CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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Twenty-sixth meeting of the Animals Committee
Geneva (Switzerland), 15-20 March 2012 and Dublin (Ireland), 22-24 March 2012

RESPONSE TO NOTIFICATION TO THE PARTIES NO. 2011/049, CONCERNING SHARKS

The attached information document has been submitted by the Secretariat at the request of PEW, in relation to agenda item 16[*].

[*] *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

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January 5, 2012

Pew Environment Group Response to CITES Notification 2011/049

To Whom it May Concern,

As an active international observer to CITES, a member of the Animals Committee Shark Working Group, as well as other working groups of the Animals and Standing Committees, and an organization that is very active in global shark conservation, the Pew Environment Group submits the following information in response to CITES Notification 2011/049. We submit this information in an effort to ensure a more complete response to the request for information, especially considering that some countries that have adopted proactive new shark conservation policies are not Parties to CITES.

1. Shark species which require additional action

In response to Section a) ii) of the Notification, the Pew Environment Group submits the following list of shark species requiring additional action to enhance their conservation and management. As international trade is likely to be a factor in population declines of these species, they should be explored for possible inclusion in CITES Appendix II. Supporting information is included in the Annexes to this document.

- shortfin mako (*Isurus oxyrinchus*) and longfin mako (*Isurus paucus*) as a look-alike species- Annex 1
- porbeagle (*Lamna nasus*) – Annex 2
- bigeye thresher (*Alopias superciliosus*) along with common thresher (*Alopias vulpinus*) and pelagic thresher (*Alopias pelagicus*) as look-alike species – Annex 3
- silky shark (*Carcharhinus falciformes*) – Annex 4
- scalloped hammerhead (*Sphyrna lewini*) along with great (*Sphyrna mokarran*) and smooth hammerhead (*Sphyrna zygaena*) as look-alike species – Annex 5
- oceanic whitetip shark (*Carcharhinus longimanus)*-Annex 6
- leafscale gulper shark (*Centrophorus squamosus),* along with the other species in the genus *Centrophorus* as look-alike species – Annex 7
- Portuguese shark (*Centroscymnus coelolepis*) – Annex 8
- manta ray (*Manta birostris* and *Manta alfredi*) – Annex 9

2. Measures regulating fishing, retention or landing of sharks as well as measures regulating the import or export of shark parts or products (Response to Section a., iii and iv)

Under point a) iii) in the Notification, Parties are invited to advise whether they have domestic measures (e.g. laws or regulations) regulating the fishing, retention or landing of shark or ray species in their waters, and whether those measures apply to certain species only or to all species.

Under point a) iv) Parties are invited to advise whether they have domestic measures (e.g., laws or regulations) regulating the import or export of shark parts and products (fins, meat, skin, organs, etc.) and, if so, what those measures are.

A number of countries have taken recent action towards the protection of sharks domestically through shark sanctuaries and other measures. Below please find a list of countries and their domestic measures regulating the fishing, retention or landing of sharks in their waters. Measures regulating the import or export of shark parts or products are also noted.

The Bahamas

As of July 2011, no person shall possess, fish for or land any shark or shark part within The Bahamas or within the Exclusive Fishery Zone of The Bahamas, unless for educational, scientific, or research purposes with a corresponding permit. In addition, no person shall export from, import into, or sell any shark, shark parts, or shark products in The Bahamas or within the Exclusive Fishery Zone of The Bahamas.

The Republic of the Congo

Shark fishing in territorial waters was banned in 2001. No exporting of sharks or products.

Egypt

No fishing of sharks and no trade in sharks or shark products.

The European Union

Regulatory measures are included in the Council Regulation (EU) No 57/2011 of 18 January 2011 fixing for 2011 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in EU waters and, for EU vessels, in certain non-EU waters:

- A zero Total Allowable Catch in 2011 for spurdog (*Squalus acanthias*)
- A zero Total Allowable Catch in 2011 for porbeagle (*Lamna nasus*)
- A prohibition for EU vessels to fish for, to retain on board, to tranship or to land the following species:
  - Basking shark (*Cetorhinus maximus*) and white shark (*Carcharodon carcharias*) in all EU and non-EU waters;
  - Angel shark (*Squatina squatina*) in all EU waters;
  - Common skate (*Dipturus batis*) in EU waters of ICES division IIa and ICES subareas III, IV, VI, VII, VIII, IX and X;
  - Undulate ray (*Raja undulata*) and white skate (*Rostroraja alba*) in EU waters of ICES subareas VI, VII, VIII, IX and X;
  - Porbeagle (*Lamna nasus*) in international waters; and
  - Guitarfishes (*Rhinobatidae*) in EU waters of ICES subareas I, II, III, IV, V, VI, VII, VIII, IX, X and XII.

French Polynesia

No retention of sharks with the exception of shortfin mako sharks.

Honduras
In June 2011, Honduran President Porfirio Lobo Sosa announced a permanent shark sanctuary in Honduran waters, building on the country's 2010 shark-fishing moratorium. Regulations by the Honduran legislature prohibit the fishing of sharks throughout the country's exclusive economic zone on its Pacific and Caribbean coasts.

Israel
No fishing of sharks (and thereby no international trade).

Kuwait
It is forbidden to catch sharks, except for two kinds, the graceful shark (*Carcharhinus amblyrhynchoides)* and the grey sharpnose shark (*Rhizoprinodon oligolinx*), and rays. In addition, it's prohibited to sell or exhibit shark, rays, or any of their parts in any of the fish markets or shops in Kuwait.

The Maldives
In 2010, the Maldives declared their waters a shark sanctuary prohibiting the catch of sharks within their waters. As of July 21, 2011, it is illegal in the Maldives to catch, keep in captivity, trade or harm any sharks.

Palau
In September 2009, Honorable Johnson Toribiong, President of Palau, declared Palau a Shark Sanctuary, where commercial shark fishing is outlawed throughout the entire exclusive economic zone with zero retention of sharks permitted.

Republic of the Marshall Islands
The Republic of the Marshall Islands declared the world's largest shark sanctuary in October 2011 covering its entire exclusive economic zone of 1,990,530 km². Key provisions of the comprehensive Marshall Islands' law include:

- A complete prohibition on the commercial fishing of sharks as well as the sale of any sharks or shark products. Its zero retention stipulation requires that any shark caught accidentally by fishing vessels must be set free.
- Large monetary fines, anywhere between US$25,000 to US$200,000, for anyone who is found to be fishing sharks or in possession of shark fins. In addition, violators would be fined the market value of the product in their possession.
- A ban on the use of wire leaders, a longline fishing gear, which is among the most lethal to sharks.
- A monitoring and enforcement provision which requires all fishing vessels to land their catch at one of the country's ports and bans at-sea transfers.

