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

UNEP

NOTIFICATION TO THE PARTIES

No. 2016/003 Geneva, 5 February 2016

CONCERNING:

Seventeenth meeting of the Conference of the Parties

Proposals to amend the Appendices related to marine species

1. In accordance with paragraph 1(a) and 2(b) of Article XV of the Convention, the Secretariat hereby informs Parties that it has receive the following proposals to amend the Appendices for marine species, for consideration at the 17th meeting of the Conference of the Parties (CoP17).

   Sri Lanka (subsequently co-proposed by the Maldives)

   Inclusion of *Alopias superciliosus* (bigeye thresher shark) in Appendix II in accordance with Article II paragraph 2(a) of the Convention and satisfying criterion A in Annex 2a of Resolution Conf. 9.24 (Rev. CoP16). Inclusion of *Alopias vulpinus* (common thresher shark) and *Alopias pelagicus* (pelagic thresher shark) in Appendix II in accordance with Article II paragraph 2(b) of the Convention and satisfying criterion A in Annex 2b of Resolution Conf. 9.24 (Rev. CoP16).

   Fiji

   Inclusion of *Mobula tarapacana* (sicklefin devil ray) and *Mobula japanica* (spinetail devil ray) in Appendix II in accordance with Article II paragraph 2(a) of the Convention and satisfying criterion A in Annex 2a of Resolution Conf. 9.24 (Rev. CoP16). Inclusion of *Mobula mobular* (giant devil ray), *Mobula thurstoni* (bentfin devil ray), *Mobula eregoodootenkee* (longhorned pygmy devil ray), *Mobula kuhlii* (shortfin pygmy devil ray), *Mobula hypostoma* (Atlantic pygmy devil ray), *Mobula rochebrunei* (Guinean pygmy devil ray), *Mobula munkiana* (Munk's pygmy devil ray) and any putative species of *Mobula* in Appendix II in accordance with Article II paragraph 2(b) of the Convention and satisfying criterion A in Annex 2b of Resolution Conf. 9.24 (Rev. CoP16).

   Maldives

   Inclusion of *Carcharhinus falciformis* (Müller & Henle, 1839) in Appendix II in accordance with Article II paragraph 2 (a) of the Convention and satisfying criterion A in Annex 2a of Resolution Conf. 9.24 (Rev. CoP16).

2. Having submitted its proposal more than 330 days in advance of CoP17, Sri Lanka requested the Secretariat to circulate its proposal to all Parties in accordance with paragraph b) of Resolution Conf. 8.21 (Rev. CoP16) on *Consultation with range States on proposals to amend Appendices I and II*. The supporting statement for the proposal is contained in the Annex to the present Notification. Interested Parties are requested to send their comments to the proposing Party[1] in time for them to be incorporated into a revised version for submission by 27 April 2016.

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

Seventeenth meeting of the Conference of the Parties
Johannesburg (South Africa), 24 September – 5 October 2016

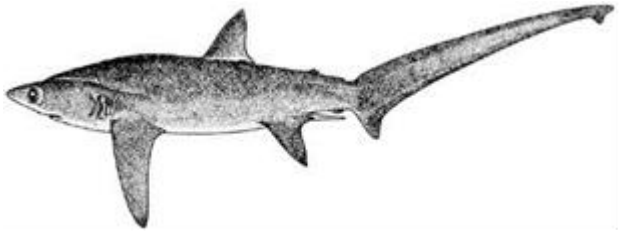
CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of *Alopias superciliosus* (bigeye thresher shark), in Appendix II in accordance with Article II paragraph 2(a) of the Convention and satisfying Criterion A in Annex 2a of Resolution Conf. 9.24 (Rev. CoP16).[1] Inclusion of *Alopias vulpinus* (common thresher shark) and *Alopias pelagicus* (pelagic thresher shark) in Appendix II in accordance with Article II paragraph 2(b) of the Convention and satisfying Criterion A in Annex 2b of Resolution Conf. 9.24 (Rev. CoP 14).

Inclusion in Appendix II, with the following annotation:

The entry into effect of the inclusion of *Alopias superciliosus* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues.



Annex 2a, Criterion A. *It is known, or can be inferred or projected, that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future.*

Alopias superciliosus qualifies for inclusion in Appendix II under this criterion because it is over-exploited for its fins, an important component of the global shark fin trade. This unsustainable international trade is driving marked declines of this species populations worldwide.

Alopias Spp have been identified in a 2014 study as the world's most vulnerable family of pelagic sharks due to a lack of global management and the threat of the unsustainable shark fin trade (Dulvy et al., 2014). The bigeye thresher shark is listed on the IUCN Red List of Threatened Species as Vulnerable globally but Endangered in the north-western, western, and central Atlantic and Near Threatened in the south-western Atlantic due to continued declines in their populations around the world.

A. superciliosus are migratory and found in oceanic and coastal habitats of tropical water. They exhibit extremely low productivity and show slow recovery from overexploitation. *A. superciliosus* are vulnerable to fishing pressure, both directed and bycatch. *Alopias spp.* fins are an important component of the global shark

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[1] The CITES listing criteria and definitions must be applied with flexibility and in context. This is consistent with the "Note" at the beginning of Annex 5 in Resolution Conf. 9.24 (Rev. CoP14): "Where numerical guidelines are cited in this Annex, they are presented only as examples, since it is impossible to give numerical values that are applicable to all taxa because of differences in their biology." The definition of "decline" in Annex 5 is relevant to the determination of whether a species meets either criterion in Annex 2a of the resolution. Nonetheless, is possible for a species to meet the criteria and qualify for listing in Appendix II even if it does not meet the specific parameters provided in the definition of "decline", which is indeed more relevant to inclusion of species in Appendix I. Where quantitative data are available, they should be used to evaluate a species' status. However, where data on population abundance are not available but there are indications that over-exploitation is or may be occurring (i.e., "it is known, or can be inferred or projected") and the regulation of trade could benefit the conservation of the species, listing should be supported.

fin trade accounting for approximately 2.3 % of sharks in the Hong Kong market. *A. superciliosus* populations have declined globally, with some regions experiencing declines of more than 83% (Ward and Myers, 2005), and with declines of over 70% observed globally. Based upon rates of exploitation, this species is likely to face an even higher threat of extinction unless international trade regulation provides an incentive to introduce or improve monitoring and management measures to provide a basis for non-detriment and legal acquisition findings.

