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Dr. Heather Koldewey
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cc. Simon Harding

December 8, 2009

Dear Heather,

Public consultation on protection of Chagos Archipelago

The UK Foreign and Commonwealth Office launched a public consultation (10th November 2009 to 12th February 2010) on whether the Chagos archipelago and its surrounding waters should be protected.

<http://www.fco.gov.uk/en/about-us/publications-and-documents/publications1/consultations1/open-consultations>

Advice was requested by Heather Koldewey and Simon Harding (both of the Zoological Society of London, representing the Chagos Environment Network) for use in a consultation paper. Specifically, the IUCN Shark Specialist Group was asked to comment on 1) the benefits for sharks if the proposed British Indian Ocean Territory/Chagos Archipelago MPA was closed to all fishing and 2) the significance of the shark bycatch from the tuna fishery (e.g. compared to other fisheries or regions).

1. First, we support the proposed closure of the Chagos Archipelago to all commercial fishing, including the pelagic tuna fishery. Second, we recommend that the vessel licensing requirement be changed to prohibit the possession of shark fins (no shark fins to be stored aboard), carcasses and other shark products and require that all sharks and rays captured during long-lining or purse-seining activities be released unharmed. These proposed actions will contribute to conserving shark and ray populations by providing a refuge from fishing mortality, which will

increase the likelihood of recovery of threatened shark species within BIOT fishing waters.

2. Fisheries for tuna and tuna-like fishes, such as swordfishes, as well as targeted shark fisheries are the greatest threat to sharks and rays. Of all ocean regions the threat of these fisheries to sharks is among the highest in the Indian Ocean. Of the 21 pelagic chondrichthyans species present in the Indian Ocean, twelve are listed as either Endangered or Vulnerable on the IUCN Red List (www.iucnredlist.org - Table 1). There are two main types of fishing activity that impact sharks in the western Indian Ocean: fisheries for tuna and tuna-like fishes and coastal fisheries.
3. Both longline and purse-seine fisheries occur in the waters surrounding the BIOT and we have summarized some catch rates and total catch values below. Total catch between 1999 and 2008 from purse-seining for yellowfin and skipjack tuna ranged between 95 and 23,418 tonnes per year with a catch per unit effort (CPUE) of 3.5 – 35.2 tonnes per vessel per fishing day (Pearce and Kirkwood, 2004; Mees *et al.*, 2008). Total catch between 1999 and 2008 from longlining for bigeye and yellowfin tuna ranged between 590 and 1939 tonnes/year with a CPUE of 0.52 – 1.17 tonnes per vessel per fishing day (Pearce and Kirkwood, 2004; Mees *et al.*, 2008). Longline bycatch of sharks in the BIOT is substantial. A study that sampled nearly 40,000 longline hooks over three fishing seasons found that in terms of percent of total catch, or total number of hooks with a fish present, rays (5%) and sharks (4%) comprised a large proportion of the catch (Roberts, 2007) and that the blue shark comprised 52% of the total shark catch, pelagic thresher (listed as Vulnerable on the IUCN Red List) 15% and the silky shark 14%. The CPUE of the blue shark was found to be 2.06 sharks per 1000 hooks.
4. There are five main sources of shark mortality in the area surrounding the BIOT.
 - a. The British Indian Ocean Territory (BIOT) is located near to the top two shark-fishing nations in the world, Indonesia and India. Together both nations have accounted for 22% of the total FAO-reported chondrichthyan global landings reported to FAO since 2000, and almost 26% of the 2007 landings from all oceans (FAO, 2009; Camhi *et al.*, 2009). Landings of chondrichthyans have been steadily rising in both the Eastern and Western Indian Ocean since the 1950s.
 - b. In the Maldives, sharks are targeted in the longline shark fishery and taken as bycatch in tuna fisheries (Anderson and Waheed, 1999). Silky sharks dominated the catch in both fisheries, accounting for about 80% by number of the directed shark catch. Oceanic whitetip has been the second most important shark

species, followed by blue, shortfin mako, threshers and hammerheads (Anderson and Hafiz, 2002). In February 2009, the Maldives shut down their reef shark fishery, and in February 2010 all shark exports from the country will be banned.

