MEMORANDUM OF UNDERSTANDING ON THE CONSERVATION OF MIGRATORY SHARKS

CMS/Sharks/MOS2/Doc.8.2.6

18 September 2015

Original: English

Second Meeting of the Signatories
San José, Costa Rica, 15-19 February 2016
Agenda Item 8

# PROPOSAL FOR THE INCLUSION OF THE SILKY SHARK, *CARCHARHINUS FALCIFORMIS*, IN ANNEX 1 OF THE CMS MEMORANDUM OF UNDERSTANDING ON THE CONSERVATION OF MIGRATORY SHARKS

*(Prepared by the Secretariat)*

1. The present proposal for the inclusion of the entire population of the Silky Shark (*Carcharhinus falciformis*) in Annex 1 to the MOU represents the original proposal for inclusion of the species in CMS Appendix II, submitted as UNEP/CMS/COP11/Doc.24.1.14/Rev.1 by the Government of Egypt to the 11th Meeting of the Conference of the Parties (CMS COP11). The proposal was subsequently adopted by the Parties.

2. As agreed at the 1st Meeting of the Signatories (MOS1) and in line with the procedure explained in CMS/Sharks/MOS2/Doc.8.2.1, the original proposal is now being resubmitted for consideration by the Second Meeting of the Signatories (MOS2). Signatories are requested to consider the inclusion of *Carcharhinus falciformis* in Annex 1 of the Memorandum of Understanding on the Conservation of Migratory Sharks (Sharks MOU) based on the information provided in this document.

3. The Advisory Committee of the MOU has presented a review of the proposal in CMS/Sharks/MOS2/Doc.8.2.10 in which the Committee recommends the entire population of *Carcharhinus falciformis* for inclusion in Annex 1.

# PROPOSAL FOR INCLUSION OF SPECIES ON THE APPENDICES OF THE CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS

*(Originally submitted as UNEP/CMS/COP11/Doc.24.1.14/Rev.1 to CMS COP11 by the Government of Egypt on 5 November 2014)*

**A.** **PROPOSAL:** Inclusion of the entire population of silky sharks, *Carcharhinus falciformis*, in Appendix II

Summary: The silky shark (*Carcharhinus falciformis*) is listed on the IUCN Red List of Threatened Species as Near Threatened globally but Vulnerable in some regions due to continued declines in their populations around the world.

*C. falciformis* are migratory and found in oceanic and coastal habitats of tropical water. They exhibit particularly low productivity and show slow recovery from overexploitation. *C. falciformis* are vulnerable to fishing pressure, both directed and bycatch. Their fins are an important component of the global shark fin trade accounting for approximately 3.5 % of sharks in the Hong Kong market. *C. falciformis* populations have declined globally, with some regions experiencing declines of more than 90%.

A listing on Appendix II of CMS would provide additional support for introducing collaborative management of this species by Range States, through CMS itself and through possible inclusion of *C. falciformis* on the CMS global Memorandum of Understanding (MoU) on the Conservation of Migratory Sharks.

**B.** **PROPONENT**: Government of Egypt

## C. SUPPORTING STATEMENT

### 1. Taxon

**1.1** **Classis**: Chondrichthyes
**1.2** **Ordo**: Carcharhiniformes
**1.3** **Familia**: Carcharhinidae
**1.4** **Genus or Species** resp. subspecies, including author and year: *Carcharhinus falciformis* (Müller & Henle, 1839)
**1.5** **Common name(s)**, when applicable: Silky shark