Annex 2b, Criterion A. *The specimens of the species in the form in which they are traded resemble specimens of a species included in Appendix II under the provisions of Article II, paragraph 2(a), or in Appendix I, such that enforcement officers who encounter specimens of CITES-listed species, are unlikely to be able to distinguish between them.*

Common thresher (A. vulpinus) and Pelagic Thresher (A. pelagicus) sharks are included in this proposal, as in the most commonly form traded (dried, unprocessed shark fins) they closely resemble the fins of A. superciliosus and meet the criteria laid out in Article II paragraph 2(b) of the Convention and satisfy Criterion A in Annex 2b of Resolution Conf. 9.24 (Rev. CoP 16).

B. Proponent

Sri Lanka

C. Supporting statement

1. Taxonomy

1.1 Class: Chondricthyes, subclass Elasmobranchii
1.2 Order: Lamniformes
1.3 Family: Alopiidae
1.4 Genus, species: *Alopias superciliosus* (Lowe, 1841)
1.5 Scientific synonyms: *Alopias profundus* (Nakamura, 1935)

1.6 Common names:
Afrikaans: Grootoog-sambokhaai
English: Long-tailed shark, whiptail shark, big-eyed thresher shark
German: Drescherhai
Spanish: Tiburon zorro, zorro de mar

Table 1. 'Look-alike' species for A. *superciliosus* fins

Family	Species	Scientific synonym	Common name	FAO Fishing areas	IUCN Red List
Alopiidae	*Alopias vulpinus (*Bonnaterre, 1788)	*Squalus vulpes* (Gmelin, 1788), *Alopias macrourus* (Rafinesque, 1810), *Squalus alopecias* (Gronow, 1854), *Alopecias chilensis* (Philippi, 1902)	Common thresher shark	21, 27, 31, 34, 37, 41, 47, 51, 57, 61, 67, 71, 77, 81	Vulnerable
Alopiidae	*Alopias pelagicus* (Nakamura, 1935)	n/a	Pelagic thresher shark	51, 57, 61, 71, 77, 87	Vulnerable

1.7 Code Numbers: Not applicable.

2. Overview

The Fisheries and Aquatic resources Act, No.2 of 1996 is the main legal instrument that provides for the management, regulation, conservation and development of fisheries and aquatic resources in Sri Lanka, and gives effect to Sri Lanka's obligations under certain international and regional fisheries agreements. Thresher shark management is conducted under this act, and the subsequent Gazette No. 1768/36.

Historically thresher sharks played an important role in Sri Lanka onshore and offshore shark fisheries, making up nearly 20% of total shark catch by the Sri Lankan fleet in 1994 (Williams, 1995; Dayaratne *et al.* 1996). The catch was made up predominantly of bigeye and pelagic thresher sharks, with bigeye thresher sharks being the second most caught shark in Sri Lankan fisheries.(Impact of policies on the conservation of sharks in the large pelagic fishery Jayathilaka R.A.M. , Maldeniya R.).

However this catch dropped significantly in subsequent years, causing concerns over the state of thresher shark populations. In 2010, the Indian Ocean Tuna Commission (IOTC) acted in response to these reported drops in thresher shark catches in Sri Lanka and throughout the Indian Ocean, and to the identification of Bigeye thresher as one of the most vulnerable species in the IOTC shark ecological risk assessment, by prohibiting the retention of thresher sharks in all fisheries covered by the convention through IOTC Resolution 2010/12.

IOTC Resolution 2010/12 notes that the international scientific community has identified the bigeye thresher shark (*Alopias superciliosus*) as particularly endangered and vulnerable, and as such fishing vessels flying the flag of an IOTC Member or Cooperating Non-Contracting Party (CPCs) are prohibited from retaining on board, transhipping, landing, storing, selling or offering for sale any part or whole carcass of thresher sharks of all the species of the family Alopiidae.

In 2012, in response to the decision of IOTC, and the growing evidence that bigeye thresher sharks were disappearing from pelagic fisheries catch, Sri Lanka imposed a total ban on catching, retaining on board, transshipping, landing, storing, selling, or offering for sale of any Thresher sharks under the regulation published in Gazette No. 1768/36. The regulation applies to all Sri Lankan vessels, and any boats fishing in the high seas that land into Sri Lankan ports. Penalty for non-compliance is imprisonment of either description for a term not exceeding six months or a fine not exceeding LKR 25 000 or both such imprisonment and fine.

CITES Appendix II listing of thresher sharks will assist in the implementation of the domestic prohibition on thresher shark retention, landing and sale in Sri Lanka, along with IOTC Resolution 2010/12 in the wider Indian Ocean and the global listing of thresher sharks under CMS Appendix II.

The bigeye thresher shark, *Alopias superciliosis,* qualifies for listing under this criterion, because populations have exhibited marked decline in population size in line with the guidance in resolution 9.24 (Rev CoP 16). The greatest threats to this species worldwide are take for the international fin trade and bycatch in fisheries for other species, which have led to significant population declines. For example, bigeye thresher shark populations have experienced declines of 80% in the Atlantic Ocean and up to 83% decline in abundance in the eastern-central Pacific Ocean.

