidjan Aquatic Wildlife Partnership, in particular where it overlaps with the conservation of CMS-listed species in the western African region.

12. The development of an action plan for supporting Range State Parties has not begun. It is unclear to the Working Group if the intent for Decision 12.46g is to develop one global action plan for all Range State Parties or regional, sub-regional or national action plans for Range State Parties that request assistance. The latter seems more appropriate and more likely to produce action plans with meaningful direction. Members of the Working Group in West Africa have been approached for assistance to develop a sub-regional aquatic wild meat action plan for the Gulf of Guinea, where aquatic wild meat is an acute problem, with serious impacts for local communities and livelihoods. We believe this request for support is complementary to Decision 12.46 g. A preliminary review, *Aquatic Wildmeat in the Coastal Regions of Benin and Togo: A Study of Consumption and Drivers* ([UNEP/CMS/COP13/Inf.6), by Working Group member Maximin K. Djondo, describes the levels of aquatic wild meat harvest in Benin and Togo. The Working Group recommends specific direction is given to:
 - a) develop a sub-regional aquatic Wild Meat action plan for the Gulf of Guinea for consideration by Range State Parties in the region; and
 - b) develop regional, sub-regional or national actions plans for Range State Parties that request assistance.
13. The Working Group has progressed the development of an academic journal article highlighting the extent of aquatic wild meat in different regions of the world, as well as the role of CMS and the programme of work for the Aquatic Wild Meat Working Group. This journal article is progressing through a final edit and sign-on process and will be submitted for publication in 2020.
14. This document completes the Working Group reporting task (Decision 12.26h) for the Fourth meeting of the Sessional Committee of the Scientific Council (ScC-SC4).

Recommended Actions

15. The Scientific Council is recommended to:

- a) note the report on the *Harvest of CMS Appendix I-Listed Sharks and Rays as Aquatic Wild Meat* (Annex 1), submitted by the Aquatic Wild Meat Working Group;
- b) note the report *Determining the Extent of Interplay between Bycatch and Aquatic Wild Meat Harvests* (Annex 2), submitted by the Aquatic Wild Meat Working Group;
- c) note the preliminary review *Aquatic Wildmeat in the Coastal Regions of Benin and Togo: A Study of Consumption and Drivers* (UNEP/CMS/COP13/Inf 6);
- d) recommend to COP13 that all CMS Appendix I-Listed Sharks and Rays should be incorporated into the working definition of aquatic wild meat for CMS;
- e) recommend to COP13 that the Bycatch Working Group and the Aquatic Wild Meat Working Group further develop analysis of the extent of instances where bycatch transitions to aquatic wild meat harvest and report on this for the Scientific Council to provide clear recommendations to CMS Parties for CMS COP14.
- f) recommend to COP13 that the Aquatic Wild Meat Working Group undertake the following tasks over the course of the intersessional period and report to the Scientific Council to provide clear recommendations to CMS Parties for CMS COP14:
 - a. continue discussions to establish an online knowledge base as a repository of papers (journal articles, meeting documents etc) and other information related to aquatic wild meat;
 - b. serve as an expert resource for CMS Parties, the Scientific Council and the Secretariat to contribute to the bushmeat/wild meat discussions within the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological Diversity (CBD), the International Whaling Commission (IWC) and the Collaborative Partnership on Sustainable Wildlife Management (CPW), or when international coordination and cooperation about aquatic wild meat is required;
 - c. explore opportunities for greater engagement with the work of the CPW;
 - d. develop a criterion for considering if some Appendix II-listed sharks and rays should be included within the scope of the Working Group;
 - e. share information with IWC and, subject to funding availability, participate in future Small Cetacean Sub-committee meetings with a focus on aquatic wild meat;
 - f. provide support to the *Abidjan Aquatic Wildlife Partnership*, where the development of the *Action Plan to Combat Trade, Direct Consumption, Illegal Logging, and Other Uses of Endangered, Threatened or Protected Coastal and Marine Species* overlaps with the conservation of CMS-listed species in the western African region;
 - g. collect and present information about seabird harvests as aquatic wild meat;
 - h. develop a sub-regional aquatic Wild Meat action plan for the Gulf of Guinea for consideration by Range State Parties in the region; and
 - i. develop regional, sub-regional or national actions plans for Range State Parties that request assistance.