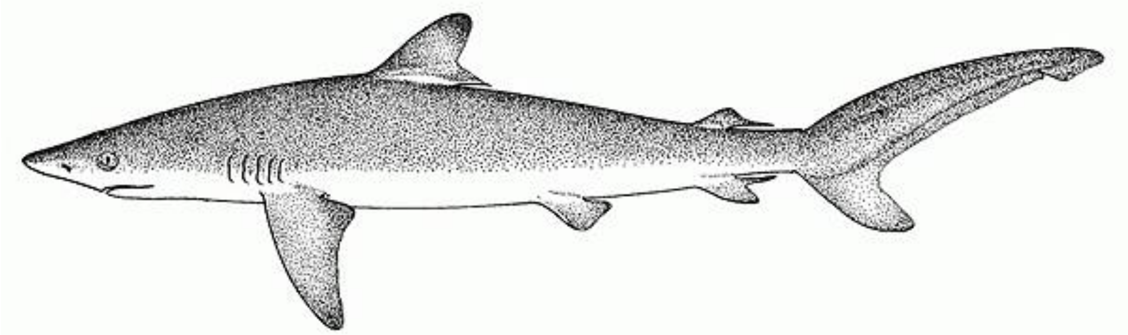

**Figure 1.** Silky shark illustration from FAO.org

## 2. Biological data

2.1 <u>Distribution (current and historical) – (see also Section 5)</u>

*C. falciformis* are known for their slender bodies and smoother skin and are considered an active and quick moving shark. They are oceanic and coastal being found near the edge of continental shelves but also out in the ocean sea. They can be found in shallow water and to depths of 500 meters. *C. falciformis* are circumglobal in tropical waters (Maguire et al. 2006).

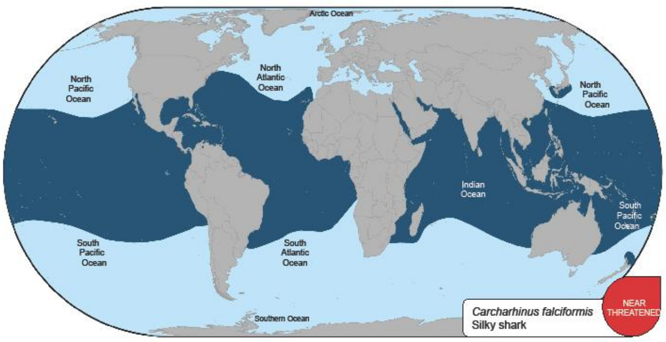


**Figure 2.** World distribution map for silky sharks, *Carcharhinus falciformis*, courtesy of IUCN.

2.2 <u>Population (estimates and trends)</u>

While the silky shark is considered Near Threatened globally by the IUCN Red List of Threatened Species, it has the following regional classifications: Vulnerable in the eastern central and southeast Pacific; Vulnerable in the northwest Atlantic and western central Atlantic; Near Threatened in the southwest Atlantic; and Near Threatened in the Indian Ocean and western central Pacific.

Due to its life history characteristics, slow growth, late maturity, and production of few young, which are noted in Table 1 below, *C. falciformis* is vulnerable to overexploitation by fishing and is experiencing significant population declines throughout its range (See section 3.1).

Few stock assessments have been conducted for *C. falciformis*, but those that exist show populations are in decline. The Western Central Pacific Fisheries Commission Scientific Committee recently conducted a stock assessment which concluded overfishing is occurring and that it is highly likely the silky shark stock is overfished (Rice and Harley 2013). As a result of the stock assessment, the Western Central Pacific Fisheries Commission (WCPFC) prohibited the landing of *C. falciformis*. In the eastern Pacific Ocean, a stock assessment has been in process for a couple of years and shows the population is in decline, especially in the south (Aires-da-Silva et al. 2013). decline, especially in the south (Aires-da-Silva et al. 2013). In the Eastern Tropical Pacific, silky sharks constitute one of the main species caught in longline fisheries, ranking as the third of four most important components of the catch, and it has been demonstrated that not only relative abundance has declined dramatically during the last 10 years, but also has the size of the silky sharks (Whoriskey et al., 2011; Dapp et al., 2013). Genetic analysis in the Pacific Ocean suggests *C. falciformis* have low genetic variation, there is genetic connectivity among the regions, and that there is evidence that there are distinct eastern and western Pacific populations (Galván-Tirado et al. 2013). Within the eastern Pacific Ocean, the recent stock assessment has suggested the possibility of two separate stocks (Aires-da-Silva et al. 2013). Eighteen microsatellite loci were developed for the silky shark *Carcharhinus falciformis* and screened across a total of 53 individuals from the western Atlantic Ocean, Eastern Tropical Pacific Ocean, and Red Sea. The number of alleles per locus ranged from 3 to 19, observed heterozygosity ranged from 0.158 to 0.917, and the probability of identity values ranged from 0.010 to 0.460. These new loci will provide tools for examining the genetic variation and structure in a globally declining species (O'Bryhim et al., in prep).