The bigeye thresher shark is commonly caught as bycatch in longline fisheries (Stevens et al., 2005), ranging across all oceans in tropical and subtropical waters. *A. superciliosus* have a very recovery potential and productivity when compared to 26 other species of sharks and low population growth rates ($r<0.14$) as defined by Food and Agriculture Organization of the United Nations (FAO). Ecological Risk and Productivity Assessments determined that bigeye thresher sharks ranked fourth in their susceptibility to pelagic fisheries among 12 other Atlantic Ocean species (Section 3.3). Bigeye thresher sharks have been listed on the IUCN Red List of Threatened Species as Vulnerable globally. Abundance trend analyses of catch rate data have reported large declines in abundance for *A. superciliosis* and for the thresher complex *Alopias pelagicus* and *Alopias vulpinus*. In the Atlantic regions, analysis of logbook data indicated declines of bigeye thresher shark catch by 80%. In the western and central Pacific Ocean, the stock has been estimated to have suffered a 83% decline in abundance (Section 5). Catches of *A.* superciliosis are often amalgamated as *Alopias spp.* Many catches go unreported, and analysis of FAO data indicates that 17,160t of *Alopias spp.* are taken each year. However, their fins form an important component of this global shark fin trade, with the last comprehensive study indicating they account for approximately 2.3 % of sharks in the Hong Kong market. This is equivalent to up to four million thresher sharks per year (Clarke et al., 2006a and 2006b). An Appendix-II listing would have

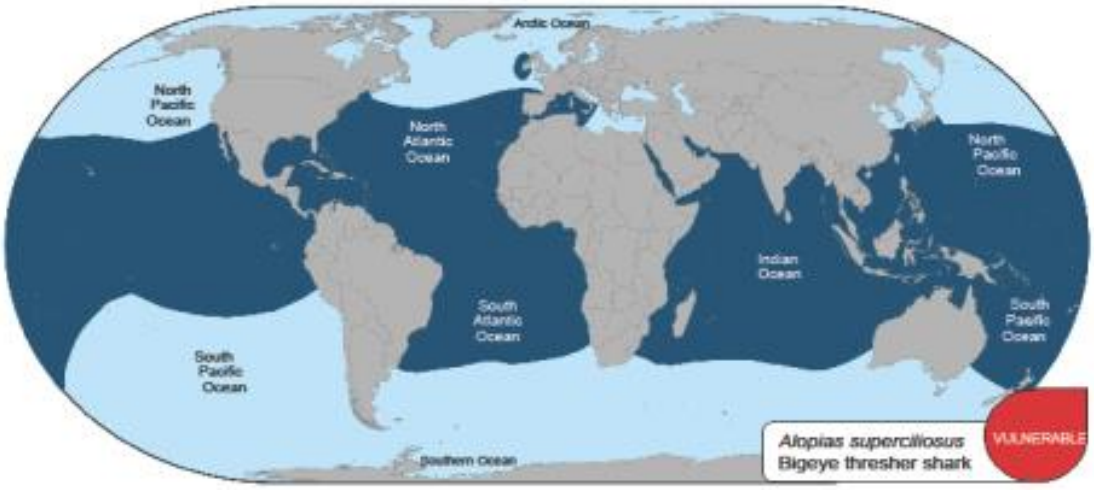
beneficial effects upon the wild populations of these animals by regulating and ensuring the sustainability of the international trade in fins (Section 6).

Bigeye thresher sharks should benefit from legislation by Palau, French Polynesia, New Caledonia, the Maldives, Honduras, The Bahamas, The British Virgin Islands, and the Marshall Islands to prohibit shark fisheries throughout their Exclusive Economic Zones (Section 7). The International Commission for the Conservation of Atlantic Tunas (ICCAT) has prohibited the retention onboard, transhipment, landing, storing, selling, or offering for sale any part or whole carcass of bigeye thresher sharks within their fisheries, and the Indian Ocean Tuna Commission prohibited retention onboard, transshipping, and landing of all thresher sharks in the Convention area. In October of 2014, *Alopias spp.* were listed on Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Member governments now must coordinate through global or regional agreements, organizations, and fora to better protect and manage these migratory species.

CITES Appendix II listing and associated legal acquisition requirements will thus help the aforementioned States, others with domestic prohibitions, and contracting Parties to relevant RFMOs, to ensure compliance with existing management measures while extending a better degree of global protection to these vulnerable, declining species.

3. Species characteristics

3.1 Distribution



World distribution map for *A. superciliosus* courtesy of IUCN.

Although comprehensive data are lacking for all *Alopias spp.* they are all considered to be highly migratory oceanic and coastal species found nearly worldwide in tropical and temperate seas.

A. superciliosus is circumglobal in distribution. Ongoing analysis has indicated no structuring of populations of *A. superciliosus* within the Pacific Ocean, but significant genetic divergence between Atlantic and Indo-Pacific populations (Trejo 2005). The existence of separate Indian Ocean and Pacific Ocean stocks is as yet unconfirmed. *A. superciliosus* has been recorded from Portugal, Spain, the UK (Thorpe 1997), Madeira, the Azores, and in the Mediterranean Sea (ICES 2007). Bigeye thresher are found in the following FAO fishing areas: 21, 27, 31, 34, 37, 41, 47, 51, 57, 61, 67, 71, 77, 81, 87.

3.2 Habitat

A. superciliosus is found in all warm and temperate areas of the world's oceans on the continental shelf and in the epipelagic zone, they are also occasionally encountered in shallow coastal waters (Stillwell and Casey 1976; Compagno 2001; Nakano *et al*. 2003; Weng and Block 2004). This species is one of the few sharks to exhibit diel vertical migratory behaviour, generally moving to shallow depths at night to feed (<100 m) and inhabiting deeper waters (between 400 to 600m) during the day (Nakano *et al*. 2003; Weng and Block 2004; Stevens *et al*. 2010). They occur in surface temperatures of 16–25 °C (61–77 °F), but have been tracked as far down as 723m (2,372 ft), where temperatures are around 5 °C (41 °F) (Nakano *et al*. 2003).