Tokelau
In September 2011, Tokelau became a shark sanctuary prohibiting the catch of sharks within its waters.

United States of America (U.S.)

Several U.S. states and territories in the Pacific have taken steps to curb the shark fin trade. Leaders in California, Hawaii, Oregon, Washington, Guam, and the Commonwealth of the Northern Mariana Islands have closed down major markets available to the shark fin trade:

- *The State of Hawaii*: In May 2010, Hawaii became the first U.S. state to criminalize the possession, sale, and distribution of shark fins.

- *Commonwealth of the Northern Mariana Islands:* In January 2011, the Commonwealth of the Northern Mariana Islands (CNMI) banned the possession, sale, trade, and distribution of shark fins in CNMI.

- *Guam:* In March 2011, Guam enacted a ban on the sale, possession, trade, and distribution of shark fins.

- *The State of Washington:* In May 2011, Washington banned the sale and trade of shark fins, as well as the preparation of shark fins for food.

- *The State of Oregon:* In June 2011, Oregon banned the possession, sale, and trade of shark fins.

- *California:* In October 2011, California banned the sale, trade, and possession of shark fins.

In addition, the U.S. has a variety of different types of protections in place for various shark species and prohibits retention of some species. For example, retention of 19 species is currently prohibited in the Atlantic and retention of great white, megamouth, and basking sharks is currently prohibited in the U.S. exclusive economic zone (EEZ) off the coasts of California, Oregon, and Washington.

International Regulations

Conservation and management measures adopted by several Regional Fisheries Management Organizations (RFMOs) prohibit the retention or directed fisheries for some species of sharks. In some cases, the prohibitions on retention also include bans on the sale or trade of the species. Vessels flying the flag of any party to an RFMO are subject to these prohibitions when engaging in fisheries under the remit of the respective RFMO.

- The International Commission for the Conservation of Atlantic Tunas (ICCAT): silky sharks (*Carcharhinus falciformes*),[1] hammerhead sharks, family *Sphyrnidae* (except

[1] It is prohibited to retain onboard, transship, land, store, sell, or offer for sale any part or whole carcass of the silky shark. There is an exception for developing coastal countries for local consumption, but in that case countries are to ensure silky sharks will not enter into international trade. This will enter into force in 2012.

for *Sphyrna tiburo)*,[2] oceanic whitetip sharks (*Carcharhinus longimanus*),[3] and bigeye thresher sharks (*Alopias superciliosus*)[4]

- Inter-American Tropical Tuna Commission (IATTC):
  oceanic whitetip shark (*Carcharhinus longimanus*)[5]

- North East Atlantic Fisheries Commission (NEAFC):
  basking shark (*Cetorhinus maximus*),[6] spurdog (*Squalus acanthias*),[7] porbeagle (*Lamna nasus*),[8] and 17 deep sea shark species (prohibitions on directed fisheries)

  The deep sea shark species for which directed fishing is prohibited for 2012 (and may be renewed subsequently) are:

  - gulper shark *(Centrophorus granulosus)*
  - leafscale gulper shark *(Centrophorus squamosus)*
  - black dogfish *(Centroscyllium fabricii)*
  - portuguese dogfish *(Centroscymnus coelolepis)*
  - longnose velvet dogfish *(Centroscymnus crepidater)*
  - kitefin shark *(Dalatias licha)*
  - greater lanternshark (*Etmopterus princeps)*
  - Iceland catchark *(Apristuris spp)*
  - frilled shark *(Chlamydoselachus anguineus)*
  - birdbeak dogfish *(Deania calcea)*
  - blackmouth dogfish *(Galeus melastomus)*
  - mouse catshark *(Galeus murinus)*
  - bluntnose six-gilled shark *(Hexanchus griseus)*
  - velvet belly *(Etmopterus spinax)*
  - sailfin roughshark or sharpback shark *(Oxynotus paradoxus)*
  - knifetooth dogfish *(Scymnodon ringens)*
  - greenland shark *(Somniosus microcephalus)*

- The Indian Ocean Tuna Commission (IOTC):
  thresher sharks (*Alopiidae*)[9]

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[2] http://iccat.org/Documents%5CRecs%5Ccompendiopdf-e%5C2010-08-e.pdf. It is prohibited to retain onboard, transship, land, store, sell, or offer for sale any part or whole carcass of hammerhead sharks of the family *Sphyrnidae* (except for *Sphyrna tiburo).* There is an exception for developing coastal countries for local consumption, but in that case countries are to ensure hammerhead sharks will not enter into international trade.

[3] http://iccat.org/Documents%5CRecs%5Ccompendiopdf-e%5C2010-07-e.pdf. It is prohibited to retain onboard, transship, land, store, sell, or offer for sale any part or whole carcass of oceanic whitetip sharks in any ICCAT fishery.

[4] http://iccat.org/Documents%5CRecs%5Ccompendiopdf-e%5C2009-07-e.pdf. It is prohibited to retain onboard, transship, land, store, sell, or offer for sale any part or whole carcass of bigeye thresher sharks.

[5] http://www.iattc.org/PDFFiles2/Resolutions/C-11-10-Conservation-of-oceanic-whitetip-sharks.pdf. It is prohibited to retain onboard, transship, land, store, sell, or offer for sale any part or whole carcass of oceanic whitetip sharks. This enters into force 1 January 2012.

[6] http://www.neafc.org/system/files/rec-6_2011_baskingshark.pdf. Directed fishing is prohibited.

[7] http://www.neafc.org/system/files/rec-7_2011_spurdog.pdf. Directed fishing of spurdog is prohibited, and incidental catches are to be released unharmed.

[8] http://www.neafc.org/system/files/rec-8_2011_porbeagle_rev1.pdf. Directed fishing is prohibited.

- Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR): All shark species (prohibition on directed fisheries)[10]

Conclusion

Thank you for the opportunity to provide this information. CITES has the potential to play a major role in ensuring future healthy shark populations. We stand ready to provide any support in your preparations for the next CoP, and we very much look forward to working with CITES Parties in the lead-up to and during CoP16.

Sincerely,

Matt Rand
Director, Global Shark Conservation
Pew Environment Group

Susan Lieberman, PhD
Director, International Policy
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[9] http://www.iotc.org/files/proceedings/misc/ComReportsTexts/resolutions_E.pdf. Resolution 10/12 (p. 209). It is prohibited to retain on board, transship, land, store, sell, or offer for sale any part or whole carcass of thresher sharks of all the species of the family Alopiidae.

[10] http://www.ccamlr.org/pu/e/e_pubs/cm/10-11/32-18.pdf. All directed fishing of any shark species is prohibited, and any bycatch should be released alive.