In the Indian Ocean, as for all other shark species, there isn't enough data to conduct a stock assessment, and the situation isn't expected to change in the near future. As a result the stock status is highly uncertain. However, a recent ecological risk assessment for the Indian Ocean ranks *C. falciformis* second in vulnerability in the purse seine fishery and fourth for the longline fishery due to their susceptibility to these fisheries and their life history characteristics. The Indian Ocean Tuna Commission (IOTC) Scientific Committee's report notes that "despite the lack of data, it is clear from the information that is available that silky shark abundance has declined significantly over recent decades" (IOTC 2013).

In the Atlantic Ocean, *C. falciformis* are ranked first in vulnerability to the longline fishery (Cortés et al. 2010), which resulted in the species being prohibited from landing in the International Commission for the Conservation of Atlantic Tuna (ICCAT). The available data, ecological risk assessments, and stock assessments show silky shark populations are declining throughout their global range.

**Table 1**. Life history characteristics noted by region for *C. falciformis*

| **Region** | **Size at sexual maturity** | **Age at sexual maturity** | **Litter size** | **Gestation period** | **Reference** |
|---|---|---|---|---|---|
| Northwest Atlantic | Male: 215-225 cm TL<br>Female: 232-246 cm TL | | | | Bonfil 2008 |
| Gulf of Mexico | Male: 210–220 cm TL<br>Female: >225 cm TL | Male: 6–7 yr<br>Female: 7–9 yr | | 12 month | Branstetter 1987 |
| Equatorial Atlantic | Male: 210- 230 cm<br>Female: 230 cm | | 4 -15 | | Hazin, F. et al. 2007 |
| Equatorial Atlantic | Male: 180-200 cm<br>Female: 205-210cm | | 7-25 | | Lana 2012 |
| Western-central Pacific | Male: 210-214 cm<br>Female: 202-218 cm | | | | Bonfil 2008 |
| Eastern Pacific (Baja California Sur, Mexico) | Male: 182 cm<br>Female: 180 cm | | 2-9 | | Hoyos-Padilla et al. 2011 |
| Baja California Sur, Mexico | | 7-8 yrs (both) | | | Sánchez-de Ita, et al. 2011 |
| Eastern Indian Ocean | Male: 207 cm<br>Female: 215 cm | Male: 13 yrs<br>Female: 15 yrs | | | Hall et al. 2012 |
| Northeastern Taiwan | Male: 212.5 cm (50%)<br>Female: 210-220 cm | Male: 9.3 yrs<br>Female: 9.2-10.2 yrs | 8-10 | | Joung et al. 2008 |

2.3 Habitat (short description and trends)

*C. falciformis* can be found in oceanic and coastal- pelagic habitats of tropical waters. *C. falciformis* often inhabit continental shelves and slopes from the surface to 500 m of depth. Older silky sharks are typically in oceanic waters, but often found more offshore near land than in the open ocean (Baum and Myers 2004). *C. falciformis* can be found on reefs that are adjacent to deep water, for example in the Red Sea (Clarke, C. et al. 2011). Their foraging occurs more inshore and they will return to the shelf to reproduce. Nurseries are along the outer continental shelf edge, and neonates stay near the reefs until they are large enough to move to the pelagic habitat, possibly the first winter after pupping in the early summer (Beerkircher et al. 2002). Around 130 cm in length, *C. falciformis* move to an oceanic habitat where they join schools of pelagic fish, such as tuna, which is why they are often caught as bycatch and found near fish aggregating devices (Rice and Harley 2013). While *C. falciformis* can be found in warmer tropical waters above 23˚C (Last and Stevens 1994, Rice and Harley 2013), and they have been found to migrate according to temperature. In the Exclusive Economic Zone (EEZ) of Costa Rica C. falciformis spends its entire time in the top 50 meter layer of water, and 45% of the time on the top 5 meter layer, at temperatures between 28°C and 30°C (Kohin et al, 2006). Even though *C. falciformis* were found to remain within the uniform temperature surface layer, but those north of 10°N remained significantly deeper and in cooler temperatures than those south of 10°N (Musyl et al. 2011). It has also been noted that *C. falciformis* have shown sexual segregation (Lana 2012, Clarke, C. et al. 2011).

