sCoP19 Prop. Xx

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

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Nineteenth Meeting of the Conference of the Parties
(Panama City, 14th-25th November 2022)

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. <u>Proposal</u>

Inclusion of the grey reef shark (*Carcharhinus amblyrhynchos),* dusky shark (*C. obscurus*), smalltail shark (*C. porosus),* Ganges shark (*Glyphis gangeticus*), sandbar shark (*C. plumbeus),* Borneo shark *(C. borneensis),* Pondicherry shark *(C. hemiodon),* smoothtooth blacktip shark *(C. leiodon),* sharptooth lemon shark *(Negaprion acutidens),* Caribbean reef shark *(C. perezi),* daggernose shark *(Isogomphodon oxyrhynchus),* night shark *(C. signatus),* whitenose shark *(Nasolamia velox),* blacknose shark *(C. acronotus),* whitecheek shark *(C. dussumieri),* lost shark *(C. obsoletus),* Pacific smalltail shark *(C. cerdale),* Borneo broadfin shark *(Lamiopsis tephrodes)* and the broadfin shark *(Lamiopsis temminckii)* in Appendix II in accordance with Article II paragraph 2(a) of the Convention and satisfying Criterion A and B in Annex 2a of Resolution Conf. 9.24 (Rev. CoP17).

Inclusion of all other species in the family Carcharhinidae (requiem sharks): Genus *Carcharhinus*, Genus *Isogomphodon*, Genus *Loxodon*, Genus *Nasolamia*, Genus *Lamiopsis*, Genus *Negaprion*, Genus *Prionace*, Genus *Rhizoprionodon*, Genus *Scoliodon*, Genus *Triaenodon* and any other putative species of family Carcharhinidae 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. CoP17).

<u>Qualifying Criteria (Conf. 9.24 Rev. CoP17)</u>

i) 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:

The grey reef shark (*C. amblyrhynchos),* dusky shark (C. *obscurus*) smalltail shark (*C. porosus*), Ganges shark (*G. gangeticus*), sandbar shark (*C. plumbeus),* Borneo shark *(C. borneensis),* Pondicherry shark *(C. hemiodon),* smoothtooth blacktip shark *(C. leiodon),* sharptooth lemon shark *(Negaprion acutidens),* Caribbean reef shark *(C. perezi),* daggernose shark *(Isogomphodon oxyrhynchus),* night shark *(C. signatus),* whitenose shark *(Nasolamia velox),* blacknose shark *(C. acronotus),* whitecheek shark *(C. dussumieri),* lost shark *(C. obsoletus),* Pacific smalltail shark *(C. cerdale),* Borneo broadfin shark *(Lamiopsis tephrodes),* and the broadfin shark *(Lamiopsis temminckii)* <u>are all assessed as Endangered or Critically Endangered on the IUCN Red List of Threatened Species, as a result of unsustainable fishing mortality driven at least partly by international trade demand for their products</u>. This categorization is based on evidence of population reduction due to fisheries exploitation, habitat deterioration, conservative life history characteristics and international trade demand for their products

Evidence of rapid recent declines of 70% or more in populations of the grey reef shark (*C. amblyrhynchos),* dusky shark (C. *obscurus*), smalltail shark (*C. porosus*), Ganges shark (*G. gangeticus*), sandbar shark (*C. plumbeus),* Borneo shark *(C. borneensis),* Pondicherry shark *(C. hemiodon),* smoothtooth blacktip shark *(C. leiodon),* sharptooth lemon shark *(Negaprion acutidens),* Caribbean reef shark *(C. perezi),* daggernose shark *(Isogomphodon oxyrhynchus),* night shark *(C. signatus),* whitenose shark *(Nasolamia velox),* blacknose shark *(C. acronotus),* whitecheek shark *(C. dussumieri),* lost shark *(C. obsoletus),* Pacific smalltail shark *(C. cerdale),* Borneo broadfin shark *(Lamiopsis tephrodes)* and the broadfin shark *(Lamiopsis temminckii)* are documented across much of their range. These low-productivity marine, estuarine, and freshwater species fulfil the CITES criteria for inclusion in Appendix II, and, in many locations approach or exceed the threshold for inclusion in Appendix I (Rigby et al. 2019 and 2021, MacNeil et al. 2020, Pacoureau et al. 2021).

Given most of these species' large size, coastal distribution, and in many cases restricted range, and the high fishing pressure and lack of trade or catch management throughout their range (Quieroz et al. 2019); Appendix II listing is clearly justified now before they reach the Appendix I listing criteria threshold.

ii) Annex 2a, Criterion B. It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

Declines in the grey reef shark (*C. amblyrhynchos),* the dusky shark (*C. obscurus*), the smalltail shark (*C. porosus*) the Ganges shark (*G. gangeticus*), the sandbar shark (*C. plumbeus)* the Borneo shark *(C.borneensis),* the Pondicherry shark *(C. hemiodon),* the smoothtooth blacktip shark *(C. leiodon),* the sharptooth lemon shark *(Negaprion acutidens),* the Caribbean reef shark *(C. perezi),* the daggernose shark *(Isogomphodon oxyrhynchus),* the night shark *(C. signatus),* the whitenose shark *(Nasolamia velox),* the blacknose shark *(C. acronotus),* the whitecheek shark *(C. dussumieri),* the lost shark *(C. obsoletus),* the Pacific smalltail shark *(C. cerdale),* the Borneo broadfin shark *(Lamiopsis tephrodes)* and the broadfin shark *(Lamiopsis temminckii)* due to unsustainable fishing pressure and the high value of dried shark fins in international trade, are reported throughout much of their range (Rigby et al. 2019, Simpfendorfer et al 2020, MacNeil et al 2020, Pacoureau et al 2021, Dulvy et al 2021). The majority of these species occur in the global shark fin trade hubs in China (Hong Kong Special Administrative Region and Guangzhou; Fields et al 2018, Cardeñosa et al 2020) in significant numbers, where even small percentages of the overall trade equate to tens, or hundreds of thousands of individual Critically Endangered or Endangered sharks entering the international fin trade every year. For those found in lower quantities in the shark fin trade, that does not mean that trade pressure isn't a key decline driver, rather unsustainable catch and trade has already depleted some of these Endangered and Critically Endangered species populations to a level where they are absent from the trade, or they are naturally so rare that such studies may not detect their presence.

With limited fisheries management measures in place across their known ranges, in the absence of international trade regulation, the value of their fins and meat will encourage continued targeted fisheries, or the retention of bycatch that could otherwise be released alive, and drive these species to extinction in the near future.

iii) 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, so that enforcement officers who encounter specimens of CITES-listed species are unlikely to be able to distinguish between them.

There is a close visual resemblance between the most commonly traded forms of the 19 Critically Endangered and Endangered species proposed here for listing, primarily their fins (Clarke et al. 2006, Fields et al 2018) but also dressed carcasses (i.e., headless, finless trunks) and meat (FAO 2015), and the same products from many currently unlisted species in the family Carcharhinidae, along with already Appendix II listed members of the family, such as the silky shark (*C. falciformis*). With each of the 19 lead species proposed according to Article II paragraph 2a having a unique set of lookalikes (as per the matrix set in Appendix I to this proposal), if the 19 EN/CR species in this proposal are listed on CITES Appendix II, every

member of the family Carcharhinidae is a visual lookalike for at least one fin position, with the exception of the daggernose shark (*Isogomphodon oxyrhynchus)* and the whitenose shark (*Nasolamia velox)*. All members of the family are lookalikes for traded meat. Please see Annex 1 and 2 to this proposal for full details on fin identification at the first point of trade.

Several other species within the family Carcharhinidae (see both Annex 1 and 2 for specific details) have caudal and pectoral fins that are similar in appearance to those of currently listed species, such as scalloped and great hammerhead sharks (family Sphyrnidae). This further justifies the benefit of a family-level listing of requiem sharks (family Carcharhinidae), to aid the enforcement of existing CITES listings.