3.3 Biological characteristics

Of the *Alopias spp., A. superciliosus* has the lowest fecundity and thus, exceptionally low potential annual rate of population increase (0.002-0.009 or 1.6%) under sustainable exploitation (Smith *et al.* 2008; Cortés 2008; Dulvy *et al.* 2008). This makes them particularly vulnerable to any level of fisheries exploitation, whether targeted or caught as bycatch in fisheries for other species. *Alopias* spp. have been identified as among the shark species most at risk from anthropogenic pressure worldwide – and of the pelagic sharks *Alopias* spp are the family at highest risk of extinction (Oldfield *et al* 2012, Dulvy et al 2014).

A. superciliosus is a viviparous species usually bearing only two embryos per litter (Compagno 2001), making it one of the least fecund species of shark. They have a gestation period of 12 months with females reaching sexual maturity at around 12 - 14 years (332 - 341cm) and males slightly earlier between 9 - 10 years (270 - 288cm), and a lifespan of 20-21 years (Liu *et al.* 1998; Moreno and Moron 1992; Compagno 2001).

Cortés (2008), using a density independent demographic approach, calculated population growth rates (λ) of 1.009 yr^{-1} (0.990, 1.028; lower and upper 95% confidence limits, respectively) and generation times (T) of 17.2 yrs (15.9, 18.6). In this study, population growth rates are extremely low when compared with eight other pelagic shark species. Estimates of the intrinsic rate of increase for this species (r=0.028 yr^{-1}) indicated that bigeye thresher shark populations are vulnerable to depletion and are among the least productive of 33 elasmobranchs examined (Smith et al., 2008). Bigeye thresher sharks are estimated to produce fewer than twenty pups in its lifetime (Amorim et al., 2009). Furthermore, Ecological Risk and Productivity Assessments determined that bigeye thresher sharks were the fourth most vulnerable to pelagic fisheries among 12 other Atlantic Ocean species (Cortés et al. 2010).

3.4 Morphological characteristics

Alopias spp. are large, wide-ranging lamniform sharks. Thresher sharks can be most easily identified by the extremely long upper lobe of the caudal fin. The upper caudal lobe can be as long as the body and gives the tail a slender whip-like appearance. The first dorsal fin is tall and erect (on large subadult and adult specimens), and the pectoral fins are elongated.

A. superciliosus have large, upward looking eyes extending onto the top of the head, pronounced groove on top of head running from the eye to the gill slits; Dark bluish brown (with metallic purple hues) along the dorsal midline, bluish grey along the flanks and white below, with the white not extending above the pectoral fins (as in the common thresher). The first dorsal fin originates closer to pelvic fins than to pectoral fins. Pectoral fins are dark on the dorsal surface, lighter on the ventral surface with dusky markings along the outer margins. *A. superciliosis* also lack labial furrows, unlike the common thresher shark. Coloration for all *Alopias* spp. fade to grey upon harvest.

3.5 Role of the species in its ecosystem

Bigeye thresher sharks are a high trophic level predator in ocean ecosystems feeding mainly on pelagic fishes including herring, mackerel, and small billfishes, as well as squid (Compagno, 1984; Galván-Magaña et al., 2013). Cortes (1999) determined the trophic level based on diet for *A. superciliosus* was 4.2 (maximum=5.0). The thresher shark uses its tail to stun its prey (Amorim et al., 2009), however, its large dorsal fin is often caught on pelagic longlines as a result of the shark's attempts to stun the bait (Compagno, 2001).

4. Status and trends

4.1 Habitat trends

Family *Alopiidae* is listed in Annex 1 (Highly Migratory Species) of the UN Convention on the Law of the Sea (UNCLOS) due to their regular, cyclical and predictable migrations across international boundaries.

Whilst little is known of the full geographical movements of *A. supercilious*, one study (Weng and Block 2004) documented one individual moving from the Northeast coast of the US to the Gulf of Mexico, a straight-line distance of 2,767 km (1,719 mi), while another noted tagged *A. supercilious* moving across international boundaries in Central America (Kohin *et al*. 2006). A study in the USA also demonstrated the movements of *A. superciliosus* using tag and recapture studies, recording the movement of the species from the US EEZ to both international waters and Central American countries EEZ's (Kohler *et al*. 1998).

Overall, critical habitats and the threats they face are largely unknown for all *Alopias* spp. However, nursery grounds in some inshore temperate regions have been identified for some *Alopias* spp. in the Adriatic Sea, northeastern Atlantic, western Mediterranean (Alboran Sea), southern California, and South Africa (Moreno *et al*. 1989; Compagno 2001; Notabartolo Di Sciara and Bianchi 1998). A nursery area for *A. superciliosus* is suspected in the waters off the southwestern Iberian Peninsula (Moreno and Moron 1992). It is important to note that none of these suspected key habitat areas have any specific protection measures for *Alopias* spp.

4.2 Population size

No stock assessments have been completed for bigeye thresher sharks.

4.3 Population structure

Genetic studies have not been conducted for this species. There is no additional information on the size class and sex distribution of bigeye thresher shark populations.