Annex 1

Shortfin (*Isurus oxyrinchus*) and longfin Mako (*Isurus paucus*) as a look-alike species

Additional supporting information

The shortfin mako shark (*Isurus oxyrinchus)* and the "look-alike species" longfin mako shark (*Isurus paucus)* are both classified as Vulnerable globally according to the IUCN Red List of Threatened Species.

There is limited data for the shortfin mako making it difficult to estimate the population status and potential declines, but the data that is available shows reasons for concern. Declines in the northwest Atlantic are between 50-70 percent.[11] While similar declines were documented in previous assessments, the productivity for this species is lower than previously believed, making the results more concerning. Based on the assessment conducted by ICCAT in 2008, shortfin mako sharks in the northwest Atlantic are considered to be approaching an overfished condition with overfishing occurring.[12] In the Mediterranean Sea, where they used to be common, shortfin makos are now rarely seen and are considered to be Critically Endangered by the IUCN Red List of Threatened Species.[13] Female shortfin mako sharks reach maturity around eighteen years of age, have between four and 25 pups after a gestation period of 15-18 months with more than a year break between pregnancies.[14] The shortfin and longfin mako sharks were found to be among the pelagic shark species with the greatest risk for overfishing by Atlantic longline fisheries based on their low productivity and high susceptibility to longline fisheries.[15]

Shortfin mako sharks are sought after for both their meat and fin, and also targeted as a recreational game fish. Shortfin mako sharks are found to make up approximately 2.7 percent of the shark fin trade in Hong Kong.[16] It is estimated that between 600,000-900,000 shortfin mako worldwide are caught each year for their fins.[17]

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[11] ICCAT, "Report of the 2008 Shark Stock Assessment Meeting," Collect. Vol. Sci. Pap. Iccat, 64(5): 1343-1491, (2009), SCRS/2008/017, < http://www.iccat.es/Documents/SCRS/DetRep/DET-SHK.pdf>

[12] NMFS. 2010. Final Amendment 3 to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 632. <http://www.nmfs.noaa.gov/sfa/hms/FMP/AM3_FEIS/Total_A3_FEIS.pdf>

[13] Cailliet, G.M., Cavanagh, R.D., Kulka, D.W., Stevens, J.D., Soldo, A., Clo, S., Macias, D., Baum, J., Kohin, S., Duarte, A., Holtzhausen, J.A., Acuña, E., Amorim, A. & Domingo, A. 2009. Isurus oxyrinchus. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on 12 December 2011

[14] Cailliet, G.M., Cavanagh, R.D., Kulka, D.W., Stevens, J.D., Soldo, A., Clo, S., Macias, D., Baum, J., Kohin, S., Duarte, A., Holtzhausen, J.A., Acuña, E., Amorim, A. & Domingo, A. 2009. Isurus oxyrinchus. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on 12 December 2011. < ftp://ftp.fao.org/docrep/fao/009/x9293e/X9293E07.pdf>

[15] E. Cortés et al., "Ecological risk assessment of pelagic sharks caught in Atlantic pelagic longline fisheries," Aquat. Living Resour. 23, 25–34, 2010.

[16] S. C. Clarke *et al.*, "Identification of Shark Species Composition and Proportion in the Hong Kong Shark Fin Market Based on Molecular Genetics and Trade Records," *Conservation Biology* 20(1): 201-11 (2006), <www3.interscience.wiley.com/cgi bin/fulltext/118564070/PDFSTART>.

[17] ICCAT, "Report of the 2004 Inter-Sessional Meeting of the ICCAT Sub-Committee on By-catches: Shark Stock Assessment," Col. Vol. Sci. Pap. ICCAT 58(3): 799-890, (2005), SCRS/2004/014. < http://www.protect-the-sharks.org/pdf/ICCAT/By-Catches%20Shark%20Stock%20Assessment.pdf>

Proposals were put forward at recent years to limit the catch of shortfin mako sharks at ICCAT, but countries were unable to come to agreement. Thus, there are currently no international protections for this global species. A CITES Appendix II listing would regulate international trade of shortfin mako meat and fins, aiding efforts to reverse the unsustainable harvest of this species.

Annex 2

Porbeagle (*Lamna nasus*)

Additional supporting information

Porbeagle sharks are very slow growing and have a low reproductive capacity. Yet, they are heavily exploited as bycatch and in targeted fisheries for their large fins and high-value meat. The combination of the porbeagle's low reproductive output and high market value makes populations especially vulnerable to overexploitation and depletion. Porbeagle sharks have long life spans 29-45 years (northwest Atlantic) and 65 years (southwest Pacific), are slow to reach reproductive maturity 18 years (northwest Atlantic) and 26 years (southwest Pacific), have long gestation period of eight to nine months and low reproductive capacity, and litters averaging four pups. According to the IUCN Red List of Threatened Species, porbeagle sharks are classified Critically Endangered in the northeast Atlantic and the Mediterranean, Endangered in the northwest Atlantic and Vulnerable globally.

Porbeagle sharks have been heavily exploited in the northwest and northeast Atlantic. In the northwest Atlantic, female spawning stock has decreased to between 12 and 16 percent of former levels.[18] Populations are so depleted that the Canadian Department of Fisheries and Oceans (DFO) has determined that porbeagles are no longer fulfilling their role in the ecosystem.[19] Scientific analysis of stock assessment data in the northeast Atlantic revealed severe population declines, estimating more than a 90 percent depletion of biomass from baseline levels.[20] Over the past several years, scientists with various entities, including the International Council for the Exploration of the Sea (ICES), have encouraged the closure of northeast Atlantic porbeagle fisheries. Additionally, scientists have supported practices that limit bycatch and eliminate landings of this critically endangered population.[21] Stock information is less available for southwest Atlantic porbeagles, but depletion in spawning stock indicates biomass is 18 percent of previous levels.[22] In the Mediterranean Sea, porbeagles have virtually disappeared from fishery record. Bycatch research in Mediterranean pelagic fisheries in 1998 yielded only 15 specimens in 12 months.[23] Additionally, research on swordfish longline bycatch published in

[18] ICCAT/ICES, Report of the 2009 porbeagle stock assessments meeting (Copenhagen, June22–27, 2009), <www.iccat.int/Documents/Meetings/Docs/2009_POR_ASSESS_ENG.pdf>.
[19] DFO, "Potential Socio-economic Implications of Adding Porbeagle Shark to the List of Wildlife Species at Risk in the *Species at Risk Act* (SARA)," DFO Policy and Economics Branch—Maritimes Region, Dartmouth, Nova Scotia (2006), <www.dfompo.gc.ca/species-especes/reports-rapports/porbeagle-maraiche/index-eng.htm>.
[20] ICCAT/ICES, Report of the 2009 porbeagle stock assessments meeting (Copenhagen, June22–27, 2009), <www.iccat.int/Documents/Meetings/Docs/2009_POR_ASSESS_ENG.pdf>.
[21] ICES, "Report of the ICES Advisory Committee on Fishery Management, 2008," ICES Advice 2008, Book 9, <www.ices.dk/products/icesadvice/2008/ICES%20ADVICE%202008%20Book%209.pdf>.
[22] ICCAT/ICES, Report of the 2009 porbeagle stock assessments meeting (Copenhagen, June22–27, 2009), <www.iccat.int/Documents/Meetings/Docs/2009_POR_ASSESS_ENG.pdf>.
[23] P. Megalofonou *et al.*, "By-catches and discards of sharks in the large pelagic fisheries in the Mediterranean Sea," Project 97/50, Directorate General XIV/C1, European Commission (2000).