2.4 Migrations (kinds of movement, distance, proportion of the population migrating)

Silky sharks live in a variety of habitats throughout their life and have been found to migrate, regularly and cyclically crossing international borders. While they may not travel as much as other species, they may cover large distances in a short period of time (Clarke, C. et al. 2011). Tagging studies have shown *C. falciformis* move between open ocean and coastal systems and between northern and southern regions (Galván-Tirado, et al. 2013). For feeding and reproducing, adult *C. falciformis* have been found to return to the shelf waters. *C. falciformis* are ranked fourth in speed among sharks with an estimated maximum speed of 60 km/day (Bonfil 2008). Previous known maximum distance was 1,339 km (Bonfil 2008), but a recent tagging program noted a silky shark traveled 2,200 km from Wolf Island in the Galapagos Marine Reserve to Clipperton Island (Galapagos Conservancy). In the Northwest Atlantic, *C. falciformis* were found to have left the exclusive economic zone of the United States, moved into and out of the Gulf of Mexico, and moved into the Caribbean Sea, with a maximum distance of 723 miles traveled (Kohler et al. 1998). In the Eastern Pacific Ocean, tagged *C. falciformis* crossed the EEZs of six countries and went into international waters (Kohin et al. 2006). *C. falciformis* may disperse across the Pacific Ocean, crossing boundaries, using the warm currents and islands as stepping stones (Galván-Tirado et al. 2013). As a result, it has been noted that international cooperation and management is needed for this migratory species (Kohler et al. 1998, Kohin et al. 2006).

## 3. Threat data

3.1 Direct threat of threat of the population (factors, intensity)

High levels of fishing pressure on the high seas have led to the rapid global decline of silky sharks. These severe declines have been documented in the IATTC and WCPFC assessments of *C. falciformis* populations, with similar trends indicated by the ERA's undertaken by IOTC and ICCAT.

Silky sharks are one of, if not the, most commonly caught shark in longline and purse seine gear (Beerkircher et al. 2002, IATTC 2013, Clarke et al. 2011). *C. falciformis*, especially those three years old and younger, are particularly vulnerable to being entangled in fish aggregating devices (FADs), which are common in purse seine fisheries (Filmalter et al. 2013). They have also been found to be vulnerable to shallow set longline fisheries and purse seine fisheries targeting smaller tuna and mahi mahi that occur in the upper 50 meters, due to their preference of depth and temperature (Kohin et al. 2006). In addition to being caught as bycatch, *C. falciformis* are targeted within some intensive coastal multispecies fisheries that operate in the Indian Ocean and off the Pacific coast of Central America (Galván-Tirado et al. 2013).

Atlantic Ocean:

According to an ecological risk assessment in the Atlantic Ocean, *C. falciformis* were found to be the most vulnerable of 11 pelagic elasmobranch species to pelagic longline fisheries (Cortés et al. 2010). Their combination of low productivity and high susceptibility to pelagic longline gears makes them at high risk for overexploitation. As a result of being a prominent bycatch species in the pelagic longline fishery, declines have been noted throughout the region.