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THE HARVEST OF CMS APPENDIX I-LISTED SHARKS AND RAYS AS AQUATIC WILD MEAT

(Prepared by the Aquatic Wildmeat Working Group)

Summary:

This document forms an Annex to Document
UNEP/CMS/ScC-SC4/Doc.10.2.4 *Aquatic Wild Meat*.

It has been submitted by the Aquatic Wildmeat Working Group, in
accordance with Decision 12.46d.

THE HARVEST OF CMS APPENDIX I-LISTED SHARKS AND RAYS AS AQUATIC WILD MEAT

Background

1. The Convention on Migratory Species (CMS) COP12 expressed concern that CMS-listed species, including cetaceans, sirenians, crocodiles, turtles and seabirds, are harvested¹ as aquatic wildmeat in many regions of the world, and that there is evidence that the demand is increasing. Resolution 12.15 requested the formation of a thematic Aquatic Wildmeat Working Group of the Scientific Council and the Parties established a programme of work (Dec 12.46) for this new Working Group to implement. One of these actions (Dec 12.46 d) was to facilitate a discussion about incorporating CMS Appendix I-listed sharks and rays to the scope of the Working Group. This paper serves to instigate that discussion and provides two preliminary recommendations for consideration by the Scientific Council.

Aquatic wildmeat

2. To date, CMS has defined aquatic wildmeat as the products derived from aquatic mammals, seabirds and reptiles used for subsistence food and traditional uses, including meat, shells, bones and organs, and as bait for fisheries. The species that are the focus of these aquatic wildmeat harvests are often threatened and protected aquatic (coastal and marine) species, including sirenians, various species of turtles, cetaceans, seabirds and reptiles. Aquatic wildmeat is obtained opportunistically (e.g., from bycatch or strandings) or from illegal or unregulated hunts.
3. Until now, the harvest of sharks and rays has not been recognized by CMS as aquatic wildmeat. However, when viewed within certain criteria, we argue the exploitation of at least CMS Appendix I-listed sharks and rays should be considered as aquatic wildmeat, including those species that are:
 - a) harvested and/or caught as bycatch in unregulated fishing activities in developing countries;
 - b) caught in restricted coastal areas (including rivers and estuaries) where fishing is prohibited and/or in essential fish habitats;^[1]
 - c) caught with prohibited/restricted gear; and/or
 - d) products which are frequently traded illegally through local markets and, in some circumstances, international markets.
4. Many of these criteria are often met with sharks and rays. The intentional exploitation of CMS Appendix I-listed sharks and rays is already a significant problem recognized by CMS. Ignoring such harvest activities fails to address key utilization processes for many sharks and rays and puts local sharks and ray populations at risk of overexploitation and extirpation.^[2]
5. Indeed, the status of sharks and rays is worsening globally, and in some regions of the world several CMS Appendix I-listed species are already locally extinct (e.g., the Angelshark (*Squatina squatina*), and sawfishes (Family Pristidae), while others (e.g. Manta and Mobula rays, *Manta birostris*, *Mobula rochebrunei*) are threatened.
6. A broader and inclusive understanding on what taxa are considered as aquatic wildmeat is urgently needed.

¹ Note, there is an active discussion within the Aquatic Wildmeat Working Group about the terminology surrounding 'harvest', 'exploitation', and 'hunting' (the terms more commonly used within terrestrial wildmeat policy circles), and if they should be changed to 'fishing' and 'capture' (terms that might work for sharks and rays but could be inappropriate for aquatic mammals and turtles). This paper continues to use the original terminology until this discussion is resolved.

Common biological traits of sharks and rays

7. So far, 507 species of sharks and 646 species of rays have been described scientifically. These species have different distributions and distinct life-histories.[3] Consequently, they are exposed to various levels of harvest pressure and have individual responses to this pressure.[3]
8. Sharks and rays are members of the taxonomic subclass Elasmobranchii within the class Chondrichthyes, an ancient group of fishes dating back to the Devonian period (~418 million years ago).[4] Their main common characteristic is their cartilaginous skeleton, distinguishing them from the bony fishes. The majority of economically important Chondrichthyes are elasmobranchs, which are further divided into the two superorders Selachiomorpha (sharks) and Batoidea (rays).[5]
9. Life-history characteristics of many species of sharks and rays are more like those of marine mammals than of bony fishes.[6] For example, they grow slowly, mature late, have long gestation periods, have a small litter sizes, and some species give birth only every second year or even longer intervals. These traits result in a low ability to recover from reduced population sizes, which makes some shark and ray species threatened by even low levels of harvest.[7]