The 19 species, that are all Critically Endangered or Endangered, need CITES listing and management now, given their severely depleted population status and well documented fact that the fin trade is driving severe declines globally. Should only a subset of the remainder of the requiem shark family be listed as lookalikes (rather than the entire family) ID trainings and enforcement action will be incredibly challenging, as visual separation of CITES listed species from non-CITES listed species would be impossible. Given that visual ID has been a fundamental element of implementation particularly for lower capacity countries, removing this ability to visually ID traded products while listing a significant portion of the fin trade would remove the globally equitable implementation burden that visual identification at a family level would provide. Please see section 6.3 and Annex 1 to this proposal for additional information on this issue.

Regional and global identification guides are available for whole bodies of the proposed species, and all other members of the family Carcharhinidae. These enable species or genus-specific identifications at the point of landing, which will allow for sound labeling and traceability of traded products of these species, and will aid implementation and enforcement of this listing. However, for products at the first point of trade, such as dressed carcasses, meat and fins, many of the proposed species are similar in appearance to those of other members of family Carcharhinidae. However, visual identification is possible at the family level, with the use of a fin identification guide (under development and summarized in Annex 1 and 2), allowing for effective customs level enforcement action in line with techniques used for sharks and rays already listed on CITES Appendix II.

The international trade in shark fins continues to drive population declines of shark species globally, with recent studies finding that over 70% of species traded for their fins are already IUCN threatened (Cardeñosa et al in press), twice the background level for all chondrichthyans. CITES must regulate this trade comprehensively now, before widescale Appendix I listings are needed.

At least 35 species in the family Carcharhinidae have been documented in the fin markets of Hong Kong SAR and Chinese Mainland, representing 46% of all species recorded in this market (Fields et al. 2018, Cardenosa 2020). The proportional contribution of carcharhinid species to the overall volume could be as high as 85.5%, as many of species traded in the highest volumes are in this family (Clarke et al. 2006, Fields et al. 2018, Cardeñosa et al. 2018a, Cardeñosa et al. 2020). Due to the complications of identifying products in trade within the family Carcharhinidae and the large proportion of the fin trade that this family represents, it would be challenging for customs officials to separate a subset of listed Carcharhinidae species from unlisted species within the family in a timely and easy manner.

However, a listing at the family level would bring the majority of the shark fin trade under CITES Appendix II regulation, and given that 70% of the fin trade (Cardeñosa et al in press) and over 68% of the family Carcharhinidae is already considered threatened according to the IUCN Red List of Threatened Species Categories and Criteria (only 7 species of 56 in the family are IUCN Least Concern) (Dulvy et al 2021), such action is clearly justified if the intent of CITES Appendix II, to regulate the trade in species which might be threatened by continued harvesting or other influences, is to be met.

This step would assist the implementation and enforcement of all shark listings at the customs and border control level, since almost every shipment of fins would contain CITES Appendix II species, and should be accompanied by the appropriate CITES permit or certificate. This would also limit the ability to hide small

quantities of listed species among large quantities of unlisted fins, a common issue encountered in the implementation of current shark listings (Villate-Moreno 2021), with around 25% of the fin trade already being CITES Appendix II listed (Cardeñosa et al. 2018a).

Therefore, to facilitate the implementation of this, and existing CITES shark listings, all remaining members of the family are included in this proposal, under criteria Annex 2b, Criterion A.

B. Proponent

Bangladesh, Colombia, Dominican Republic, Ecuador, El Salvador, European Union, Gabon, Israel, Maldives, Panama, Senegal, Seychelles, Sri Lanka, Syrian Arab Republic, United Kingdom of Great Britain and Northern Ireland*

C. Supporting statement

1. Taxonomy

1.1 Class: *Chondrichthyes*

1.2 Order: Carcharhiniformes

1.3 Family: Carcharhinidae

1.4 Species: *Carcharhinus amblyrhynchos, Carcharhinus obscurus, Carcharhinus porosus, Glyphis gangeticus, Carcharhinus plumbeus, Carcharhinus borneensis, Carcharhinus hemiodon, Carcharhinus leiodon, Negaprion acutidens, Carcharhinus perezi, Isogomphodon oxyrhynchus, Carcharhinus signatus, Nasolamia velox, Carcharhinus acronotus, Carcharhinus dussumieri, Carcharhinus obsoletus, Carcharhinus cerdale, Lamiopsis tephrodes* and *Lamiopsis temminckii* (and all remaining species found within the family Carcharhinidae under Annex 2b, Criterion A, as detailed in section 9 of this proposal).

1.5 Scientific synonyms:

1.6 Common names:

English: Grey reef shark, dusky shark, smalltail shark, Ganges shark, sandbar shark, Borneo shark, Pondicherry shark, smoothtooth blacktip shark, sharptooth lemon shark, Caribbean reef shark, daggernose shark, night shark, whitenose shark, blacknose shark, whitecheek shark, lost shark, Pacific smalltail shark, Borneo broadfin shark and the broadfin shark.

1.7 Code Numbers: Not applicable.

Figure 1 - Grey reef shark (*C. amblyrhynchos) top left,* dusky shark (C. *obscurus*) top right, Ganges shark (*Glyphis gangeticus)* bottom left, smalltail shark (*C. porosus*), bottom right

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

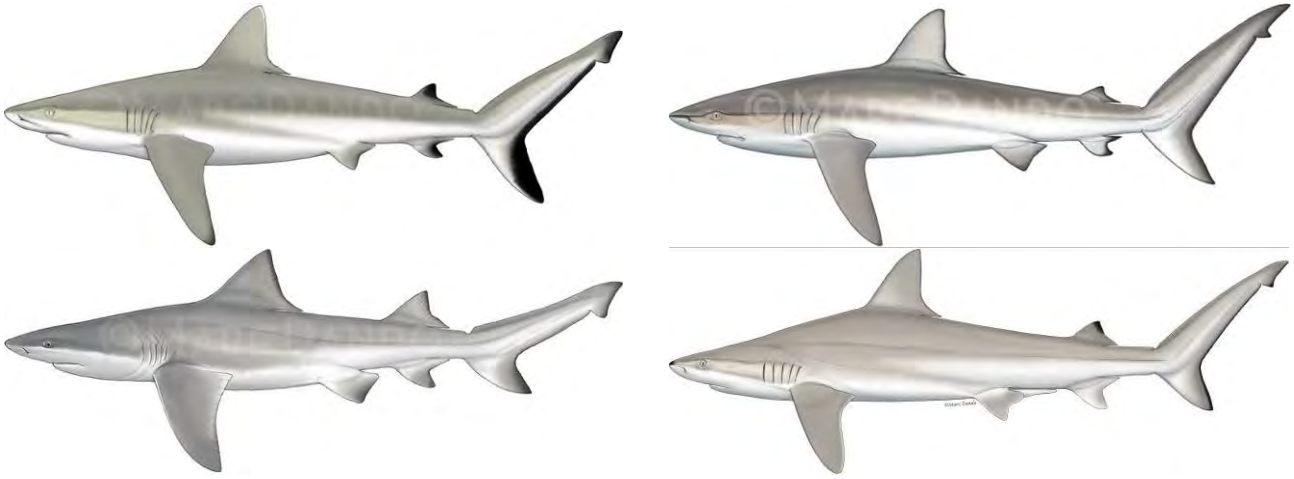


Figure 2 - Sandbar shark (*C. plumbeus) top left,* Borneo shark (*C. borneensis*) top right, Pondicherry shark (*C. hemiodon)* bottom left, smoothtooth blacktip shark (*C. leiodon*), bottom right