2002 documented zero catch of *Lamna nasus* in the Western Mediterranean.[24] On the high seas, porbeagle catch numbers are unclear because of widespread underreporting.[25]

The absence of species-specific trade data has hampered efforts to determine the proportion of global catch that enters international trade. At the conclusion of International Commission for the Conservation of Atlantic Tunas (ICCAT)/ICES specialist meetings in 2009, officials recommended that high-seas fisheries stop targeting porbeagle.[26] While recent NEAFC and European Union efforts to protect porbeagle are good steps, protection is needed in all areas. A CITES Appendix II listing would regulate international trade of porbeagle meat and fins, aiding efforts to reverse the unsustainable harvest of this species.

[24] J. M. De la Serna *et al.,* "Large Pelagic Sharks as By-catch in the Mediterranean Swordfish Longline Fishery: Some Biological Aspects," NAFO SCR Doc. 02/137, Serial No. N4759 (2002), <http://archive.nafo.int/open/sc/2002/scr02-137.pdf>.
[25] ICCAT/ICES, Report of the 2009 porbeagle stock assessments meeting (Copenhagen, June22–27, 2009), <www.iccat.int/Documents/Meetings/Docs/2009_POR_ASSESS_ENG.pdf>.
[26] ICCAT/ICES, Report of the 2009 porbeagle stock assessments meeting (Copenhagen, June22–27, 2009), <www.iccat.int/Documents/Meetings/Docs/2009_POR_ASSESS_ENG.pdf>.

Annex 3

Bigeye thresher (*Alopias superciliosus*) along with the Common Thresher (*Alopias vulpinus)* and Pelagic Thresher (*Alopias pelagicus)* as look-alike species

Additional supporting information

The bigeye thresher shark (*Alopias superciliosus*), along with the "look-alike species" common thresher (*Alopias vulpinus)* and pelagic thresher (*Alopias pelagicus)*, are classified as Vulnerable according to the IUCN Red List of Threatened Species.

Bigeye thresher sharks are extremely vulnerable to overexploitation from both direct and incidental catch. Their life history characteristics include: slow population growth rates, the slowest of all thresher sharks, late maturity (12 years for female and 10 for males), long gestation period of 12 months and low reproductive capacity of only two- four pups per litter.[27] Bigeye thresher sharks' very low productivity and high susceptibility to fisheries makes it one of the most vulnerable pelagic shark species.[28] During the past two centuries, thresher sharks have declined more than 99 percent in abundance and biomass in the Mediterranean Sea.[29] In the northwest Atlantic, thresher sharks (common and bigeye) have declined 80 percent since the late 1980s.[30] Observed declines in this region suggest the population has collapsed. Bigeye thresher sharks are often grouped with common thresher sharks in catch data making it difficult to distinguish the status of the population.

Bigeye thresher sharks are often caught as bycatch and targeted for their fins and meat. Thresher sharks account for approximately 2.3 percent of the shark-fin trade in Hong Kong.[31] From this information, scientists have estimated that up to four million thresher sharks are exploited for the fin trade every year worldwide.[32] Catch and trade data of thresher sharks is often categorized by the genus and not species making it difficult to distinguish the direct effect trade is having on the continued survival of bigeye thresher sharks, but the information that is available suggests catch and trade is actually more than what is documented.

In 2009, ICCAT recognized the extreme vulnerability of the bigeye thresher shark, banning the retention in its fisheries, the first zero retention ban for any shark species in a regional fishery

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[27] Compagno, L.J.V. 2001. *Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Volume 2. Bullhead, Mackerel and Carpet Sharks (Heterodontiformes, Lamniformes and Orectolobiformes)*. FAO, Rome. < ftp://ftp.fao.org/docrep/fao/009/x9293e/X9293E05.pdf>.

[28] E. Cortes, et al., "Ecological Risk Assessment of Pelagic Sharks Caight in Atlantic Pelagic Longline Fisheries," SCRS/2008/138. < http://www.iccat.int/Documents/Meetings/Docs/SCRS/SCRS-08-138_Cortes_et_al.pdf>

[29] F. Ferretti, et al., "Loss of Large Predatory Sharks from the Mediterranean Sea," Conservation Biology 22(4): 952-964 (2008). < http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2008.00938.x/pdf>

[30] J.K. Baum, et al., "Collapse and Conservation of Shark Populations in the Northwest Atlantic," Science 299: 389- 392 (2003) <http://www.sciencemag.org/content/299/5605/389.full.pdf>

[31] S. C. Clarke *et al.*, "Identification of Shark Species Composition and Proportion in the Hong Kong Shark Fin Market Based on Molecular Genetics and Trade Records," *Conservation Biology* 20(1): 201-11 (2006), <www3.interscience.wiley.com/cgi bin/fulltext/118564070/PDFSTART>.

[32] S. C. Clarke *et al.*, "Global Estimates of Shark Catches Using Trade Records From Commercial Markets," *Ecology Letters*, 9:1115–26, < http://www.iccs.org.uk/papers/Clarke2006EcologyLetters.pdf >.

management organization.[33] While this prohibition provides some protection for bigeye threshers in the Atlantic, it does not extend throughout the entire range of this global species nor does it regulate trade. A CITES Appendix II listing would regulate international trade of bigeye thresher meat and fins, aiding efforts to reverse the unsustainable harvest of this species.

[33] International Commission for the Conservation of Atlantic Tunas, "Recommendation by ICCAT on the Conservation of Thresher Sharks caught in Association with Fisheries in the ICCAT Convention Area," in Report for biennial period, 2008-09 Part II (2009) Vol 1, Recommendation 09-07, Madrid, Spain (2010). < http://www.iccat.es/Documents/BienRep/REP_EN_08-09_II_1.pdf>

Annex 4

Silky shark (*Carcharhinus falciformis*)

Additional supporting information

Silky sharks (*Carcharhinus falciformis*) are found in all tropical waters around the globe. They are pelagic (open ocean) sharks and are most commonly found near the edge of continental and insular shelves at depths of 200 meters (656 feet) or more, but have been known to occur to depths of at least 500 meters (1,640 feet) further offshore. Young silky sharks are often found in coastal nurseries. As sub-adults these sharks move further offshore over deeper waters, frequently joining schools of tuna they seem to feed upon.