Extinction risk of sharks and rays

10. A comparison of 26 shark and 151 bony fish populations found that sharks show twice the harvest extinction risk of bony fishes.[8] Moreover, recent studies indicate that sharks and rays are among the marine taxa with the highest extinction risk.[2, 9] According to the IUCN Red List of Threatened Species, nearly a quarter of all sharks and rays are facing an elevated risk of extinction globally, while in some regions of the world (e.g. Mediterranean, Northwest Indian Ocean) over 50 per cent of the species are considered critically endangered, endangered or vulnerable. Five of the seven most threatened families are rays, only one-third of species are considered Least Concern, and almost half of the species are classified as Data Deficient.[2]
11. Like most marine species, sharks and rays face multiple, often cumulative anthropogenic stressors including fishing (direct takes and bycatch), habitat modification or destruction, pollution, climate change and ocean acidification.[10-12] They interact with a wide range of fishing gear and are often bycaught in fisheries that are difficult to regulate and manage.[13]
12. Many sharks and rays occupy high trophic levels, fulfilling key ecological roles in various coastal habitats, like structuring marine communities through predation and influencing prey behavior.[14] Therefore, the ongoing and rapid depletion of sharks and rays in coastal environments potentially has far-reaching consequences, including ecosystem shifts and the possibility of future human generations to rely on aquatic-derived protein sources.[15]

13. Already, CMS recognizes that the following 21 Appendix I-listed sharks and rays should not be the target of harvest.

Scientific names	Common names	IUCN Red List Status
ORECTOLOBIFORMES Rhincodontidae <i>Rhincodon typus</i>	Whale Shark	EN
LAMNIFORMES Lamnidae <i>Carcharodon carcharias</i> Cetorhinidae <i>Cetorhinus maximus</i>	White Shark Basking Shark	VU VU
SQUATINIFORMES Squatinae <i>Squatina squatina</i>	Angelshark	CR
RHINOPRISTIFORMES Rhinobatidae <i>Rhinobatos rhinobatos</i> (Mediterranean population) Pristidae <i>Anoxypristis cuspidata</i> <i>Pristis clavata</i> <i>Pristis pectinata</i> <i>Pristis pristis</i> <i>Pristis zijsron</i>	Common Guitarfish Narrow Sawfish Dwarf Sawfish Smalltooth Sawfish Largetooth Sawfish Green Sawfish	EN EN EN EN CR CR CR
MYLIOBATIFORMES Mobulidae <i>Mobula alfredi</i> <i>Mobula birostris</i> <i>Mobula eregoodoo</i> <i>Mobula hypostoma</i> <i>Mobula mobular</i> <i>Mobula kuhlii</i> <i>Mobula munkiana</i> <i>Mobula rochebrunei</i> <i>Mobula thurstoni</i> <i>Mobula tarapacana</i>	Reef Manta Ray Oceanic Manta Ray Longhorned Pygmy Devil Ray West Atlantic Pygmy Devil Ray Spinetail Devil Ray Shorthorned Pygmy Devil Ray Munk's Pygmy Devil Ray East Atlantic Pygmy Devil Ray Bentfin Devil Ray Sicklefin Devil Ray	VU VU NT DD EN DD NT VU NT VU

The harvest of CMS Appendix I-listed sharks and rays as aquatic wildmeat

14. Data on artisanal fisheries of CMS Appendix I-listed sharks and rays are for example, available for the Arabian region (i.e. *M. thurstoni*, *M. kuhlii*, Pristidae), Indonesia (i.e. *R. typus*), Bangladesh (i.e. Pristidae), Mexico (i.e. *M. munkiana*), India (i.e. *R. typus*, *P. pristis*, *A. cuspidata*), Madagascar (i.e. *C. carcharias*, Mobulidae, Pristidae), and Fiji (Pristidae).[16-25] Although limited, these studies highlight the importance of shark and ray exploitation in meeting the dietary needs of many coastal communities. Evidence from other parts of the world, including West Africa and Peru, suggests that artisanal fishers also profit from the local sale of shark fins.[26, 27]

Trade of sharks and rays and domestic utilization of shark and ray derived products