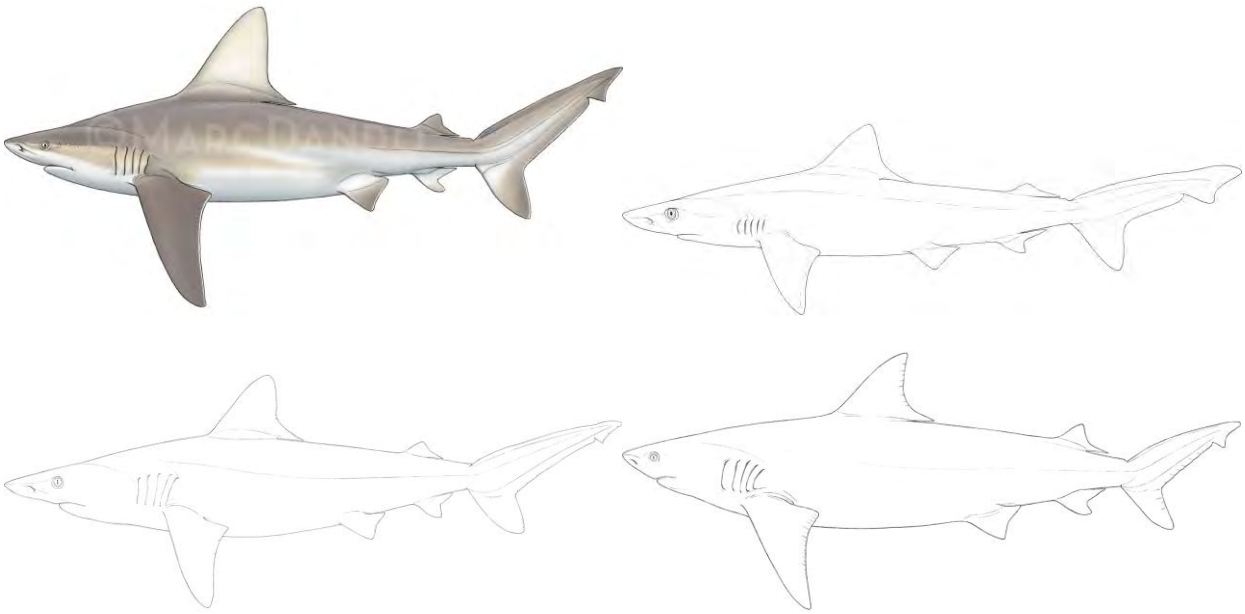


Figure 3 – Sharptooth lemon shark (*Negaprion acutidens) top left,* Caribbean reef shark (*C. perezi*) top right, daggernose shark (*Isogomphodon oxyrhynchus)* bottom left, night shark (*C. signatus*), bottom right

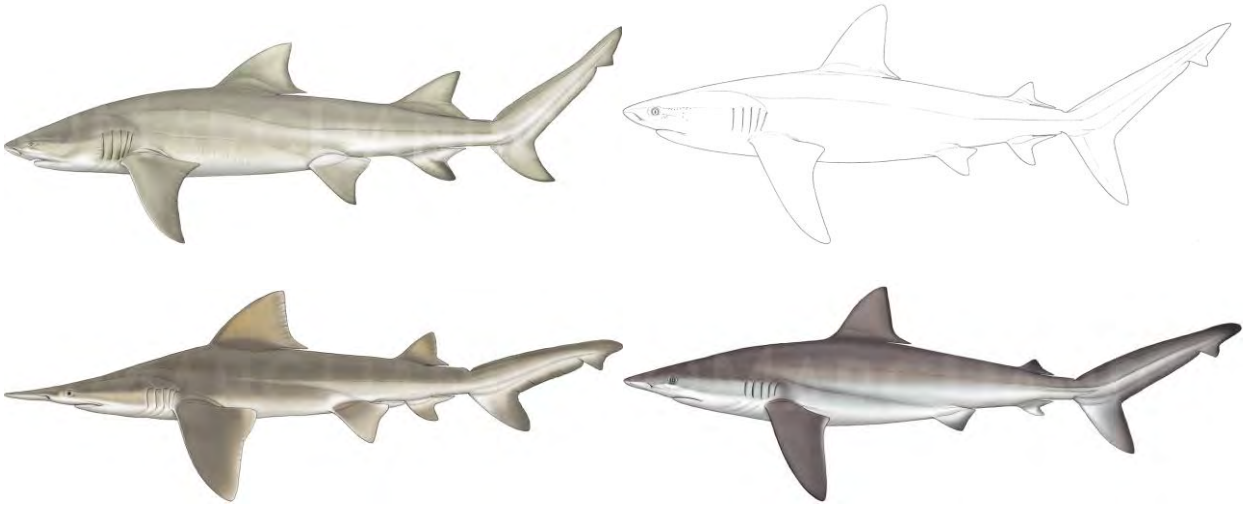


Figure 4 – Whitenose shark (*Nasolamia velox) top left,* blacknose shark (*C. acronotus*) top right, whitecheek shark (*C. dussumieri)* bottom left, lost shark (*C. obsoletus*), bottom right

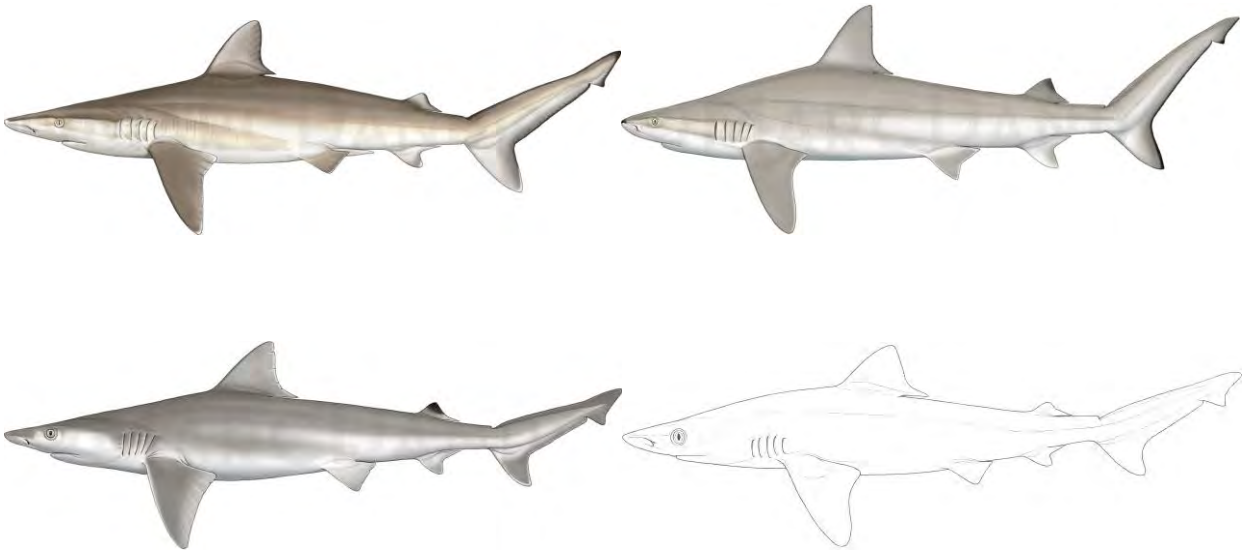
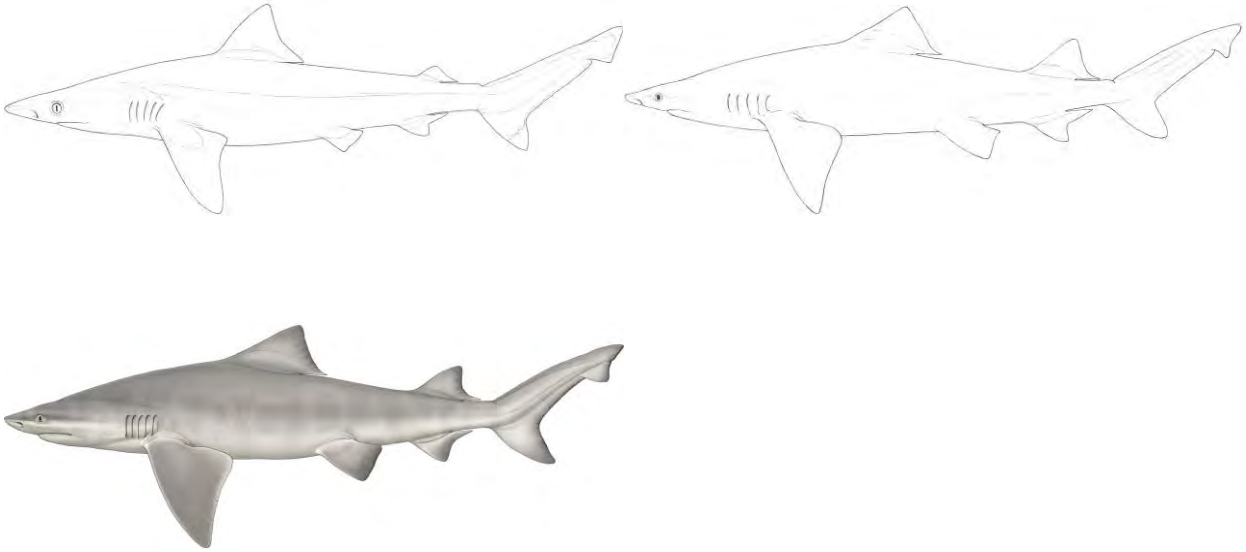