According to the IUCN Red List of Threatened Species, the silky shark is Vulnerable in Eastern Central and Southeast Pacific and Near Threatened globally. Silky sharks are vulnerable to overfishing due to their low reproductive capacity. A recent ecological risk assessment of sharks ranked silky sharks as the most vulnerable species to Atlantic longline fisheries, due to their low rate of productivity and high likelihood of capture and mortality in these fisheries.[34]

Silky sharks are both targeted and caught as bycatch and are often associated with fish aggregating devices (FADs). Fishing pressure from longline and purse seines targeting tuna and swordfish is high for this species, especially in the eastern Pacific Ocean. Silky shark fins are relatively high-valued and are the third most commonly traded species in the fin trade.[35] Between half a million and 1.5 million silky sharks are traded annually for their fins.[36]

In the eastern Pacific Ocean, silky sharks are the most commonly caught shark species in the purse seine fishery and are also caught in the longline fishery.[37] While there is little information available on the population status of silky sharks, the data that is available shows catch is declining. Comparisons of catch per set data for silky sharks from 1993-2004 suggests these sharks are in decline, thus raising concern for the future survival of this species.[38]

Total global catch of this species reported to the FAO has decreased steadily since 2000; from 11,680 tons reported in 2000 to 4,358 in 2004. A 2005 study estimated that the silky shark population in the tropical central Pacific has declined in abundance by about 90 percent between the 1950s and 1990s. In the Maldives, it is estimated that this species represented close to 85 percent of oceanic shark catch. Due to their high rate of capture, silky shark populations appear to be declining across their range in the eastern and western Pacific, the northwest and western

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[34] E. Cortés et al., "Ecological risk assessment of pelagic sharks caught in Atlantic pelagic longline fisheries," Aquat. Living Resour. 23, 25–34, 2010.

[35] S. Clarke, J.E. Magnusson, D.L. Abercrombie, M. McAllister and M.S. Shivji, "Identification of shark species composition and proportion in the Hong Kong shark fin market using molecular genetics and trade Records," Conservation Biology 20: 201-211, 2006.

[36] 3. R., Bonfil, A. Amorim, C. Anderson, R. Arauz, J. Baum, S.C. Clarke, R.T. Graham, M. Gonzalez, M. Jolón, P.M. Kyne, P. Mancini, F. Márquez, C. Ruíz, and W. Smith. 2007. Carcharhinus falciformis. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. <www.iucnredlist.org> Downloaded on 28 April 2011.

[37] Inter-American Tropical Tuna Commission, "Fishery Status Report 8," La Jolla, CA, 2010. <http://iattc.org/PDFFiles2/FisheryStatusReports/FisheryStatusReport8ENG.pdf>

[38] M. Román-Verdesoto and M. Orozco-Zöller, "Bycatches of sharks in the tuna purse-seine fishery of the eastern Pacific Ocean reported by observers of the Inter-American Tropical Tuna Commission, 1993- 2004," Inter-American Tropical Tuna Commission Data Report 11, La Jolla, CA, 2005. <http://www.iattc.org/PDFFiles2/DataReports/Data- Report-11.pdf>

Atlantic, and the Indian Ocean. A CITES Appendix II listing would regulate international trade of silky fins, aiding efforts to reverse the unsustainable harvest of this species.

Annex 5

Scalloped hammerhead (*Sphyrna lewini*), along with great and smooth hammerhead as look-alike species

Additional supporting information

The scalloped hammerhead shark (*Sphyrna lewini*), one of the most distinctive species on the planet, is subject to targeted fisheries, illegal fishing and fishery bycatch throughout the world. While their distinct body-shape makes hammerheads easy to identify as a genus, fishermen have trouble identifying the species. As a result, the lack of classification to the species level in catch data inhibits the ability to accurately assess the status of hammerhead species. Thus, the status of the populations may actually be worse off than what the documented declines suggest. According to the IUCN Red List of Threatened Species, scalloped and great hammerhead (*Sphyrna mokarran*) sharks are listed as Endangered and smooth hammerheads (*Sphyrna zygaena*) are listed as Vulnerable. Fisheries surveys in the northwest Atlantic have documented declines of up to 98 percent for scalloped hammerheads[39] and landings in the southwest Atlantic have shown declines of up to 90 percent.[40] Reports have also shown that hammerhead juveniles are increasingly being targeted. Furthermore, according to a 2008 assessment of illegal, unreported and unregulated fishing, hammerheads are among the most frequently taken shark species in illegal fishing.[41]

Scalloped hammerhead shark populations are biologically vulnerable to overexploitation due to their life history characteristics which include: reproduction every two years, long gestation period of eight to 12 months and low reproductive capacity of only 14-26 pups per litter. Unlike other species of sharks, hammerheads frequently aggregate in large numbers, which makes them more vulnerable to fishing efforts.[42] Scalloped hammerheads have some of the lowest recovery potentials in comparison to other shark species, which makes them susceptible to extinction.

Hammerheads are targeted for their high value fins as the meat is generally not consumed. The large size and high "needle count" make hammerhead fins among the most valued for shark fin soup.[43] Globally, species-specific trade data are limited, but market-based scientific inquiries have yielded important trade information.[44] Traders have stated that hammerhead fins are some

[39] R. A. Myers et al., "Cascading effects of the loss of apex predatory sharks from a coastal ocean," Science, 30 315:1846–50 (March 2007), <www.sciencemag.org/cgi/content/abstract/315/5820/1846>

[40] C. M. Vooren et al., "Biologia e status conservação dos tubarão-martelo Sphyrna lewini e S. zygaena," pp. 97-112. In: C. M. Vooren and S. Klippel (eds.), Ações para a conservação de tubarões e raias no sul do Brasil. Igaré, Porto Alegre (2005), <www.ibama.gov.br/ceperg/downloads/visualiza.php?id_arq=41>.

[41] M. Lack and G. Sant, "Illegal, unreported and unregulated shark catch: A review of current knowledge and action," Department of the Environment, Water, Heritage and the Arts and TRAFFIC, Canberra, <http://search.atomz.com/search/?sp_a=sp1003bbd0&sp_q=Illegal%2C+unreported+and+unregulated+shark+catch%3A+A+review+of+current+knowledge+and+action&sp_p=all&sp_f=ISO-8859-1>.