15. Trade networks dealing with shark and ray products can be divided into either local markets focused on meat (i.e. fresh, salted-dried, or smoked), or export markets mainly targeting shark fins or gill plates. In some, but not all, circumstances there is a crossover of these two markets. For example, in West Africa, fishermen from several countries have been involved in either the exploitation or trade of sharks and rays. Most of them come from Ghana (traders) or Senegal (fishers). Senegalese artisanal fishers have depleted shark and ray resources from their domestic waters, and have started making longer fishing trips, moving to other countries (e.g. Mauritania, Guinea-Bissau, Guinea, Sierra Leone and Liberia), exploiting their fishing zone.[28]
16. Over the last two decades, a decreasing trend in catches has been observed despite an increase in fishing effort, which is most likely due to the reduced abundance of the species (e.g. the almost complete disappearance of the sawfish species (Pristidae [28]). For instance, in Fiji, the shark fin trade has likely shifted from a previously export-oriented market to one currently dominated by domestic outlets.[21] Similarly, Vieira et al. (2017) observed a fall in shark fin production after the closure of the bêche-de-mer (sea cucumber) fishery in Papua New Guinea.[29]
17. What cannot be discounted is that many countries have traditionally relied on shark meat. Fishers and local communities experiencing declining fish stocks are often reliant on sharks and rays for food security.[30, 31] While industrial and artisanal fisheries historically discarded carcasses retaining only fins, data indicate that most artisanal fishers now retain all parts of harvested sharks.[20] In these cases, if sharks and rays are landed, the meat is mostly utilized either for local consumption or local trade. The fins may be sold locally to restaurants or to middlemen, who then trade internationally. Hence, fishers are usually not directly involved in the trade.

Management of shark and ray harvests

18. Acknowledging that the intentional exploitation of CMS Appendix I-listed sharks and rays should be prohibited (Art III, para. 5), the harvest of most sharks and rays is often through bycatch or not usually undertaken in a way that satisfies the characteristics of managed and regulated fisheries.
19. Moreover, local communities use the harvested animals for subsistence food, and locally trade parts or sale the meat, for which the demand is reportedly increasing. In this way, fishing for sharks and rays is often more characteristic of aquatic wildmeat harvest or hunts than it is of fisheries. As the harvest of aquatic wildmeat is not managed by local or regional fisheries agencies, these shark and ray harvests must be addressed by conservation and wildlife agencies. As such, we believe the harvest and use of CMS Appendix I-listed sharks and rays meet the definition of aquatic wildmeat and in this way can be drawn to attention of conservation and wildlife agencies.
20. Furthermore, as numerous sharks and rays are long-lived, overexploited throughout their range, and have an intrinsically low resilience to even low harvest pressure, we consider CMS Appendix I-listed sharks and rays of high priority for conservation efforts.

21. In addition to the CMS Appendix I-species, there is also concern about many CMS Appendix II listed sharks and rays, especially those that have a high risk of extinction and/or are similarly harvested such that these activities meet the aquatic wildmeat definitions. When viewed within the initial proposed criteria, the harvest of these Appendix II sharks and rays may also qualify as aquatic wildmeat species, as sharks and rays that:
 - a) can be fished and/or caught as bycatch in unregulated fishing activities in developing countries;
 - b) are often caught in restricted coastal areas (including rivers and estuaries) where harvest is prohibited, including essential fish habitats;
 - c) are often caught with prohibited/restricted gear;
22. Species that meet some or all these criteria include the guitarfishes, wedgefishes (Rhinidae) and hammerhead sharks (Sphyrnidae).

Recommended Actions

23. The Sessional Committee is recommended to:
 - a) Incorporate all Appendix I-listed sharks and ray species into the working definition of aquatic wildmeat for CMS.
 - b) Instruct the Aquatic Mammals Working Group to develop a criterion for considering some Appendix II-listed sharks and rays within the scope of the Working Group.

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DETERMINING THE EXTENT OF INTERPLAY BETWEEN BYCATCH AND AQUATIC WILDMEAT HARVESTS

Submitted by the Aquatic Wildmeat Working Group and the Bycatch Working Group)

Summary:

This document forms an Annex to Document
UNEP/CMS/ScC-SC4/Doc.10.2.4 *Aquatic Wild Meat*.

It has been developed by the Aquatic Wildmeat Working Group in
cooperation with the Bycatch Working Group, in response to the
activities contained within Decision 12.46.