Figure 5 – Pacific smalltail shark (*C. cerdale) top left,* Borneo broadfin shark (*Lamiopsis tephrodes*) top right, whitecheek shark (*Lamiopsis temminckii)* bottom left



2. <u>Overview</u>

<u>Grey reef shark (*C. amblyrhynchos) summary:*</u>

The grey reef shark (*C. amblyrhynchos*) is a medium-sized coastal shark that occurs in coral reef habitats in tropical waters of the Indian and Pacific Oceans from the surface down to a depth of at least 280 meters. The species has relatively low biological productivity. *C. amblyrhynchos* is assessed as Endangered globally on the IUCN Red List of Threatened Species (Simpfendorfer et al. 2020).

The declines in the populations of reef associated sharks around the world are well represented by the grey reef shark (*C. amblyrhynchos).* Historically this species was thought to have been abundant on coral reef ecosystems throughout its Indo-Pacific range, but it has declined significantly due to overfishing. In the

coming decades, these declines will be compounded by the impacts of climate change, thus extirpating a key predator from coral reefs, further impacting reef health.

A recent global survey highlighted the poor status of reef-associated sharks, including *C. amblyrhynchos*, finding widespread depletion of reef sharks across much of the world's tropical oceans (MacNeil et al. 2020). The key finding was the profound impact that fishing has had on reef shark populations: on almost 20% of reefs surveyed, no sharks were found at all, and they were almost completely absent from reefs (effectively functionally extinct) in several countries, particularly in the Western Pacific and Indian Ocean regions. Grey reef sharks were not detected on reefs from 8/40 countries where they should occur based on historical range; in over half of the remaining countries they were rarely sighted. This indicates widespread declines, far exceeding the guidance for CITES Appendix II decline criteria. Grey reef shark fins still occur in landings sites around the Indo-Pacific, are found in illegal seizures on high seas vessels, and are commonly sampled in random surveys of the Hong Kong SAR fin trade hub (Fields et al. 2018, Cardeñosa et al. 2018a, Bonaccorso et al 2021, Appleyard et al 2018).

Ganges shark (*Glyphis gangeticus) summary:*

The river sharks of the genus *Glyphis* are represented by three described species (the speartooth shark *Glyphis glyphis*, northern river shark *G. garricki*, and Ganges shark *G. gangeticus*). All are considered threatened and restricted to freshwater, estuarine and occasionally adjacent nearshore systems in Australasia and South and Southeast Asia. They are rare, poorly known and hard to accurately identify. Undescribed species may still exist, if they are not already extinct, in South and Southeast Asia.

The most widely distributed, the Ganges shark (*G. gangeticus*), is among the world's most threatened shark species, and is considered Critically Endangered on the IUCN Red List due to high human pressures on its restricted habitat throughout its South Asian range (Rigby et al. 2021). Despite their rarity, river sharks are recorded as being processed for the fin trade at landing sites and have been detected in random surveys of the shark fin trade hub of Hong Kong SAR (White et al 2015, Fields et al. 2018, Cardeñosa et al. 2018a).

Continued trade, even in small quantities, is of high concern, given the species' low numbers, highly restricted ranges, poorly understood life history, and the high extinction risk to surviving unprotected populations.

Dusky shark (C. *obscurus*) summary:

The dusky shark (*Carcharhinus obscurus*) is a large (to 420 cm total length) coastal and pelagic shark with a patchy distribution in tropical and warm temperate seas from the surface down to depths of 500 m. The species has low biological productivity with late age-at-maturity and a long reproductive cycle. It is highly migratory and listed in Appendix II of the Convention on the Conservation of Migratory Species (CMS). Significant declines have been recorded throughout much of the species' range and it is assessed as Endangered in the IUCN Red List of Threatened Species (Rigby et al. 2019). The species is still regularly found in the global shark fin trade (Fields et al. 2018, Cardeñosa et al. 2018a).

Smalltail shark (*C. porosus*) summary:

The smalltail shark (*Carcharhinus porosus*) is a small (<150 cm total length) Central and South American coastal requiem shark. It is heavily fished and in at least part of its range has declined by over 90% in ten years. It is assessed as Critically Endangered globally on the IUCN Red List of Threatened Species (Pollom et al. 2020). The species been detected in the most recent random surveys of the shark fin trade hub of Hong Kong SAR (Fields et al. 2018, Cardeñosa et al. 2018a).

Sandbar shark (*C. plumbeus)* summary*:*

The globally Endangered (IUCN Redlist) sandbar shark (*C. plumbeus*) is captured as target and bycatch in artisanal, industrial, and recreational fisheries and is retained for the high value meat and fins, unless regulations prohibit retention. Species-specific population trend data reveal population reductions of >50% and >80% in the United States and South Africa respectively over the past three generation lengths (60–78 years), and stock assessments in Australia indicate a reduction of 60% over the past three generation lengths (78 years). It is also suspected to have declined by 50–79% in the Mediterranean and the Arabian Seas region over the past three generation lengths (60–78 years) (Rigby et al 2021). The species is used for its valuable meat and fins and to a lesser extent for its skin and liver oil (Last and Stevens 2009, Ebert et al. 2013). The proportion of sandbar shark fins in the Hong Kong shark fin trade appears to have declined from 2.4% to 0.2% from 2002 to 2015 (Clarke et al. 2006, Fields et al. 2018).

Borneo shark (*C. borneensis)* summary:

The Borneo shark is suspected to have undergone a population reduction of >80% over the past three generation lengths (27 years) due to a decline in habitat quality and actual or potential fishing levels, and it is assessed as Critically Endangered (Dulvy et al 2021)

Pondicherry shark (*C. hemiodon*) summary:

The Pondicherry shark (*C. hemiodon*) is a small (to 102 cm total length) and very rare Indo-West Pacific whaler shark (Kyne et al., 2021). It has a wide historic range from Oman to southern China, but known records are scattered, and it has only been reliably verified from a handful of countries. Population declines in the Pondicherry shark likely occurred over 3 generations ago. The Pondicherry shark is so rare that there is a lack of any reliable records of the shark since the 1960s. However, given the lack of records, the number of mature individuals is assumed to be <250 with no subpopulation >50 mature individuals, and the species is assessed as Critically Endangered by the IUCN Red List (Kyne et al., 2021).