- c. Sri Lanka was once a major shark-fishing nation, but reported landings have rapidly declined since 2003 (FAO, 2009). The oceanic whitetip, blue, shortfin mako, threshers and hammerheads, along with crocodile *Pseudocarcharias kamoharui* and whale *Rhincodon typus* sharks, are also taken in the drift gillnet and/or longline fisheries of Sri Lanka (Joseph, 1999). Silky sharks dominate (by weight and numbers) Sri Lanka's coastal and offshore fisheries.
 - d. The Spanish longline fleet has been targeting swordfish in the Indian Ocean since 1993. Between 1993 and 2004, large pelagic sharks, accounted for 47% of the total landed biomass (Mejuto *et al.*, 2006). About 71% of the shark bycatch was of blue sharks, with shortfin mako being the second most prevalent "bycatch" species by weight (Garcia-Cortés and Mejuto, 2005).
 - e. Ocean-based fisheries and poaching by illegal fishers are also causing declines in reef-associated sharks in the BIOT. Reef-associated sharks are commonly caught on longlines (Table 2). Underwater visual census of four island groups in the Chagos archipelago have shown a decline of over 90% in the number of sharks present on coral reefs over the past 30 years; 4.2 sharks per dive (s/d) in both 1975 and 1979, 0.7 s/d in 1996, 1.2 s/d in 2001 and 0.4 s/d in 2006 (Anderson *et al.* 1998; Graham, N.A.J., personal communication). One of the 5 species documented in the coral reef habitats of BIOT, the tawny nurse shark (*Nebrius ferrugineus*) is listed as Vulnerable on the IUCN Red List (Table 2) and showed continued declines throughout the 30 year study (Graham, N.A.J., personal communication).
5. Sharks are intrinsically vulnerable to overfishing because they are generally characterized by slow growth, late maturity and low fecundity. As a consequence sharks have low rates of population increase and limited potential to recover from overfishing (Dulvy *et al.*, 2008; Camhi *et al.*, 2009). The BIOT MPA may give threatened species a 'safe house', which can only facilitate their recovery.
 6. We recommend that the licensing requirement be changed to ensure that fishing vessels are not permitted to have shark fins or shark products on board or in their possession at any time. This would ensure effective monitoring and enforcement. Furthermore, it should be REQUIRED that all sharks and rays captured during long-lining or purse-seining

activities be released unharmed. Allowing possession of sharks onboard fishing vessels operating in BIOT, as is currently allowed (Table 3), creates a potential loophole which may hinder fisheries enforcement and facilitate continued shark mortality.

Please do not hesitate to contact us if you have any further questions.

Sincerely,

Nicholas K. Dulvy and Andrés Domingo Balestra

IUCN Shark Specialist Group Co-Chairs

Table 1. Pelagic sharks present in the Indian Ocean and their IUCN Red List status. EN: Endangered; VU: Vulnerable; NT: Near Threatened; LC: Least Concern; DD: Data Deficient.

Species	Name	Family	Status
<i>Sphyrna lewini</i>	Scalloped hammerhead	Sphyrnidae	EN
<i>Sphyrna mokarran</i>	Great hammerhead	Sphyrnidae	EN
<i>Alopias superciliosus</i>	Bigeye thresher	Alopiidae	VU
<i>Alopias vulpinus</i>	Thintail thresher	Alopiidae	VU
<i>Alopias pelagicus</i>	Pelagic thresher	Alopiidae	VU
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	Carcharhinidae	VU
<i>Cetorhinus maximus</i>	Basking shark	Cetorhinidae	VU
<i>Isurus paucus</i>	Longfin mako	Lamnidae	VU
<i>Lamna nasus</i>	Porbeagle	Lamnidae	VU
<i>Isurus oxyrinchus</i>	Shortfin mako	Lamnidae	VU
<i>Rhincodon typus</i>	Whale shark	Rhincodontidae	VU
<i>Sphyrna zygaena</i>	Smooth hammerhead	Sphyrnidae	VU
<i>Prionace glauca</i>	Blue shark	Carcharhinidae	NT
<i>Mobula eregoodootenkee</i>	Pygmy devilray	Myliobatidae	NT
<i>Mobula thurstoni</i>	Smooth-tail mobula	Myliobatidae	NT
<i>Pseudocarcharias kamoharui</i>	Crocodile shark	Pseudocarchariidae	NT
<i>Carcharhinus falciformis</i>	Silky shark	Carcharhinidae	NT
<i>Pteroplatytrygon violacea</i>	Pelagic stingray	Dasyatidae	LC
<i>Megachasma pelagios</i>	Megamouth shark	Megachasmidae	DD
<i>Mobula kublii</i>	Shortfin devil ray	Myliobatidae	DD
<i>Mobula tarapacana</i>	Greater Guinean Mobula	Myliobatidae	DD

Table 2. Reef-associated sharks present in the Chagos Archipelago and their IUCN Red List status. EN: Endangered; VU: Vulnerable; NT: Near Threatened; LC: Least Concern; DD: Data Deficient.

Species	Name	Family	Status
<i>Nebrius ferrugineus</i>	Tawny nurse shark	Ginglymostomatidae	VU
<i>Carcharhinus albimarginatus</i>	Silvertip shark	Carcharhinidae	NT
<i>Carcharhinus amblyrhynchos</i>	Grey reef shark	Carcharhinidae	NT
<i>Carcharhinus melanopterus</i>	Blacktip reef shark	Carcharhinidae	NT
<i>Triaenodon obesus</i>	Whitetip reef shark	Carcharhinidae	NT

Table 3. Terms and conditions of tuna long-line licensing in BIOT with respect to sharks (Anon, 2007).

The removal of shark fins is not permitted.
The retaining or transshipping shark fins is prohibited.
The release of all sharks is recommended.
The master of a licenced fishing boat shall upon inspection declare the quantities of shark fins and shark products on board the boat.
All sharks retained must be recorded in BIOT logbooks.
When entering the zone, any shark fins onboard must be stored separately from the catch. Fins should be put in bags or another separate container and clearly labeled.
When entering or exiting the zone, shark or any shark products onboard must be reported in the prescribed manner and according to the prescribed schedule to the Director of fisheries.

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