In the Gulf of Mexico, silky sharks, along with oceanic whitetip sharks, were the most commonly caught shark species, but these shark species have experienced drastic declines in their populations. In the 1950s, *C. falciformis* were found on 35% of sets and accounted for 24% of all sharks caught in the longline fishery (Baum and Myers 2004). Catch rates for *C. falciformis* declined from 1.71 (±3.49 SD) per 1000 hooks in the 1950s to 0.10 (±0.42 SD) per 1000 hooks in the 1990s (Baum and Myers 2004). Baum and Myers (2004) estimate this decline in catch rate equates to a 10-fold decline, or 91.2%, in *C. falciformis* abundance in 40 years in the Gulf of Mexico. The mean size is also notably smaller from the 1950s, with silky sharks averaging 97 cm in the 1990s, which is well below the size of maturity of 180 cm for the region (Baum and Myers 2004). Based on this study and others, it was noted that *C. falciformis* are under serious risk of extirpation (Baum and Myers 2004).

Off the southeastern coast of the U.S., large declines in relative abundance have been seen for *C. falciformis*. Catch per unit effort (CPUE) observed in the pelagic longline fishery was 11.22 in 1981-83 and 3.49 in 1992-2000 (Beerkircher et al. 2002). More than 95% of the catch from 1992-2000 was immature individuals (Beerkircher et al. 2002). While 25.9% of the silky sharks caught were released alive, 44% were discarded dead and 30% were retained (Beerkircher et al. 2002). While variable, overall standardized catch rates for *C. falciformis* in the Atlantic, including the Gulf of Mexico and Caribbean, experienced a 72% decline in abundance from 1992-1997 as noted from CPUE in longline reports (Cramer 2000). From 1992-2005 in the same region, including Gulf of Mexico and Caribbean, pelagic longline logbooks noted a 50% decline and the pelagic longline observer program noted a 46% decline (Cortés et al. 2007). According to U.S. pelagic longline fishery observer data for the northwest Atlantic, the coastal shark group, dusky, silky, and night sharks, were estimated to have declined by 76% between 1992-2005 (Baum and Blanchard 2010). It has been estimated that fishing mortality in the northwest Atlantic would need to be reduced by ~60%, as a minimum baseline, to ensure the survival silky sharks (Myers and Worm 2005).

Pacific Ocean:

*C. falciformis* are the main shark bycatch of both the longline and purse seine fisheries in the western and central Pacific Ocean (Clarke et al. 2011) Whoriskey et al., 2011; Dapp et al., 2013). Concentrated between 20° N and S latitudes, silky sharks have been found to be more abundant in the western equatorial WCPO than in eastern areas (Clarke et al. 2011). In the western, eastern, and central Pacific Ocean, *C. falciformis* have experienced both a decline in population as well as the median length of the individuals caught (Clarke et al. 2011, Clarke et al. 2012);, Whoriskey et al., 2011; Dapp et al., 2013). While Clarke et al. 2012 found the changes in abundance for silky sharks were not significant from 1995-2010, the study did note that *C. falciformis* are experiencing a decline in the catch rate from 2006- 2010 and that all *C. falciformis* were immature. Furthermore, those caught in the longline fishery were often kept, while the silky sharks caught in the purse seine fishery were finned and not retained. During observer studies on board longline vessels in the EZZ of Costa Rica from 1999 to 2009, it was determined that silky sharks were the third most abundante catch, wtih a CPUE ranging from 2.96 to 8.08 indiv/1000 hooks, with generalized linear models showing a decline in catch rates throughout the decade examined (Whoriskey et al., 2011; Dapp et al., 2013). Furthermore, a significant reduction was detected in Total Length for silky sharks from 2003 to 2010, with very few adults present in the 2010 reported catch (Dapp et al., 2013).

In the western and central Pacific Ocean, bycatch from the longline fishery presents the greatest threat to *C. falciformis* populations. *C. falciformis* are predominately caught in the shallow sets. The purse seine fishery, which catches juveniles predominantly, also significantly impacts the stock. Interactions with *C. falciformis* can occur throughout the full range of the purse seine fishery and 70% of the observer-recorded catch was silky sharks. (Clarke et al. 2011) Increased fishing mortality, recent declining CPUE, and declines in size composition data have been found during 1995-2009. For this stock, MSY is estimated at 1,994 mt requiring a 78% reduction in fishing mortality to be at MSY. Stock depletion has been estimated that the total biomass is at 30% of the theoretical virgin biomass and spawning biomass has declined to 67% of the 1995 value (Rice and Harley 2013).