Intensive and largely unregulated coastal fisheries are likely to have driven an historical population reduction in this species (e.g. Stobutzki et al. 2006). Fisheries across the range of this species have experienced increased demand for sharks since the 1970s due to growing coastal human population densities driving increasing fishing effort in traditional shark fisheries in many areas, and international trade in shark products, including the fin trade (e.g. Henderson et al. 2007, Jabado et al. 2015). India is the only country across the range of this species with specific regulations protecting the Pondicherry shark under Schedule I of the (Indian) Wildlife (Protection) Act, 1972. Given the population's Critically Endangered status, limited range and very small size of existing populations of Pondicherry shark, an Appendix II listing is urgently needed to ensure any attempts to trade this species are well regulated and with source documentation.

Smoothtooth blacktip shark (*C. leiodon*) summary:

The smoothtooth blacktip shark (*C. leiodon*) is endemic to the Arabian Seas region and was only rediscovered in 2009. Its maximum size is 165 cm total length (TL) (Weigmann 2016). Overall, there are a limited number of specimens reported. However, based on the significant decline in other similar species in the region, and difficulty in differentiating the species from other sharks in the family Carcharhinidae, population declines of 50–80% are suspected and the species is currently assessed as IUCN Red List Endangered (Kyne et al., 2017). A further population reduction is suspected over three generation lengths (2017–2042) based on current levels of exploitation. There are no management measures currently in place for the smoothtooth blacktip shark. As such, an Appendix II listing is warranted to assist in the prevention of further declines in this species.

The smoothtooth blacktip shark is morphologically very similar to the blacktip shark (*C. limbatus*), spottail shark (*C. sorrah*) and the graceful shark *(C. amblyrhynchoides*) and there is likely to have been confusion in species identification across its potential range. It is believed to occur in inshore waters where it is captured in gillnet, line and trawl fisheries within its range (Kyne et al., 2017). Its recent re-discovery and re-

description means that historically it has likely been under-recorded, however reliable identification of Carcharhinus species since then indicates that this species is rare and localized.

The meat of this species may be sold fresh for human consumption at local markets in the region. In some countries, such as Oman and Yemen, the meat is cut into fillets, dried and salted for domestic sales or trade with neighboring countries. Species with black fins such as this one have higher value fins and fetch higher prices (although still lower than hammerheads and guitarfishes) (Jabado et al. 2015), and the smoothtooth blacktip shark is currently found in the international fin trade (Cardeñosa et al., 2020; Fields et al., 2017).

Sharptooth Lemon Shark (*Negaprion acutidens)* summary:

The sharptooth lemon shark (*N. acutidens)* is an Indo West Pacific species assessed as Endangered globally on the IUCN Red List of Threatened Species as it has suffered populations losses up to 79% over the last three generation lengths (Simpfendorfer et al., 2021). The species is also threatened by declines in habitat quality of coral reefs due to climate change (IPCC Report, 2019), destructive fishing practices (McManus, 1997), poor water quality, and loss of mangroves from deforestation and coastal development. The sharptooth lemon shark is regularly found in the international fin trade (Fields et al., 2018). Outside of Australia, there are few species-specific regulations in place for the sharptooth lemon shark (Simpfendorfer et al., 2019).

Caribbean Reef Shark (*C. perezi)* summary:

The Caribbean Reef Shark (*C. perezi*) is a medium-sized (to 295 cm TL) reef-dwelling shark found throughout the Western Central Atlantic from the southern United States to the Bahamas, and the Gulf of Mexico and Caribbean Sea to Brazil (Carlson et al., 2021). It is found mainly on coral reefs on continental and insular shelves from the surface to a depth of 378 m. Similar to other coastal sharks, it is especially vulnerable due to habitat loss from destructive fishing practices and the effect of climate change on reef ecosystems (IPCC Report, 2019). The Caribbean reef shark has undergone a population reduction of 50–99% over the past three generation lengths and is currently considered IUCN Red List Endangered (Carlson et al., 2021; MacNeil et al., 2020). However, in areas where protection measures are in place such as "shark sanctuaries" (e.g. Bahamas), the population has remained relatively stable since the 1980s (MacNeil et al., 2020). Such population differences based on management measures in place indicate that should sufficient management be enacted across its range; population recovery is possible. In addition to fisheries pressure, coral reef ecosystems in the Caribbean Sea, which are the primary habitat for this species, are in decline due to climate change, specifically coral bleaching, disease, invasive species, and coastal pollution (Carpenter et al. 2008, Jackson et al. 2014). Overall, this shark has very little refuge from fishing, and is at threat from a continuing decline in habitat quality.

Daggernose Shark (*Isogomphodon oxyrhynchus*) summary:

The daggernose Shark (*I. oxyrhynchus*) is a medium-sized (to 160 cm TL) shark that occurs in the Western Central and Southwest Atlantic from Trinidad and Tobago and eastern Venezuela to Maranhão State, Brazil. This species is targeted, along with other sharks, and/or caught as bycatch in intense and largely unregulated artisanal and commercial gillnet and trawl fisheries. The daggernose shark is currently assessed by the IUCN Red List as Critically Endangered as estimates of population reduction over three generations are 80-99% (Pollom et al., 2020a). There are no known protections or conservation measures in place for the daggernose dhark in any of its range states outside of Brazil. Overall, due to the intense and unmanaged fishing pressure that this species is exposed to, its slow life history characteristics that make it particularly sensitive to overfishing, inferred and estimated declines, the paucity of recent records, and ongoing habitat degradation; global management is urgently needed.

Night Shark (*C. signatus)* summary:

The night shark (*C. signatus*) is a medium-sized (to 280 cm TL) requiem shark that occurs in the Northwest, Western Central, and Southwest Atlantic from New York, USA to Río Negro, Argentina, including the Gulf of Mexico and Caribbean Islands and in the Eastern Central and Southeast Atlantic from Senegal to Namibia (Carlson et al., 2020). The night shark is estimated to have suffered declines up to 79% over the last 50 years, and is currently assessed as IUCN Red List Endangered (Carlson et al., 2020). It is pelagic and semi-oceanic and inhabits outer continental and insular shelves from the surface to a depth of 600m, although it is typically found at depths of 26–365m (Carlson et al. 2008, Castro 2011). The night shark is caught in primarily pelagic longline fisheries and when retained is used for its meat, fins, liver oil, and skin (Carlson et al. 2008). The night shark has documented declines across all of its range, but little species-specific management in place. The night shark has been listed as a prohibited species in the United States (U.S.) National Marine Fisheries Service finalized Consolidated Atlantic Highly Migratory Species Federal Management Plan since 1999, but little else. Based on the combination of high fishing mortality throughout its range, slow reproductive rate and late maturation age, estimated population reduction in the U.S. pelagic longline fishery and suspected declines elsewhere, the IUCN Red List called for a wide variety of management needed for the night shark, including trade management measures via CITES (Carlson et al., 2020).

Whitenose Shark (Nasolamia velox) summary:

The Whitenose Shark (*N. velox*) is a small (to 150 cm total length) requiem shark that occurs in the Eastern Central and Southeast Pacific from Baja California, Mexico, to Peru in estuaries and over the continental shelf to a depth of 192m (Ebert et al. 2013, Weigmann 2016). The whitenose shark is assessed as IUCN Red List Endangered with population declines up to 79% across its range (Pollom et al., 2020b). It is captured in artisanal gillnet and longline fisheries and in industrial shrimp trawls throughout its range. Similar to other coastal shark species, it is especially vulnerable to unmanaged fishing efforts and the effects of climate change on its ecosystem. This shark is retained and the meat is consumed locally, and fins are likely exported internationally (Pollom et al., 2020b). There are no species-specific protections or conservation measures in place for the whitenose shark. Due to the level of intense and unmanaged fisheries across its range, combined with an increasing rarity of records, limited biological productivity, and habitat degradation; a wide variety of measures including trade management are needed to allow this population to recover.