4.4 Population trends

Worldwide *Alopias* spp. have declined by over 70% in almost every area they are found:

Ocean/Sea	IUCN estimated stock decline	Reference
Atlantic	50-80% dependent on sub-region	Baum et al., 2003 and Beerkircher et al
Indian	83% inferred as no confirmed separation from the pacific stock	Goldman et al., 2014
Pacific	83%	Ward & Myers, 2005
Mediterranean	99%	Ferretti et al., 2008

While the bigeye thresher shark is considered Vulnerable globally by the IUCN Red List of Threatened Species, it has the following regional classifications: Vulnerable in the eastern central Pacific; Endangered in the northwest Atlantic and western central Atlantic; Near Threatened in the southwest Atlantic; Data Deficient in the Mediterranean Sea; and Vulnerable in the Indian Ocean and western central Pacific. The bigeye thresher shark has exhibited population declines in every area where sufficient historical and current population data exists.

Due to its life history characteristics, slow growth, late maturity, and production of few young, which are noted in Table 1 below, *A. superciliosus* is considered one of the most vulnerable of the key shark species due to overexploitation by fishing, and is experiencing significant population declines throughout its range.

Estimates of trends in abundance of *A. superciliosus* are available for this species (Summary in Annex 2). Given the difficulties in differentiating the species, *A. superciliosus, A. pelagicus*, and *A. vulpinus,* and the amalgamation of catch records, estimates of trends in abundance are also listed for threshers as a complex.

Atlantic and Mediterranean trends

A. superciliosus and *A. vulpinus* are often grouped together in catch data making it difficult to distinguish the status of each population, although *A. superciliosus* is the more common of the two species found in this region. Observed declines in the Northwest Atlantic region suggest the population has collapsed with estimates for *A. superciliosus* and *A. vulpinus* indicating an 80% decrease since the late 1980s (Baum *et al*. 2003 along with Amorim *et al*.; Goldman *et al*.; Reardon *et al*. – IUCN Red List Assessments for *Alopias* spp.).

Cortés *et al*. (2010) undertook an Ecological Risk Assessment (ERA) of pelagic sharks in Atlantic pelagic longline fisheries, which identified *A. superciliosus* as one of the shark species most at risk from overexploitation in the Atlantic, having undergone six decades of incidental and targeted fishing. Studies in the Southeastern United States also show severe declines in the species, with decreases in Catch Per Unit Effort (CPUE) indicating that the population of *A. superciliosus* has declined by 70% from historic levels (Beerkircher *et al*. 2002). Similar results were found in the western central Atlantic, where common and bigeye thresher sharks have been found to have suffered a 63% decline in population since 1986 (Cortes et al., 2007).

In the southwest Atlantic, the IUCN categorizes the bigeye thresher shark as Near Threatened. However, for the past 30 years, CPUE of bigeye threshers have consistently fallen (Amorim et al., 1998).

Pacific Ocean Trends

In the Eastern Central Pacific, trends in abundance and biomass of *Alopias spp.* indicate a decline in abundance of 83%, and a decline in biomass to approximately 5% of virgin levels (Ward and Meyers 2005).

In the western and central Pacific, complete data is not available for thresher sharks. However, bigeye thresher shark is commonly caught in fisheries of the region (Amorim et al., 2009) in both legal and illegal directed shark catch (Camhi et al., 2007). A 2013 study notes that the stock of *A. pelagicus* in the region has reduced by 34.3% over the past 20 years and that the stock is under high fishing pressure and overexploited (Liu S-YV 2013). Furthermore, a significant decrease in the median size of thresher sharks caught in the western and central Pacific has been noted in recent years as well as a decrease in nominal catch rates in portions of the western and central Pacific (Clarke et al., 2011).

All *Alopias* spp. are included on the WCPFC list of key shark species, however a lack of detailed, species specific catch data has led to no stock assessments being produced to date (WCPFC Scientific Committee report 2013).

Indian Ocean Trends

Little detailed information is available on *Alopias* spp. in this region, with catches under-reported and pelagic fishing effort high. A recent review of fisheries in the Indian Ocean reported that sharks in this region are considered to be fully over-exploited. Given that *A. superciliosus* has high biological vulnerability and a low intrinsic rate of increase, coupled with the continued high levels of exploitation in this region and the declines observed in other areas of its range, declines can be inferred (Amorim *et al*.; Goldman *et al*.; Reardon *et al*.; – IUCN Redlist Assessments for *Alopias spp*.).

The stock status is, like all shark stocks in the Indian Ocean, highly uncertain. In response to these uncertainties an Ecological Risk Assessment (ERA) has been developed by the IOTC Scientific Committee to quantify which shark species are most at risk from the high levels of pelagic longline fishing pressure (IOTC Scientific Committee advice on pelagic and bigeye thresher sharks -2013).

In this ERA, the IOTC Scientific Committee noted that *A. pelagicus* and *A. superciliosus* received high vulnerability rankings (No. 2 and No. 3 respectively) for longline gear as they are characterised as two of the least productive shark species, and are highly susceptible to catch in longline fisheries. They also noted that the available evidence indicates considerable risk to the status of the Indian Ocean *Alopias spp.* stocks at current effort levels

4.5 Geographic trends

See 4.4 for details.

5. Threats

The principal threat to *Alopias* spp. globally is overexploitation from unsustainable catch in target and bycatch fisheries. *Alopias* spp. are frequently caught by offshore longline and pelagic gillnet fisheries, but are also fished with anchored bottom and surface gillnets, and caught as a bycatch of other gear including bottom trawls and fish traps (Maguire *et al.* 2006).

Key habitat areas, such as nursery grounds identified in some inshore temperate regions (see section 3.2) are also at risk, in particular from fishing pressure. None of the potential key habitat areas for *Alopias* spp. have any specific protection measures in place.