[42] J. Baum *et al.*, *Sphyrna lewini* (2007). In: IUCN 2009, IUCN Red List of Threatened Species, Version 2009.2, <www.iucnredlist.org>. Downloaded 15 December 2009.

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

[44] S. Clarke, "Use of shark fin trade data to estimate historic total shark removals in the Atlantic Ocean," *Aquatic Living Resources*, 21:373-81 (2008), <www.alrjournal.org/index.php?option=toc&url=/articles/alr/abs/2008/04/contents/contents.html>.

of the most valuable in the market.[45] The three hammerhead species *(Sphyrna lewini, S. mokarran, S. zygaena)* combined make up approximately 6 percent of the identified fins entering the Hong Kong market.[46] From this information, scientists have estimated that 1.3 million to 2.7 million scalloped and smooth hammerheads are exploited for the fin trade every year worldwide.[47]

A research study published in 2009 in the journal *Endangered Species Research* documents the global nature of the scalloped hammerhead trade. Researchers performed DNA tests on shark fins obtained from the Hong Kong market and were able to determine their geographic origins. Findings from 62 fins revealed that 21 percent had originated from endangered scalloped hammerhead populations.[48]

ICCAT has banned the retention of hammerhead sharks in its fisheries, excluding by fishermen in developing coastal countries for local consumption.[49] While this measure does lend protection to hammerheads, ICCAT's management does not extend to the full range of these species' habitats. A CITES Appendix II listing for scalloped hammerheads would greatly ensure the future sustainability of wild populations by regulating international trade in hammerhead products. Due to the similar appearance of certain species' fins, it is unlikely that enforcement personnel could readily distinguish between scalloped hammerhead fins and those from smooth and great hammerheads, suggesting smooth and great hammerheads should be included as well.

[45] D. L. Abercrombie *et al.*, "Global-scale genetic identification of hammerhead sharks: Application to assessment of the international fin trade and law enforcement," *Conservation Genetics*, 6:775–88, <www.springerlink.com/content/k13n380815h59q11/?p=db3caf027f654ee294d73ac44b1e7e80&pi=2>.
[46] S. C. Clarke *et al.*, "Identification of Shark Species Composition and Proportion in the Hong Kong Shark Fin Market Based on Molecular Genetics and Trade Records," *Conservation Biology* 20(1):201-11 (2006), <www3.interscience.wiley.com/cgi-bin/fulltext/118564070/PDFSTART>.
[47] S. C. Clarke *et al.*, "Global Estimates of Shark Catches Using Trade Records From Commercial Markets," *Ecology Letters*, 9:1115–26, <http://www.iccs.org.uk/papers/Clarke2006EcologyLetters.pdf>.
[48] D. D. Chapman *et al.*, "Tracking the fin trade: Genetic stock identification in Western Atlantic scalloped hammerheads sharks *Sphyrna lewini*," *Endangered Species Research,* in press, <www.int-res.com/articles/esr2008/theme/Forensic/forensicpp9.pdf>.
[49] International Commission for the Conservation of Atlantic Tunas, "Recommendation by ICCAT on Hammerhead Sharks (Family Sphyrnidae) Caught in Association with Fisheries Managed by ICCAT," 10-08, in Report for biennial period 2010-11: Part I (2010)- Vol. 1, Madrid, Spain, (2011). <http://www.iccat.es/Documents/BienRep/REP_EN_10-11_I_1.pdf>

Annex 6

Oceanic whitetip shark (*Carcharhinus longimanus)*

Additional supporting information

Oceanic whitetip sharks are one of the most widespread shark species found in all the world's oceans, but the global demand for their high-value fins has led to significant population declines. According to the IUCN Red List of Threatened Species, oceanic whitetip sharks are listed as Critically Endangered in the northwest and central Atlantic Oceans and Vulnerable globally. The size of oceanic whitetip populations is difficult to estimate, because stock assessments have not been conducted and data are generally limited. However, U.S. pelagic longline surveys and observer data in the Gulf of Mexico have estimated a decline of 99 percent over four generations for this species.[50] In the northwest Atlantic, an analysis of U.S. pelagic longline logbook data estimated declines of up to 70 percent since 1992.[51] A similar analysis of pelagic longline surveys and observer data from the Pacific yielded a 90 percent decline in biomass.[52] Purse seine data in the eastern Pacific Ocean suggest oceanic whitetip sharks have virtually disappeared.[53]

Oceanic whitetip shark populations are biologically vulnerable to overexploitation due to their life history characteristics which include reproduction only every two years, long gestation period of nine to 12 months and low reproductive capacity of five to six pups per litter.

Oceanic whitetip sharks are frequently caught as bycatch in tuna and swordfish fisheries. In the Atlantic, tuna longline data have shown that the majority of oceanic whitetip catch is juveniles.[54] Even though oceanic whitetip sharks experience a high catch-survival rate on longlines, the low market value of their meat coupled with the high value and increasing demand for their fins encourages the practice of finning globally.[55] Fins of this species have been valued at US$45 to $85 per kilogram.[56] Thus, rather than releasing live catch or utilizing the entire shark, fishermen often remove the fins at sea and dispose of the carcass overboard. Oceanic whitetip fins are easily identified by their white coloring, rounded shape and large size, making them one of the most distinctive and common products in the Asian shark fin trade. Oceanic whitetip sharks

[50] J. K. Baum et al., "Shifting baselines and the decline of pelagic sharks in the Gulf of Mexico," Ecology Letters, 7(3):135-45 (2004), <www.fmap.ca/ramweb/papers-total/Baum_Myers_2004.pdf>.
[51] J. K. Baum et al., "Collapse and conservation of shark populations in the Northwest Atlantic, Science," 299:389-92 (2003), <www.sciencemag.org/cgi/content/full/299/5605/389>.
[52] P. Ward and R. Myers, "Shifts in open ocean fish communities coinciding with the commencement of commercial fishing," Ecology, 86:835–47 (2005), <www.soest.hawaii.edu/ pfrp/reprints/ecol_86_420_835_847.pdf>.
[53] M. Román-Verdesoto and M. Orozco-Zöller, "Bycatches of sharks in the tuna purse-seine fishery of the eastern Pacific Ocean reported by observers of the Inter-American Tropical Tuna Commission, 1993-2004," Inter-American Tropical Tuna Commission Data Report 11, La Jolla, CA, 2005. < http://www.iattc.org/PDFFiles2/DataReports/Data-Report-11.pdf>
[54] 8 M. Tolotti, et al., "Size, distribution and relative abundance of the oceanic whitetip shark caught by the Brazilian tuna longline fleet," SCRS/2010/158.
[55] L. R. Beerkircher et al., "Characteristics of Shark Bycatch Observed on Pelagic Longlines Off the Southeastern United States, 1992–2000," Marine Fisheries Review, 64(4):40–9 (2002), <http://findarticles.com/p/articles/mi_m3089/is_4_64/ai_n6148326>.
[56] 10 S. Clarke et al., "Estimates of Shark Species Composition and Numbers Associated With the Shark Fin Trade Based on Hong Kong Auction Data," Journal of Northwest Atlantic Fishery Science, 35:453–65 (2004), <http://journal.nafo.int/35/35.html>.