Blacknose shark (*C. acronotus*) summary:

The blacknose shark (*C. acronotus*) is a small (to 137 cm total length) requiem shark found in the Western Central and Southwest Atlantic Oceans from North Carolina to Brazil, including the Gulf of Mexico and Caribbean Sea. It is caught as target and bycatch in coastal commercial fisheries and retained primarily for meat. Significant declines (30 -79%) have been recorded throughout much of the species' range and it is assessed as Endangered in the IUCN Red List of Threatened Species (Carlson et al. 2021). The species is still regularly found in the global shark fin trade (Fields et al. 2018, Cardeñosa et al. 2020).

Whitecheek shark (*C. dussumieri*) summary:

The whitecheek shark (*C. dussumieri*) is a small-sized shark (to 100 cm total length) that occurs primarily in the Western Indian Ocean from at least the Arabian/Persian Gulf to the southeastern coast of India. This species has a relatively low reproductive capacity (litters of 2-5 pups) making it particularly susceptible to over-exploitation (Moore et al. 2012, Jabado et al. 2016). The species is caught in commercial trawling, artisanal fishing, hook-and-line fishing, and gillnetting throughout its range. The whitecheek shark is often the dominant species landed in the Arabian/Persian Gulf (e.g. Iran and Qatar). However, off Pakistan and India, where it used to be common, there is evidence of declines exceeding 50-70% over the last 15 years with recent surveys in India and Sri Lanka failing to report the species. As such this species is assessed as Endangered in the IUCN Red List of Threatened Species (Simpfendorfer et al. 2019). In some countries, such as Oman, Saudi Arabia (Arabian/Persian Gulf), Pakistan, and India the meat is cut into fillets, dried and

salted for domestic sales or trade with neighboring countries. Fins are not considered valuable due to their small size but are still traded internationally (Jabado et al. 2015, Cardeñosa et al. 2020).

Lost shark (*C. obsoletus*) summary:

The lost shark (*C. obsoletus*) is a small requiem shark from the southern South China Sea (Gulf of Thailand, Viet Nam, and Sarawak in Malaysian Borneo) in the Western Central Pacific, but it may have had a wider historic distribution in the southern South China Sea. The maximum size is unknown but, based on similar species, it likely reached a size of ~100 cm total length. Its life history is unknown, but the lost shark can be inferred as having a low productivity, from its close relative the smalltail shark which has a litter size of 2–9 pups, a gestation length of ~1 year and a biennial reproductive cycle (Lessa et al. 1999, Santana et al. 2020). The lost shark is suspected to have undergone population reduction of >80% over the past three generation lengths (27 years) and the remaining population size is suspected to be fewer than 50 individuals and is inferred to be continuing to decline due to actual or potential fishing levels. The weighted probability of extinction of both the threats and records and surveys models combined is 0.77–0.78 and hence the lost shark is suspected to be Critically Endangered in the IUCN Red List of Threatened Species (Possibly Extinct). While there is no species-specific information available on use and trade of the lost shark, it would likely have been utilized if caught. (Dulvy et al. 2020a).

Pacific smalltail shark (*C. cerdale)* summary:

The Pacific smalltail shark (*C. cerdale*) is caught in artisanal gillnet and longline and industrial trawl fisheries across its range. Further south, intense and increasing artisanal fishing exists with very little management in place. Relative abundance decreased in the Colombian industrial shrimp trawl fishery between 1995 and 2004, which represented the equivalent of a >99% population reduction over three generations (27 years). Overall, due to intense and largely unmanaged fishing pressure throughout its range, a lack of recent records in Mexico, and documented declines in Colombia, the Pacific smalltail shark is inferred to have undergone a population reduction of more than 80% over the past three generations (27 years) based on levels of exploitation, and it is assessed as Critically Endangered in the IUCN Red List of Threatened Species. Currently, fins are likely to be exported internationally because most of their fins are lookalike to Atlantic smalltail (Pollom et al. 2020b).

Borneo broadfin shark *(Lamiopsis tephrodes)* summary:

The species is caught in a variety of gears including demersal trawls and gillnets and the meat is retained for human consumption and the fins are traded. Reconstructed catches of mainly carcharhinids and elasmobranchs in Gulf of Thailand, Indonesia, Malaysia (Peninsular and Sarawak), and China can be used to infer population reductions of 28–76% when these declines are scaled to the suspected three generation lengths of the Borneo broadfin shark (20 years). These levels of declines are not species specific but are informative for understanding the broader levels of decline in carcharhinid sharks, particularly in the central part of this species distribution. The species is exposed to intense fishing pressure and has no refuge from fishing pressure. It is suspected that the Borneo broadfin shark has undergone a population reduction of 50–79% over the past three generation lengths (20 years) due to actual or potential fishing levels, and it is assessed as Endangered in the IUCN Red List of Threatened Species (Dulvy et al. 2021). The fins are dried and traded internationally (Last et al. 2010, Cardeñosa et al. 2020).

Broadfin shark *(Lamiopsis temminckii)* summary:

Reconstructed catches of mainly carcharhinids for the western and northern Indian Ocean infer declines of 67% when scaled to three generation lengths (20 years). It is suspected that the broadfin shark has undergone a population reduction of 50–79% over the past three generations lengths (20 years) due to

levels of exploitation, and it is assessed as Endangered in the IUCN Red List of Threatened Species. (Dulvy et al. 2021b). In Pakistan and India, the meat is cut into fillets, dried and salted for domestic sales or trade with neighboring countries. The fins are dried and traded internationally (Cardeñosa et al. 2020).

Family level summary

The family Carcharhinidae forms the core of the global shark fin trade, with estimates from recent studies conducted in trade hubs indicating these species make up 46% of all the species recorded in trade (Fields et al. 2018, Cardeñosa et al. 2018a). Given the relative contribution of some of the species within the family to that trade, the family Carcharhinidae make up as much as 85.5% of fins found for sale in the world's largest shark fin retail markets (estimate determined via an index of relative species contribution to the trade, see Fields et al. 2018, Cardeñosa et al. 2018a, 2020 for details on this index).

As highlighted in this proposal to amend the Appendices, the 19 lead species within the family that form the core of this proposal are already Critically Endangered or Endangered and meet, and in many cases greatly exceed the threshold for CITES Appendix II listing, several clearly meeting the Appendix I listing criteria and may already be approaching extinction (such as the Ganges shark, Pondicherry shark and lost shark). Due to the political polarization still seen at CITES for marine species, this proposal is for Appendix II listing rather than Appendix I, but for these Critically Endangered species, sustainable trade is unlikely, however such action will be possible for many other species within the family.

Recent global analysis of shark populations found 37.5% of shark, ray, and chimaera species to be threatened with extinction, the second highest of all vertebrate lineages (Dulvy et al 2021). However, within the family Carcharhinidae the situation is far worse, with 68.4% of species considered threatened (Dulvy et al 2021 – supplementary information), one of the highest rates among all shark families. Given that this family forms the majority of the trade in shark fins and meat, this clearly makes the case for CITES Appendix II regulation, as the family is clearly already deeply impacted by unregulated international trade.