Like many sharks, catches of *Alopias* spp. are hugely under-reported globally (Clarke *et al*. 2006; Worm *et al.* 2013) and trend data on a species specific level is lacking due to the paucity of data. However, an analysis by the United Nations Fish and Agriculture Organisation (FAO) states: 'unless demonstrated otherwise, it is prudent to consider these species as being fully exploited or overexploited globally' (Maguire *et al.* 2006). Furthermore, recent work by TRAFFIC to develop an assessment framework for exposure and management risk found *Alopias* spp. to be in the highest risk category with regard to the level of management in place and their intrinsic vulnerability (Lack, M. *et al* 2014).

In 2014, the International Union for the Conservation of Nature and Natural Resources (IUCN) released a report assessing the threat levels of shark and ray species. Out of the list of 1041 species, the *Alopias* spp. were listed as the seventh most threatened family of chondrichthyans (Dulvy et al., 2014).

Alopias spp. have been widely caught in offshore longlines by the former USSR, Japan, Taiwan (Province of China), Brazil, Uruguay, USA, and others. Furthermore, *A. superciliosis* comprises a large majority of the catch in the Brazilian Santos fishery (Amorim et al., 2009). The northwestern Indian Ocean and eastern Pacific are especially important fishing areas (Compagno 2001).

A. superciliosus comprised approximately 11% of the shark catch by Japanese tuna longline vessels in the Pacific Ocean between 1992-2006, making them the second most commonly recorded shark in the fishery, caught by almost 1/3 of the total number of sets each year (Matsunaga & Yokawa 2013). All three thresher species were estimated to make up 13% of the total shark, skate, and ray bycatch of the tuna longline industry, of which 98.9% were finned and then discarded (Bromhead et al., 2012). It has been estimated that fishing mortality in the northwest Atlantic would need to be reduced by ~40%, as a minimum baseline, to ensure the survival of bigeye thresher sharks (Myers and Worm 2005).

Their intrinsic biological characteristics make *Alopias* spp. particularly vulnerable to a range of anthropogenic threats across their range. The entire genus is vulnerable with *A. superciliosus* having the lowest intrinsic rebound potential and least resistance to fishery pressure (Amorim *et al*.; Goldman *et al*.; Reardon *et al*. – IUCN Red List Assessments for *Alopias* spp.; Oldfield *et al.* 2012.; Lack *et al.* 2014). They are considered as having a low capacity to recover from even small levels of exploitation due to their slow life history characteristics, with their population doubling time estimated at around 25 years (Smith *et al*. 2008). This is further compounded by their epipelagic habitat occurring within the range of many largely unregulated gillnet and longline fisheries, resulting in high levels of largely unmanaged and unreported mortality (Dulvy *et al*. 2008).

The demand for shark fins from the largely unregulated international shark fin trade is the driver behind this overexploitation of *Alopias spp.,* with Clarke *et al.* (2006 A) reporting that they compose at least 2.3% of Hong Kong trade in a market study using DNA-based species identification techniques. This level of fins in international trade equates to up to four million thresher sharks being killed and traded per year (Clarke *et al*. 2006 B).

6. Utilization and trade

6.1 National utilization

Although often noted as an incomplete record of global catch (Worm *et al* 2013), the following details the data on *Alopias* spp. catch (species are often grouped together) reported to the FAO in 2010 (the year with the most recent complete data):

- Americas - 3,519 tonnes
  (Brazil, Ecuador, USA, smaller amounts from Mexico and Trinidad and Tobago)
- Africa - 12 tonnes
  (Namibia and South Africa)
- Asia – 13,610 tonnes
  (Indonesia, Korea)
- Oceana - 19 tonnes
  (New Zealand)

Markets exist internationally for *Alopias* spp. meat, which is cooked, smoked or dried-salted, and lesser markets for its skin (for leather), and liver oil (for vitamin A). However, the principal driver of catch and then trade in these species is the international demand for shark fins (Worm *et al*. 2013; FAO landings data; Clarke *et al*. 2006 A and B; and Amorim *et al*.; Goldman *et al*.; Reardon *et al*. – IUCN Redlist Assessments for *Alopias* spp.). In many areas where immediate refrigeration or freezing facilities are not available, meat is often salted and dried, in particular in eastern and southern Africa where it is used primarily to supply domestic and intra-regional demand. Frozen shark meat for export from the Seychelles and the processing of juvenile sharks into meat dough in Somalia has also been reported. Similarly in Southeast Asia, both fins and meat are considered valuable and traded as either frozen or salted and dried. In the Philippines, *Alopias* spp. meat historically sold for around €2.75/kg and dried fins for €18.30/kg (TRAFFIC 1996).

In East Asia processed forms of shark meat are common, for example, in Taiwan (Province of China). Most shark meat is used in the domestic production of minced fish products, such as fish balls and tempura. In Japan *Alopias* spp. are marketed frozen, whilst in China the meat is used to produce salted shark meat, canned meat, and shark meatballs (Parry-Jones *et al*.; 1996).

A recent study in Taiwan (Province of China) shows that *Alopias* spp. are heavily consumed in Taiwan, with 23% of sampled shark products coming from *A. pelagicus*. The study notes that the stock of *A. pelagicus* in the region has reduced by 34.3% over the past 20 years and that the stock is both under high fishing pressure and overexploited (Liu S-YV 2013).

6.2 Legal trade

Thresher sharks are caught as bycatch in high seas pelagic fisheries. As the meat is of generally low value, it is known to be discarded and the fins are retained because of their high value in international trade.