DETERMINING THE EXTENT OF INTERPLAY BETWEEN BYCATCH AND AQUATIC WILDMEAT HARVESTS

Background

1. The Convention on Migratory Species (CMS) defines aquatic wildmeat as the products derived from aquatic mammals, birds and reptiles used for subsistence food and traditional uses, including meat, shells, bones, organs and as bait for fisheries. It is obtained opportunistically (e.g., from bycatch or strandings) or from unregulated and at times illegal hunts.
2. The 12th CMS Conference of the Parties (COP) expressed concern that CMS-listed species, including aquatic mammals, turtles, seabirds and elasmobranchs, are affected by being harvested as aquatic wildmeat in many regions of the world, and that there is evidence that the demand is increasing (Robards & Reeves, 2011). Resolution 12.15 requested the formation of a thematic Aquatic Wildmeat Working Group of the Scientific Council and established a programme of work (Dec 12.46) for this new group to implement.
3. The Working Group is tasked to advise the Scientific Council and Parties about emergent issues as they pertain to aquatic wildmeat. This paper serves to instigate a discussion and provide a preliminary recommendation for consideration by the Scientific Council about the interplay between bycatch and aquatic wildmeat harvest.

Bycatch

4. Bycatch can be defined as the capture of non-target species or undesired sizes of target species (Lewison et al. 2004). Bycatch is among the greatest threats to seabirds and marine mammals worldwide and causes declines in other migratory megafauna such as turtles and elasmobranchs (Peckham et al. 2007; US Commission on Ocean Policy 2004; Read et al. 2006; Phillips et al. 2016). Bycatch mortality in small-scale fisheries, including artisanal, traditional and subsistence fisheries, may be among the greatest current threats to aquatic megafauna, as migratory species frequent coastal high use areas which overlap with small-scale or artisanal fisheries (James et al. 2005).
5. The effect of bycatch in freshwater fisheries around the world has been even more neglected than coastal fisheries, yet it has had damaging impacts on species such as African manatees (Raby et al. 2011; Mayaka et al. 2015). The majority of inland freshwater bycatch occurs in the developing world, with one estimate finding over 90 per cent of freshwater bycatch occurring in Asia and Africa (Raby et al. 2011). To date, however, bycatch assessments and mitigation processes have largely focused on marine industrial fisheries, while small-scale fisheries often receive little attention from domestic and international authorities (Lewison et al. 2004; Lewison & Crowder 2007). As a result, both, fishing effort and bycatch from these fisheries are largely unknown or have primarily focused on seabirds. In addition, small-scale fisheries are subject to substantial illegal, unregulated, or unreported (IUU) fishing (Panayotou 1982; Pauly 2006), further precluding the understanding of fisheries' impacts on migratory megafauna in coastal waters.

Aquatic Wildmeat and Bycatch

6. In commercial/industrial fisheries bycatch is typically discarded, with the exception of sharks. Bycatch in small-scale or artisanal fisheries is often retained. For example, a diverse range of small cetaceans (e.g., *Stenella* spp., *Tursiops truncatus*), Waved Albatrosses (*Phoebastria irrorata*), Loggerhead Turtles (*Caretta caretta*), and various hammerhead sharks (*Sphyrna* spp.) are killed as bycatch and used as aquatic wildmeat (Peckham et al 2007; Mangel et al. 2010; Alfaro-Shigueto 2011; Glaus et al. 2015). Humans have hunted wildlife for over 100,000 years, but consumption and human population growth have increased considerably over the past few decades (Milner-Gulland & Bennett, 2003). To illustrate, reports estimate that wildmeat harvest in Central Africa is now in the order of 3.4 million tons per annum (Wilkie & Carpenter, 1999; Fa et al. 2001). It should be noted that the demand for aquatic wildmeat, both for consumption and trade, can turn opportunistic bycatch into a desirable component of the catch, that is retained as valuable source of food or income (White et al. 2006). Hence, what was previously considered to be bycatch can subsequently be sought intentionally and evolve into direct catches.

7. Reported bycatch may in fact be directed catch. However it is often difficult to distinguish and can change daily (Temple et al. 2018). Incorrectly declaring direct catch as bycatch can act as barrier to management. One reason for this is that bycatch appears to be difficult to prevent – a perception that hampers the willingness of individuals and management bodies to act towards bycatch mitigation. Also, although there are studies on fishing techniques to reduce bycatch, this knowledge or gear types is often not available or viable for small-scale fishermen. Another aspect of bycatch that must be considered is what is called ‘cryptic’ bycatch, i.e. the animals that are killed or fatally wounded by a fishing activity but are lost from the nets before hauling or are not brought on-board the fishing vessel, and not included in captures reported by fisheries observes. Such events are an important component of the bycatch of large whales, but smaller marine mammals, seabirds, turtles and discarded fish are also often injured and die following capture, escape or release from fishing operations (Davis 2002; Campana et al. 2009; Debski & Pierre 2014)