A new study summarizes the situation for this family well. It concludes that: '*Requiem sharks are heavily fished and traded, with at least 23 species of the genus Carcharhinus and at least 39 species of the family Carcharhinidae documented in fin clippings in Hong Kong and Guangzhou markets in China (Cardeñosa et al. 2020). Most requiem sharks are threatened and indeed the whole family Carcharhinidae is in the top ten most threatened families of sharks and rays, with two-thirds (68.4% 39 of 57) of species threatened. The genus Carcharhinus is the largest of the Family with 35 species, of which nearly three-quarters (71.4%, n=25) are threatened [IUCN: CR(PE), CR, EN, VU] (Dulvy et al. 2021). Here, we show that this high level of threat, from overfishing and unregulated international trade, results from a shortfall in national and international management. We conclude that listing requiem sharks on CITES Appendix II provides a mechanism for tackling the management deficits for requiem sharks.'* (High overexploitation risk and management shortfall in highly traded requiem sharks, Sherman et al – in press and pre-print made available to Panama as part of range state consultation on this proposal).

The global trade in shark fins, and increasingly other products such as meat, is highly reliant upon species in family Carcharhinidae. Most species in this family are caught in coastal multi-species fisheries in which it is not possible to target one species over another and in most cases caught individuals are dead when the fishing gear is collected or have a reduced survivability after release. Under current management regimes, international trade will continue to drive fisheries for these ecologically important species, sequentially depleting species after species as each one declines and become harder to source. The precautionary solution is to bring most of the high value international fin trade under CITES regulation control now, as proposed here. This will secure their legal, sustainable, traceable and well-regulated use, with associated long term economic benefits, and allow depleted stocks to recover, thus averting the need for future Appendix I listings.

3. Species characteristics

3.1 Distribution

Grey reef shark (*C. amblyrhynchos*) – top left image (figure 2)
Tropical Indo-West and Central Pacific Oceans; some parts of the Eastern Tropical Pacific Ocean (Last and Stevens 2009, Simpfendorfer et al 2020, Ebert et al. 2021).

Ganges shark (*G. gangeticus*) – bottom right image (figure 2)

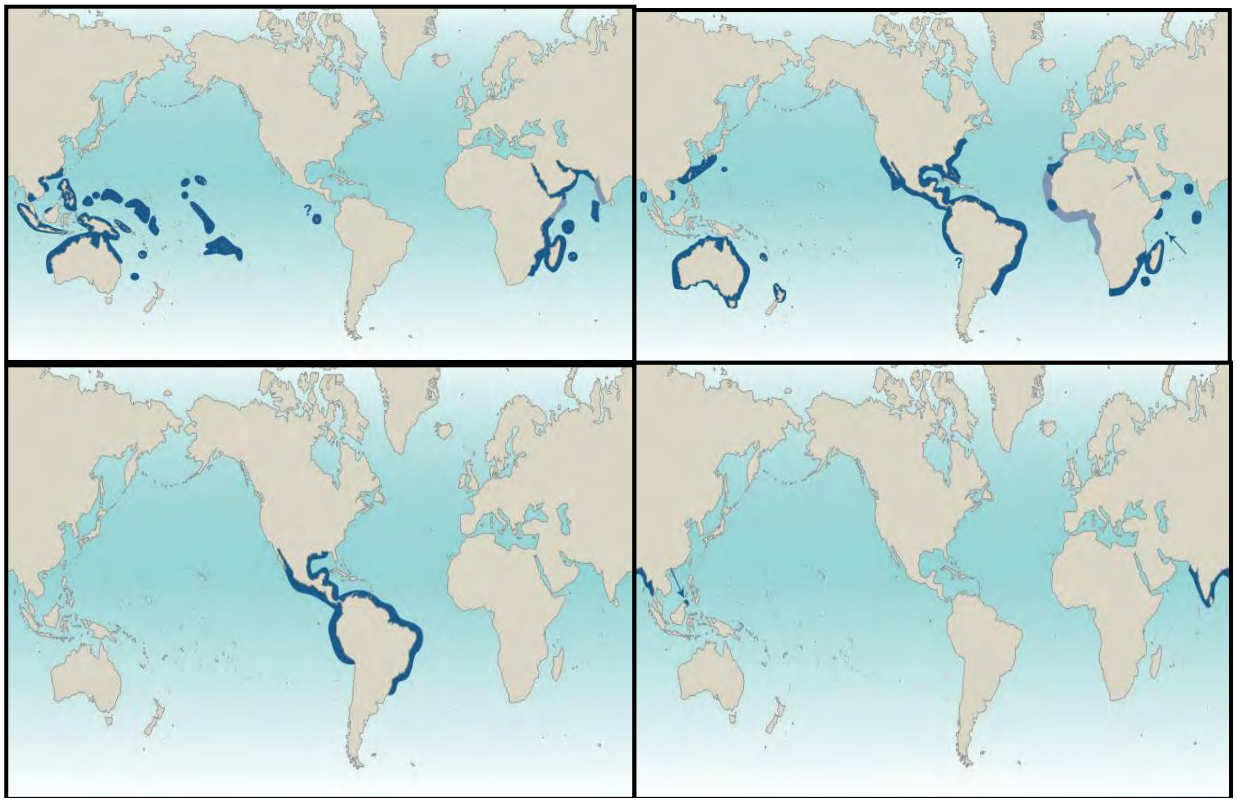
Relatively poorly known, patchy distributions in tropical rivers, estuaries and adjacent coastal waters in South Asia (Compagno, L.J.V. 2007, Ebert et al. 2021).

Dusky shark (*C. obscurus*) – top right image (figure 2)

Wide-ranging migratory species with a mainly coastal global distribution in tropical, sub-tropical and temperate oceans (Compagno 1984, Ebert et al. 2021).

Smalltail shark (*C. porosus*) – bottom left image (figure 2)
West Atlantic from the Gulf of Mexico and mainland Caribbean coast to southern Brazil, and central East Pacific (Ebert et al. 2021).

Figure 2 – range maps



Sandbar shark (*C. plumbeus)*- top left image (Figure 3)
Circumglobal distribution (De Silva et al. 2006, White et al. 2006, Last et al. 2010, Ebert et al. 2013, Sutaria et al. 2015, SEAFDEC 2016, Hylton et al. 2017, White et al. 2017, Arunrugstichai et al. 2018, Kumar et al. 2018, Psomadakis et al. 2019).

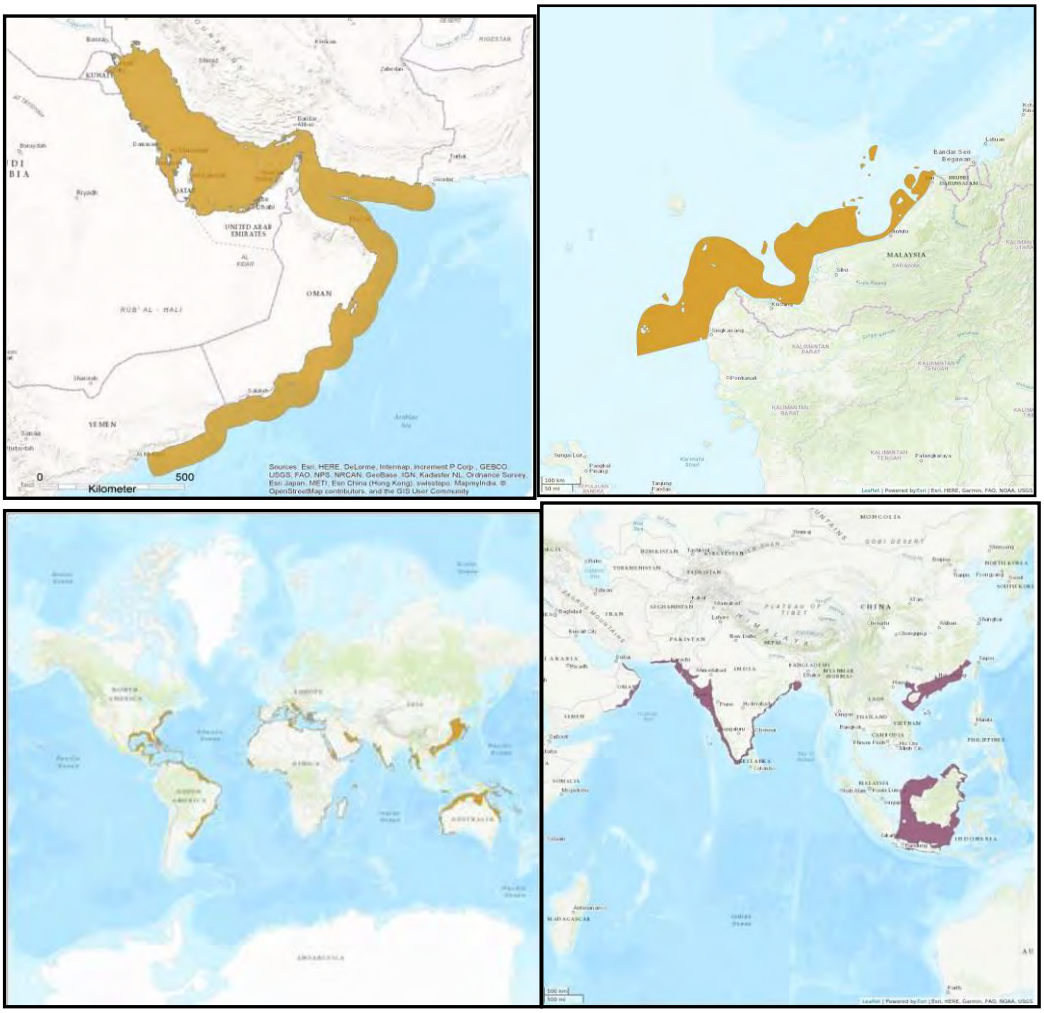
Borneo shark *(C. borneensis)*- top right image (Figure 3)