International shark trade information is not documented to the species level for sharks in the Harmonized Tariff Schedule. Therefore, species-specific information about quantity or value of imports or exports is not available through the tariff schedule. In addition, most parties do not report catches to species level to FAO or Regional Fisheries Management Bodies. However, information on the trade of thresher shark fins can be obtained by examination of the Hong Kong Fin Market where thresher sharks made up 2.3% of the global trade in fins from 1980 to 1990 (Clarke 2008. Prior to 1998, imports of fins to Hong Kong were reported as either dried or frozen ("salted") without distinguishing between processed and unprocessed fins. To avoid double-counting fins returning to Hong Kong from processing in mainland China, only unprocessed dried and frozen fins were included in total imports to Hong Kong. Hong Kong shark fin traders use 30–45 market categories of fins (Yeung et al. 2000), but the Chinese names of these categories do not correspond to the Chinese taxonomic names of shark species (Huang 1994). Instead Chinese market categories for shark fins appear to be organized primarily by the quality of fin rays produced and secondarily by distinguishing features of dried fins. Using commercial data on traded weights and sizes of fins, the Chinese category for thresher sharks, coupled with DNA and Bayesian statistical analysis to account for missing records, Clarke et al. (2006a, 2006b) estimated that up to 4 million thresher sharks were traded globally in 2000.

6.3 Parts and derivatives in trade

Thresher sharks are caught as bycatch, often by their tails in longline hooks, in high seas pelagic fisheries. Space for retaining meat from this species is often limited and reserved for higher -value species such as tunas and swordfish. As the meat is generally of low value, thresher shark fins are usually retained because of their high value (€18.30/kg), while the carcass is more likely to be discarded at sea. However, thresher meat is consumed more often than other shark species, usually domestically. Bigeye thresher sharks comprise 5.8% of the average shark landings in Taiwan (Vanson et al., 2013).

However the primary product from thresher sharks in international trade is the fins. Other products, including skin, liver oil, cartilage, and teeth, are considered low grade and are not traded in large quantities and are not separately recorded in trade statistics (Clarke 2004).

Demand for these products appears to fluctuate over time with changes in fashion, medical knowledge, and the availability of substitutes. There are numerous difficulties in using the existing trade databases to quantify trends in the shark trade by species. For example, none of the 14 commodity categories used by FAO for chondrichthyan fishes can be taxonomically segregated, with the exception of four categories for various forms of dogfish sharks (family Squalidae). Furthermore, because of non-specific reporting of both trade and capture production figures by many countries, sharks are commonly aggregated into generic fish categories. Therefore at present, quantitative analysis of shark products based on FAO trade data, can only be conducted for generic shark products. The use of commodity codes also varies considerably among countries, further complicating the

traceability of products by species and provenience. Information on trade in bigeye thresher shark products, other than fins, is mostly from observation of personnel in the field.

6.3.1 Fins

Bigeye thresher fins are often mixed with the fins of pelagic and common thresher sharks. These fins of these three species are identifiable visually without genetic analysis, and Hong Kong traders seldom mix them with other species outside of *Alopias* spp. (Clarke et al. 2006a).

Clarke et al. (2004; 2006a) estimated that *Alopias* spp. fins comprise about 2.3% by weight of the total fin trade. Molecular genetic testing of 23 fin samples that were imported from three oceans and collected from nine randomly sampled Hong Kong fin traders demonstrated 74% concordance between the fin trade name "Wu Gu" and *Alopias* spp. (Clarke et al. 2006).

6.4 Illegal trade

Most Regional Fisheries Management Organizations' regulations and some national laws prohibit finning sharks at sea (discarding the carcass and transhipping the fins at sea). Other countries have an outright ban on the trade of sharks. For example, The Bahamas banned the sale, import, and export of sharks, shark parts, and shark products within its waters. The Maldives and the Marshall Islands also prohibit the trade of sharks. In addition, Guam and the Commonwealth of the Northern Mariana Islands, U.S. territories, have both prohibited the sale or trade of shark fins within their waters. ICCAT recommends that members refrain from retaining onboard, transshiping, landing, storing, selling, or offering for sale any part of whole carcass of any bigeye thresher shark within the fisheries covered by the Convention areas. However, ICCAT has limited compliance mechanisms, so the level of international trade that may be out of compliance is not known. The extent of illegal trade activities is unknown.

6.5 Actual or potential trade impacts

Demand from international shark fin markets is the driving economic force behind the retention and mortality of *A. superciliosus* caught as bycatch globally. Regulation of the fin trade through an Appendix II listing of this species is necessary to ensure that the trade is sustainable and not driving the species towards extinction.

7. Legal instruments

7.1 National

In 2012, in response to the decision of IOTC, and the growing evidence that bigeye thresher sharks were disappearing from pelagic fisheries catch, Sri Lanka imposed a total ban on catching, retaining on board, transshipping, landing, storing, selling or offering for sale of any Thresher sharks under the regulation published in Gazette No. 1768/36.The regulation applies to all Sri Lankan vessels, and any boats fishing in the high seas that land into Sri Lankan ports. Penalty for non-compliance is imprisonment of either description for a term not exceeding six months or a fine not exceeding LKR 25 000 or both such imprisonment and fine.

A number of countries and territories have banned the retention of all sharks, notably Palau, the Maldives, Honduras, The Bahamas, Marshall Islands, French Polynesia, New Caledonia and the Cook Islands. Several U.S. states and territories in the Pacific have also taken steps to curb the shark fin trade with California, Hawaii, Oregon, Washington, Guam, and the Commonwealth of the Northern Mariana Islands banning the sale, possession, and trade of shark fins. The United Arab Emirates and India have both banned the export of domestic shark products and all shark fins.

In terms of *Alopias* spp. specific domestic measures, few are in place worldwide. The Philippines has afforded legislative protection for *Alopias* spp. (Batangas City, Ordinance Resolution 9, series 2008). Management has also been put in place in the form of prohibitions on landings based on scientific advice in the Northwest Atlantic US waters. A prohibition on retaining *Alopias* spp. when caught has also been put in place by Spain. The catch of *Alopias* spp. is regulated under domestic fisheries legislation in the U.S, New Zealand and Australia.