make up approximately 1.8 percent of the identified fins entering the Hong Kong market.[57] From this information, scientists have estimated that between approximately 250,000 and 1.3 million oceanic whitetip sharks are killed worldwide per year for the fin trade.[58]

Both ICCAT and the IATTC have taken measures to protect oceanic whitetip sharks in their jurisdictions by prohibiting the retention of these sharks within their fisheries.[59] While this is good progress, the jurisdiction of these two RFMOs does not extend to the full range of the oceanic whitetip's distribution. Additionally, because RFMOs do not manage international trade, particularly of the fins, inclusion of the oceanic whitetip shark in Appendix II is necessary to ensure international trade is regulated sustainably, and would indeed assist both IATTC and ICCAT members in compliance with their measures for the oceanic whitetip shark. An Appendix II listing would also complement the existing zero retention measures of ICCAT and IATTC by providing much needed species specific data from other fisheries and would also help protect against possible serial population depletion scenarios driven by international trade.

[57] S. C. Clarke et al., "Identification of Shark Species Composition and Proportion in the Hong Kong Shark Fin Market Based on Molecular Genetics and Trade Records," Conservation Biology 20(1):201-11 (2006), <www3.interscience.wiley.com/cgi-bin/fulltext/118564070/PDFSTART>.

[58] S. C. Clarke et al., "Global Estimates of Shark Catches Using Trade Records from Commercial Markets," Ecology Letters, 9:1115–26, <http://www.iccs.org.uk/papers/Clarke2006EcologyLetters.pdf>.

[59] International Commission for the Conservation of Atlantic Tunas, Recommendation by ICCAT on the Conservation of Oceanic Whitetip Shark Caught in Association with Fisheries in the ICCAT Convention Area,10-07, in Report for biennial period 2010-11: Part I (2010)- Vol. 1, Madrid, Spain, (2011). <http://www.iccat.es/Documents/BienRep/REP_EN_10-11_I_1.pdf>

Annex 7

Leafscale gulper shark (*Centrophorus squamosus*), along with the other species in the genus Centrophorus as look-alike species

Additional supporting information

The Leafscale gulper shark (*Centrophorus squamosus*), a deep sea shark, is extremely vulnerable to overexploitation due to their life history characteristics, which include very late maturity (35 years), long lifespan (70 years) and a long estimated generation period (>50 years).[60] The IUCN Red List of Threatened Species considers this species to be Vulnerable globally and Endangered in the Northeast Atlantic. Their vulnerable status is compounded by a significant lack of information on global deep sea shark fisheries, biological status, or comprehensive trade data.

The leafscale gulper shark has already seen drastic declines in abundance, especially in the Northeast Atlantic. Fisheries in the Northeast Atlantic region are regulated by a mixture of several regional and international policies, management, and advisory bodies. However, even with supervision, deep-sea fisheries are overexploited, largely unregulated, and afford insufficient protection for extremely vulnerable deep-sea species.

Species of *Centrophoridae* are believed to have the lowest reproductive potential of all elasmobranch species.[61] Leafscale gulper shark meat and liver are marketed in many areas throughout its range, utilized as fishmeal, dried and salted for human consumption, meat and fins (low value) and liver oil (very high value), and occasionally for its mature eggs. Catch per unit effort (CPUE) for autoline catches in ICES Area VI saw an 80-90 percent decline in three years; Area VII saw a 67-77 percent decline in four years; and Area XII saw a 20-69 percent decline in one year.[62] OSPAR estimates that even if deepwater fisheries closed and there was zero bycatch, recovery of depleted populations would be so slow as to take longer than 25 years.[63]

One popular use of deep sea sharks is their liver oil for a multitude of products, including as an emollient in beauty products and cosmetics, machinery lubrication, alternative medicines, and health products. Squalene is a product extracted from the livers of only deep sea sharks, frequently marketed in pill form as shark liver oil or naturally occurring squalene.

Intensive fishing has led to the rapid collapse of deepwater deep sea shark stocks, particularly *Centrophorus* species. In south-east Australia, the upper slope shark fishery collapsed after depleting upper slope species, with 98-99 percent declines for *Centrophorus* species over a

[60] Gibson, C., S.V. Valenti, S.V. Fordham, and S.L. Fowler. 2008. The Conservation of Northeast Atlantic Chondrichthyans: Report of the IUCN Shark Specialist Group Northeast Atlantic Red List Workshop.
[61] Kyne, P.M., and Simpfendorfer, C.A. 2007. A collation and summarization of available data on deepwater chondrichthyans: biodiversity, life history and fisheries. A report prepared by the IUCN SSC Shark Specialist Group for the Marine Conservation Biology Institute. At: http://www.flmnh.ufl.edu/fish/organizations/SSG/SSG.htm. Accessed 11 April 2011.
[62] Compagno 1984, SGRST 2002, White 2003, White et al. 2006, Froese and Pauly 2011
[63] OSPAR Commission 2010. Background Document for Leafscale gulper shark Centrophorus squamosus. At: http://qsr2010.ospar.org/media/assessments/Species/P00473_leafscale_gulper_shark.pdf. Accessed 11 April 2011.

twenty-year period.[64] A gulper shark liver oil fishery in the Maldives started in the 1980s and collapsed roughly 20 years later due to population depletion. In the north-east Atlantic, deep sea shark fishing to the west of the British Isles led to the depletion of leafscale gulper sharks – also within a two decade timeframe.[65]

Due to their depleted status and the fact that they are highly traded, leafscale gulper sharks would significantly benefit from a CITES Appendix II listing. Since the sharks in the genus *Centrophorus* are very similar in appearance, the other sharks in the genus should be listed as look-alike species.

[64] Kyne, P.M., and Simpfendorfer, C.A. 2007.
[65] Kyne and Simpfendorfer 2007.