The fourth largest catcher of sharks in the world is the Taiwanese fleet, accounting for 6% of the global figures (which could be an under estimate) (Vanson Liu et al. 2013). The silky shark is one of the main species caught by this fleet. DNA barcoding of shark filets from the market in Taiwan found 23% of the samples were *C. falciformis* sharks, but *C. falciformis* represented 1.04% of the total landings (Vanson Liu et al. 2013). According to Vanson Liu et al. 2013, these results suggest an increase in *C. falciformis* exploitation in recent years, landings from other harbors, or unreported landings.

*C. falciformis* are also the most commonly caught shark species in the eastern Pacific Ocean in both the longline and purse seine fisheries. Commonly referred to as “punta negra” by fishermen, silky sharks were often misidentified as blacktip sharks leading to higher catch rates than previously reported (Román-Verdesoto and Orozco-Zöller 2005). Based on data for purse-seine sets on floating objects, the estimated indices of relative abundance of medium and large sized *C. falciformis* from 1994-2004 showed decreasing trends (IATTC 2013). Between 1994-2004 silky shark bycatch in the eastern Pacific Ocean purse seine fishery declined 60-80% (Minami et al. 2007, Galván-Tirado et al. 2013). While the data suggested the *C. falciformis* population may have experienced some stability, the most recent purse-seine CPUE showed declines for all sizes of silky shark in the northern eastern Pacific Ocean over the past two years (Aires-da-Silva et al. 2013).

Indian Ocean:

*C. falciformis* are commonly taken in fisheries in the Indian Ocean and are vulnerable to overfishing. In a recent ecological risk assessment, *C. falciformis* ranked second as the most vulnerable shark species for purse seine gear and fourth for the longline gear. Silky sharks have low productivity and were found to be highly susceptible to both fishing gears. *C. falciformis* are both a bycatch of industrial fisheries (pelagic longline tuna and swordfish and purse seine fisheries) and a target in semi-industrial, artisanal, and recreational fisheries (IOTC 2013). At current effort levels, the stock status is at considerable risk, and if continued at current or increased levels declines in biomass, productivity and CPUE are expected, with local population depletions possible. Australia, EU (Spain, Portugal), United Kingdom and South Africa reported bycatch of silky sharks in longlines targeting swordfish (0.1% of catch) and Iran and Sri Lanka reported 25% and 11% of their catch in gillnets was *C. falciformis* respectively.

Declines in abundance have been noted in the region. Over the past 20 years, Maldivian fishermen noted a significant decline in *C. falciformis* abundance (Anderson 2009, IOTC 2013). There is anecdotal evidence of a five-fold decrease in *C. falciformis* catch in purse seine CPUE between the 1980s and 2005 (IOTC 2013). Indian longline catch has also seen a decline from 1984-2006 (John and Varghese 2009, IOTC 2013). Sri Lanka has had a silky shark fishery for 40 years but it appears to have collapsed with the average landings declining from 13,000 t in the 1980s to 4,600t since 2000 (Bonfil 2008 and FAO 2009, Camhi et al. 2009). Decreases in shark abundance have been noted by Omani fishermen and *C. falciformis* are one of the main species caught. While all life stages are represented in Oman’s landings, *C. falciformis* were vulnerable to capture soon after birth with immature sharks representing a large part of the landings. It was further suggested that different components of the fishery were taking different size classes. (Henderson et al. 2009). In addition to the fisheries themselves, *C. falciformis* are often entangled in the drifting fish aggregating devices (FADs) associated with the purse seine fishery. The mortality found with these FADs in the Indian Ocean was 5-10 times higher than the previous estimates of bycatch in the purse seine fishery. Between 480, 000–960,000 silky sharks were estimated killed from this fishery in the Indian Ocean per year (Filmalter et al. 2013).