7.2 International

In response to growing concern over the status of large pelagic sharks, a number of RFMOs have undertaken stock assessments for species with insufficient data. They have also taken measures to improve data collection to species level, reduce bycatch, control finning, and prohibit landings of the most threatened species.

In 2009, the International Commission for the Conservation of Atlantic Tunas (ICCAT) advised against directed fisheries for *Alopias* spp., and prohibited any retention, landing and sale of *A. superciliosus*. The Indian Ocean Tuna Commission (IOTC) has also prohibited the retention, landing, and sale of any part or whole carcass of all species of the family *Alopiidae*.

The conservation and management of sharks in EU waters falls under the remit of the European Common Fishery Policy, which manages fish stocks through a system of annual catch quotas and effort control. The Community Action Plan for the Conservation and Management of Sharks (EU COM 2009) establishes a goal of rebuilding depleted shark stocks utilised by the EC fleet within and outside EC Waters. However, there is no specific management of *Alopias* spp. under the Common Fisheries Policy in EC and international waters, aside from that transposed from ICCAT and IOTC.

8. Species management

8.1 Management measures

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

A number of countries and territories have banned commercial fishing of all sharks within their waters, including Palau, the Maldives, Honduras, The Bahamas, the Marshal Islands, New Caledonia, the Cook Islands, the Federated States of Micronesia and the British Virgin Islands.

In November 2014, the Convention on the Conservation of Migratory Species (CMS) listed all species of thresher shark on Appendix II of the Convention, meaning the 120 member governments have identified *Alopias* spp. as shark species most in need of conservation action. These listings have committed Parties to work together to better protect thresher sharks globally.

To complement fisheries management measures and obligations under CMS, 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 thresher shark products - ensuring it is sustainable, and from a legally obtained source.

8.2 Population monitoring

Population monitoring requires collection of catch data as initial input for a stock assessment. In 1996, ICCAT began requesting that its contracting Parties submit shark data using a form that lists eight species of pelagic sharks. Other RFMOs have followed suit and request data on shark catches, particularly those most commonly caught. Each member of IATTC is required to annually report data for catches, effort by gear type, landing and trade of sharks by species. WCPFC also requests data on sharks to be submitted to the Commission, particularly on the key shark species, such as bigeye thresher shark. In 2011, the IOTC Working Party on Ecosystems and Bycatch recommended that all members be required to submit catch data by species from longline, purse seine, and gillnet fishing vessels of the most commonly caught shark species, including thresher sharks (IOTC 2011).

8.3 Control measures

8.3.1 International

Other than through obligations under CMS, the IOTC measures, and recommendations by ICCAT (See Section 7.2), no focused species-specific international management measures are in place for bigeye thresher sharks, with the species unmanaged over much of its range.

8.3.2 Domestic

N/A

8.4 Captive breeding and artificial propagation

N/A

8.5 Habitat conservation

N/A

8.6 Safeguards

N/A

9. Information on similar species

Because of the difficulty in identification of thresher species, catches of *A. superciliosus* are often amalgamated with *A. vulpinus* and *A. pelagicus*. As fins in trade, *A. vulpinus* and *A. pelagicus* fins are morphologically similar to *A. superciliosus*. Fins from all three species are grouped and identified and sold as "*Wu gu*" in the Hong Kong market and are not differentiated between the species (Clarke, 2006).

10. Consultations (to be added)

Country	Support Indicated (Yes/No/ Undecided/ No Objection)	Summary of Information Provided
Australia		
Azerbaijan		
Canada		
Cape Verde		
China (Hong Kong)		
Colombia		
Croatia		
Ecuador		
Finland		
France		
Germany		
Greenland		
Iceland		
Indonesia		
Italy		
Kenya		
Latvia		
Madagascar		
Malawi		
Mexico		
Monaco		
Montenegro		
Morocco		
Namibia		
Netherlands		
New Zealand		
Peru		
Poland		
Russia		
Serbia		
Sweden		
Thailand		
Turkey		
Ukraine		
Viet Nam		

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Annex 1

Life history parameters for bigeye thresher shark

Region	Size at sexual maturity	Age at sexual maturity	Litter size	Gestation period	Reference
Northeast Atlantic	Male: 270 cm TL Female: 340 cm TL		2-4		Moreno & Moron 1992
Northeast Pacific	Male: 182 cm Female: 180 cm	13 years	2		NMFS 2011
Northwest Pacific	Male: 270-288 cm Female: 332-341	Male: 9-10 years Female: 12.3-13.4			Liu et al. 1998
General	Male: 270-400 cm Female: 355-430 cm		2-4	12 months	Compagno 2001
West Africa			2		Cadenat 1956

Summary of population and abundance trend data for *Alopias spp.*

Year	Location	Data	Trend	Reference
1992-2005	NW Atlantic Ocean	Commercial pelagic fishery logbook	63% decline*	Cortés et al. (2007)
1992-2003	NW Atlantic Ocean	Commercial pelagic fishery logbook	80% decline*	Baum et al. (2003)
1992-2000	NW Atlantic Ocean	Fishery survey and commercial pelagic longline observer program	70% decline*	Beerkircher et al.(2002)
1899-2007	NE Atlantic Ocean	Commercial and Recreational fisheries landings, scientific surveys and sighting records	99% decline	Ferretti et al. (2008)
1951-1958 and 1999-2002	Central Pacific Ocean	Fishery survey and commercial pelagic longline observer program	83% decline*	Ward and Myers (2005)
1951-1958 and 1999-2002	Central Pacific Ocean	Average size	41% decline	Ward and Myers (2005)
1995–2000 and 2004–2006	Central Pacific Ocean	Commercial pelagic longline observer program	9.5% decline in deep sets 43% decline in shallow sets	Walsh et al. (in press)

*Indicates the data has undergone a statistical standardization to correct for factors unrelated to abundance