Annex 8

Portuguese shark (Centroscymnus coelolepis)

Additional supporting information

The Portuguese shark (*Centroscymnus coelolepis*), a deep sea shark species, is extremely vulnerable to overexploitation, and subject to largely unregulated deep-sea fisheries. It is caught widely both domestically and internationally in targeted fisheries and as bycatch. Fisheries are located in the North Atlantic, Pacific and Indian Oceans. Illegal, unreported, and unregulated (IUU) fishing is also a threat, and has been reported in the international waters of the Atlantic Ocean for the Portuguese shark.[66,67] The Portuguese shark has been consistently highlighted as extremely vulnerable to overfishing due to its life history characteristics, which likely include low productivity, low fecundity, slow growth, late maturity, and a long lifespan. The IUCN Red List of Threatened Species considers Portuguese sharks near threatened globally and Endangered in the Northeast Atlantic.

Portuguese shark populations have already seen drastic declines in abundance, especially in the Northeast Atlantic. Fisheries in the Northeast Atlantic region are regulated by a mixture of several regional and international policies, management, and advisory bodies. These include the North East Atlantic Fisheries Commission (NEAFC), the International Council for the Exploration of the Sea (ICES), and the Common Fisheries Policy (CFP) for marine fisheries of the European Union. However, even with supervision, deep-sea fisheries are overexploited, largely unregulated, and afford insufficient protection for extremely vulnerable deep-sea species.

The Portuguese shark is taken by trawl, hook and gillnet both as a target and bycatch species for its liver oil and flesh. As this shark is increasingly commercially exploited, it is consistently accompanied by a steeply declining trend in overall abundance.[68] Pregnant females are particularly vulnerable since they tend to be located in shallower water where fisheries may be located. The OSPAR Commission notes that as catches fall fishing effort is simply redirected, causing rapid local depletions and an overall unsustainable fishery.

There is a general lack of available trade and landings data for deepwater sharks. Many deepwater species are taken as bycatch, often discarded, or landed under generic species-codes such as ‗shark,' ‗siki,' or ‗other.' The lack of accurate catch data, including the underreporting of catches, the lack of recording bycatch, poor taxonomic resolution and species identification, and illegal fishing, makes an assessment of the global catch of deepwater chondrichthyans extremely difficult.[69,70,71]

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[66] ICES WGEF. 2007. Report of the Working Group on Elasmobranch Fishes (WGEF). ICES Advisory Committee on Fishery Management. ICES CM 2007/ACFM: 27 Ref. LRC.
[67] Lack, M. and Sant, G. (2008) Illegal, unreported and unregulated shark catch: A review of current knowledge and action. Department of the Environment, Water, Heritage and the Arts and TRAFFIC, Canberra.
[68] OSPAR. 2010. OSPAR Commission. Background Document for Portuguese dogfish *Centroscymnus coelolepis.* At: http://qsr2010.ospar.org/media/assessments/Species/P00469_Portuguese_dogfish.pdf. Accessed 11 April 2011.
[69] Kyne, P.M., and Simpfendorfer, C.A. 2007. A collation and summarization of available data on deepwater chondrichthyans: biodiversity, life history and fisheries. A report prepared by the IUCN SSC Shark Specialist Group

One popular use of this species, as with other deep sea sharks, is their liver oil for a multitude of products, including as an emollient in beauty products and cosmetics, machinery lubrication, alternative medicines, and health products. Squalene is a product extracted from the livers of only deep sea sharks, frequently marketed in pill form as shark liver oil or naturally occurring squalene (see discussion above, under leafscale gulper shark).

Due to its conservation status, life history characteristics, and the current impact on populations from fisheries and international trade, the Portuguese shark (*Centrophorus squamosus*) would greatly benefit from inclusion in Appendix II.

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for the Marine Conservation Biology Institute. At: http://www.flmnh.ufl.edu/fish/organizations/SSG/SSG.htm. Accessed 11 April 2011.

[70] Gibson, C., S.V. Valenti, S.V. Fordham, and S.L. Fowler. 2008. The Conservation of Northeast Atlantic Chondrichthyans: Report of the IUCN Shark Specialist Group Northeast Atlantic Red List Workshop.

[71] MRAG. April 2011. Deep Sea Markets Study. In preparation.

Annex 9

Manta Rays (*Manta birostris* and *Manta alfredi*)

Additional supporting information

There are two species of manta rays, the reef manta ray (*Manta alfredi*) and the giant manta ray (*Manta birostris*). The giant manta ray, the largest living ray, can be found around the world in tropical and temperate waters.[72] While they occasionally visit shallow coastal areas, giant mantas spend the majority of their time in pelagic waters and are known to migrate over thousands of kilometers.[73] The reef manta ray can be found in tropical and sub-tropical waters and is especially widespread in the Indian Ocean.[74] They frequent shallow coastal areas around rocky and coral reef habitats where productive upwellings exist.[75] Both species of manta rays were recently assessed as Vulnerable by the IUCN Red List of Threatened Species.

The life history characteristics of manta rays make them susceptible to overfishing. Female mantas are thought to mature at 8–10 years of age.[76] Once mature, they usually give birth to one pup every 2-3 years.[77] The rate of population reduction for both species of manta rays appears to be high in several regions, up to as much as 80 percent over the last three generations (approximately 75 years), and globally a decline of >30 percent is strongly suspected.

The main threat to manta rays is fishing, with mantas being caught as both targeted catch and bycatch. Fisheries targeting manta rays in many parts of the world are fueled by an increasing demand for branchial filter plates (gill rakers) and cartilage.[78] The branchial filter plates are used in Asian medicinal products, and the cartilage is used as filler in shark-fin soup.[79] Manta ray products, particularly their gill rakers, have a high value in international trade markets. This market has resulted in directed fisheries for manta rays, which are currently targeting these rays in unsustainable numbers.[80]

Due to their low reproductive potential, depleted population status, and the fact that they are highly traded, manta rays would significantly benefit from a CITES Appendix II listing.

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[72] Marshall, A., Bennett, M.B., Kodja, G., Hinojosa-Alvarez, S., Galvan-Magana, F., Harding, M., Stevens, G. & Kashiwagi, T. 2011a. Manta birostris. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on 12 December 2011.

[73] Deakos M.H., Baker, J.D., Bejder, L., "Characteristics of a manta ray Manta alfredi population off Maui, Hawaii, and implications for management.," Marine Ecology Progress Series 429:245-260, 2011.

[74] Marshall, A., Kashiwagi, T., Bennett, M.B., Deakos, M., Stevens, G., McGregor, F., Clark, T., Ishihara, H. & Sato, K. 2011b. Manta alfredi. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on 12 December 2011.

[75] Deakos M.H., Baker, J.D., Bejder, L. 2011.

[76] Marshall, A. et al., 2011b.

[77] Marshall, A. et al., 2011a; Marshall, A. et al., 2011b.

[78] Deakos M.H., Baker, J.D., Bejder, L. 2011.

[79] Deakos M.H., Baker, J.D., Bejder, L. 2011.

[80] Marshall, A. et al., 2011b.