Overexploitation of a particular sex or stage could disrupt the population dynamics and cause a collapse. In the Red Sea, female silky sharks, predominately, were found to aggregate on the reefs (Clarke, C. et al. 2011). It is unclear whether this is part of an isolated population or part of a larger population within the Indian Ocean. If these females are targeted, it could impact the status of silky shark population throughout the Indian Ocean, suggesting the need for collaborative management (Clarke, C. et al. 2011).

## 3.2 Habitat destruction (quality of changes, quantity of loss)

Habitat loss can change the abundance and distribution of a species. Since *C. falciformis* aren’t often found inshore or use coastal lagoons for pupping or nursery areas, the threats from habitat loss or destruction that is widespread in these areas are limited (Maguire et al. 2006).
However, it is important to note that there is no protection for critical pelagic high seas habitats, which is highly significant given the highly migratory, pelagic nature of *C. falciformis*.

### 3.3 Indirect threat (e.g. reduction of breeding success by pesticide contamination)

High levels of ecosystem contaminants (PCBs, organo-chlorines and heavy metals) that bio-accumulate and are bio-magnified at high trophic levels are associated with infertility in sharks (Stevens et al. 2005), but their specific impacts on *C. falciformis* are unknown. Some studies have shown *C. falciformis* have had high levels of contaminants. In the Gulf of Mexico, they were found to have high levels of petroleum-derived contaminants, particularly polycyclic aromatic hydrocarbons (PAHs), but it was unclear whether it was a direct result of the Deepwater Horizon oil spill or just their affinity towards being near oil rigs (Hueter). Mercury levels found in *C. falciformis* in Baja California Peninsula were over the limit set forth by the Mexican government for human consumption (above 1.0 µg/g) (Maz-Courrau et al. 2012). All sampled *C. falciformis*, regardless of size, were found to be above this level, which is the highest percentage among the species tested and is a result of the habitat and prey of *C. falciformis* (Maz-Courrau et al. 2012).

### 3.4 Threat connected especially with migrations

There is little to no protection for silky sharks in much of their critical habitat. Given their wide ranging, migratory, pelagic nature, and the fact that the most significant and ongoing threat is target and bycatch in fisheries, silky sharks require protections across their range.

Since *C. falciformis* regularly migrate between the EEZs of different Range States and into the high seas, no part of any stock can benefit fully from any management measures that are introduced within its waters by a single Range State. The regional protections afforded by some regional fisheries management organizations (RFMOs) (see 4.2) will reduce some of the threat from the longline and purse seine fisheries targeting tuna and swordfish, but these measures do not offer full protection from every fishery within the region. Additionally, there are no other international protections that exist for these species, making them vulnerable over much of their range, particularly when they migrate.

### 3.5 National and international utilization

*C. falciformis* are targeted for its meat which is cooked, smoked or dried-salted, and lesser markets for its skin (for leather), and liver oil (for vitamin A). *C. falciformis* represented 23% of the sampled filets in Taiwanese markets, demonstrating the high consumption of meat. Shark flesh is consumed in Oman (Henderson et al. 2009). However, the principal driver of catch and then trade in these species is the international demand for shark fins. (Clarke et al. 2006). Silky shark fins represent 3.5 % of the fin trade in Hong Kong (Clarke et al. 2006a). Between half a million and one and half million silky sharks are utilized every year for their fins (Clarke et al. 2006b).

## 4. Protection status and needs

### 4.1 National protection status

A number of governments have prohibited the commercial fishing of all sharks throughout their exclusive economic zone, thus protecting *C. falciformis* within their waters. The following are shark sanctuaries: Palau, Maldives, Honduras, The Bahamas, Tokelau, Marshall Islands, French Polynesia, Cook Islands, and New Caledonia.

US Atlantic: Silky sharks are managed as part of the large coastal shark complex and are included in a commercial quota. In addition, these sharks may not be retained, transshipped, landed, stored, or sold by vessels with pelagic longline gear onboard. Charter/headboat vessels cannot possess these sharks while in possession of tunas, swordfish, or billfish.