Affected CMS-listed Species

8. Some affected species are included in the CMS appendices. Small cetaceans, reptiles, seabirds and elasmobranch species that are known to or may have been used as aquatic wildmeat deriving from bycatch (Alfaro-Shigueto et al. 2011; Glaus et al. 2015; Alves & van Vliet 2018) and their protection status on the Appendices of CMS (Appendices I & II) are listed below. Note, this list is not complete and only those species are included whose utilization as aquatic wildmeat derived from bycatch is documented. Also, no reports were found for some countries and as the utilisation of marine mammals is illegal in many countries, harvests are likely hidden and exact numbers remain elusive. It is therefore recommended to take a precautionary approach and not assume that bycatch and its utilization as aquatic wildmeat is absent. Of note however, of all the reptiles, the turtles have been the most severely exploited by humans for food, a situation which has been directly attributed to the precarious conservation state of many of these species (Klemens & Thorbjarnarson, 1995, Mancini & Koch, 2009, Hoffmann & Cawthorn, 2012), which is why the eight CMS I listed turtles can be found in the list below.

Appendix I

- a SIRENIA AND CETACEANS:
 - i Trichechus senegalensis*
 - ii Tursiops truncatus ponticus*
 - iii Sousa teuszii*
- b REPTILES
 - i Caretta caretta*
 - ii Chelonia mydas*
 - iii Dermochelys coriacea*
 - iv Eretmochelys imbricata*
 - v [Gavialis gangeticus](#)*
 - vi Lepidochelys kempii*
 - vii Lepidochelys olivacea*
 - viii Podocnemis expansa*
- c ELASMOBRANCHS
 - i Pristis clavata*
 - ii Pristis pectinata*
 - iii Pristis zijsron*
 - iv Pristis pristis*

Appendix II

- d SIRENIA AND CETACEANS
 - i Dugong dugon*
 - ii Lagenorhynchus obscurus*
 - iii Lagenorhynchus australis*
 - iv Stenella attenuata* (eastern tropical Pacific population, Southeast Asian populations)
 - v Stenella longirostris* (eastern tropical Pacific populations, Southeast Asian populations)
- e AVES
 - i Phoebastria irrorata*
 - ii Thalassarche melanophris*
 - iii Diomedea sanfordi* (harvested from colonies in the Chatham Islands)
 - iv Thalassarche bulleri* (harvested from colonies in the Chatham Islands)
- f ELASMOBRANCHS
 - i Carcharhinus falciformis*
 - ii Sphyrna lewini*
 - iii Sphyrna mokarran*
 - iv Rhynchobatus australiae*

Recommended Actions

9. The transition of bycatch into an intentional harvest as aquatic wildmeat thereof is known to occur in fisheries that do not possess the characteristics of managed and regulated fisheries. As the harvest of aquatic wildmeat is not managed by local or regional fisheries agencies, it needs to be addressed by conservation and wildlife agencies
10. Some caution is necessary when considering these dynamics. The opportunistic utilization of bycatch as aquatic wildmeat may be the result of local demand for alternative food sources due to the loss of traditional fish stocks (Juncker et al 2006). In addition, life-sustaining income from the sale of aquatic wildmeat may motivate fishers to intentionally target larger animals, which are often more vulnerable to exploitation, with more valuable useable products. It is therefore crucial to understand the socio-economic drivers of what fishermen catch as well as the fate of bycatch. If sufficient data to understand bycatch levels in high use coastal areas are available and working in close partnership with small-scale and artisanal fishers, this may provide a possibility to mitigate bycatch, and in turn the transition to new aquatic wildmeat harvests. This could provide a way forward to ensure the persistence of vulnerable migratory megafauna. Without such information, population declines are likely to go undetected and undocumented, and local authorities will have inadequate information for drafting management plans and implementing them in a timely manner. Ignoring the potential of bycatch as a trigger for increasing aquatic wildmeat harvests will only serve to undermine conservation measures of fisheries and wildlife management bodies.
11. The Sessional Committee is invited to:
 - a) Take note of this discussion paper
 - b) Recommend the Bycatch Working Group and the Aquatic Wildmeat Working Group further develop analysis of the extent of instances where bycatch transitions aquatic wildmeat harvest and report on this to the Fifth meeting of the Sessional Committee of the Scientific Council (ScC-SC5), for the Scientific Council to provide clear recommendations to CMS Parties for CMS COP14.

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