4.2 International protection status

*C. falciformis* is listed on Annex I, Highly Migratory Species, of the UN Convention on the Law of the Sea demonstrating the importance of cooperative management for this species.

In response to growing concern over the status of large pelagic sharks, a number of RFMOs have undertaken stock assessments for species with sufficient data and ecological risk assessments for those without enough data to help guide their decisions for shark species that need protection. They have also taken measures to improve data collection to the species level, reduce bycatch, control finning, and prohibit landings of the most threatened species.

The International Commission for the Conservation of Atlantic Tuna (ICCAT 2011) and the Western and Central Pacific Fisheries Commission (WCPFC 2013) prohibit retaining on board, transshipping, or landing any part or whole carcass of silky shark in the fisheries covered by the Convention. While these prohibitions protect the silky shark throughout part of its range, these measures aren't sufficient to fully protect the silky shark from continued fishing pressures that are driving this species towards extinction.

4.3 Additional protection needs

While some management measures and prohibitions exist at the national and regional level (4.1 and 4.2), they do not extend throughout its entire range, nor is international trade regulated. *C. falciformis* are likely to be pushed closer to extinction until globally applicable, enforceable measures are put in place worldwide to protect it from overexploitation.

An Appendix II CMS listing would raise the awareness of the need for domestic management of silky sharks in all range states. It would also ensure that international co-operation is prioritized, with additional RFMO measures to prohibit or strictly regulate catch needed urgently across the range of all silky sharks. Additionally, to complement fisheries management measures, the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix II listings would aid in regulating international trade in silky shark products - ensuring it is sustainable, and from a legally obtained source.

Additional measures are necessary for this vulnerable species that migrates across national borders and into the high seas. The CMS Scientific Council has noted the silky shark qualifies for listing under CMS (CMS; IUCN SSG 2007) (Camhi, et al. 2009). Furthermore, an Appendix II listing could lead to sustainable management of this species by providing improvement in national and regional management.

## 5. Range States

*C. falciformis* occur in areas beyond national jurisdiction, therefore CMS Article I h) should be considered in determining a Range State:

"A Range State in relation to a particular migratory species means any State […] that exercises jurisdiction over any part of the range of that migratory species, or a State, flag vessels of which are engaged outside national jurisdictional limits in taking that migratory species."

A range state is, therefore, considered to be any nation where silky sharks are present in domestic waters and those fisheries nations operating on the high seas.

Parties to CMS:

Angola, Antigua and Barbuda, Australia, Bangladesh, Benin, Cameroon, Cape Verde, Chile, Congo, Cook Islands, Costa Rica (Cocos I.), Côte d'Ivoire, Cuba, Democratic Republic of the Congo, Djibouti, Ecuador, Egypt, Equatorial Guinea, Eritrea, France –(French Polynesia, (Clipperton I.), Guadeloupe, Guyana, Martinique, New Caledonia), Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Honduras, India, Israel, Jordan, Madagascar, Mauritius, Netherlands (Aruba, Curaçao), Mozambique, New Zealand, Nigeria, Palau, Panama, Peru, Philippines, Portugal (Madeira), Samoa, Sao Tomé and Principe, Saudi Arabia, Senegal, Somalia, South Africa, Spain (Canary Is.), Sri Lanka, Tanzania, United Republic of, Togo, United Kingdom (British Virgin Islands, Cayman Islands, Montserrat, Turks and Caicos Islands,), Yemen.

Other range States:

Bahamas, Barbados, Belize, Brazil, China, Colombia, Comoros, Dominica, Dominican Republic, El Salvador, Grenada, Haiti, Indonesia, Jamaica, Japan, Kiribati, Lebanon, Malaysia, Maldives, Marshall Islands, Mexico (Revillagigedo Is.), Micronesia, Federated States of, Nicaragua, Oman, Papua New Guinea, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sierra Leone, Sudan, Suriname, Thailand, Trinidad and Tobago, USA (American Samoa, Guam, Hawaiian Is. Northern Mariana Islands, US Virgin Islands), Venezuela.

## 6. Comments from Range States

## 7. Additional remarks

## 8. References

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