Known from Kalimantan (Indonesian Borneo) and Sarawak (Malaysian Borneo) and a single specimen collected from Chu San Island in the Chekiang Province of China in the Western Central Pacific (White et al. 2010).

Pondicherry shark *(C. hemiodon)*- bottom right image (Figure 3)
Historically ranged from the Arabian Sea (Oman) to the South China Sea (Garrick 1985).

Smoothtooth blacktip shark *(C. leiodon)*- bottom left image (Figure 3)
Endemic to the Arabian Seas region, occurring in the northern Indian Ocean, including the Gulf (UAE, Kuwait, Bahrain), Sea of Oman and Arabian Sea (Oman and Yemen) (Simpfendorfer et al 2017).

Figure 3 – Additional Range Maps



Sharptooth lemon shark *(Negaprion acutidens)* – top right image (Figure 4)
Widespread in coastal waters of the tropical and subtropical Indian and Northwest, Western Central, and Eastern Central Pacific Oceans (Last and Stevens 2009, Ebert et al. 2013).

Caribbean reef shark *(C. perezi)* – top left image (Figure 4)
Throughout the Western Central and Southwest Atlantic Oceans from the North Carolina (United States of America), the Bahamas, the Gulf of Mexico and Caribbean Sea to Brazil (Castro 2011, Ebert et al. 2013).

Daggernose shark *(Isogomphodon oxyrhynchus)*- bottom left image (Figure 4)
Western Central and Southwest Atlantic from Trinidad and Tobago and eastern Venezuela to Maranhão State, Brazil (Lessa et al. 2016).

Night shark *(C. signatus)* – bottom right image (Figure 4)
Generally in outer continental shelf waters in the Northwest, Western Central, and Southwest Atlantic Oceans ranging from Delaware, USA to Río Negro, Argentina, including the Gulf of Mexico, Central America, Bahamas and Caribbean (Castro 2011, Espinoza et al. 2018, Meíja-Falla and Navia 2019, Ehemann et al. 2019).

Figure 4 – Range Maps (cont.)

Whitenose shark *(Nasolamia velox)* – top left image (Figure 5)
Eastern Central and Southeast Pacific from Baja California, Mexico to Peru including the Gulf of California and the Galápagos Islands (Ebert et al. 2013).

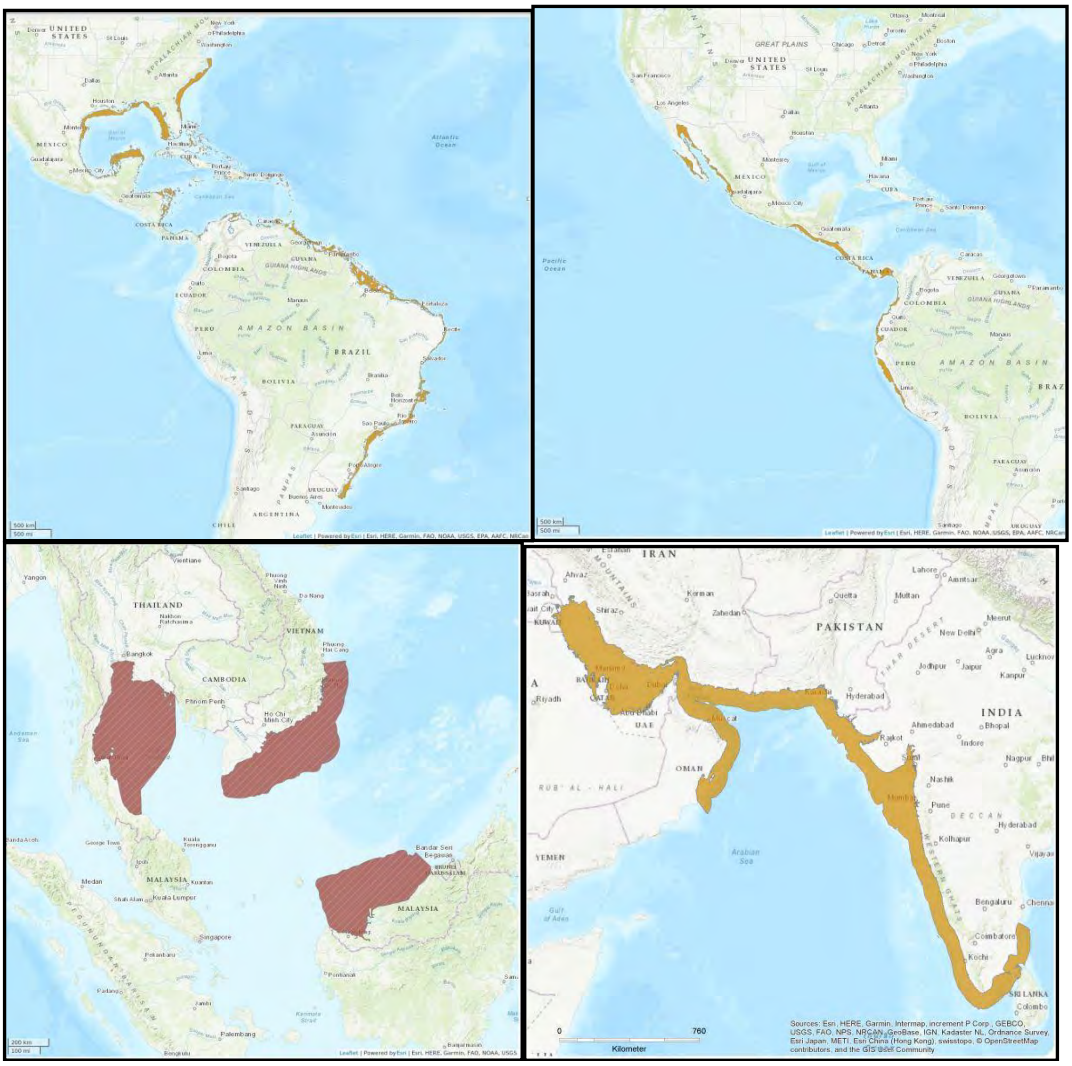
Blacknose shark *(C. acronotus)*- top right image (Figure 5)
Western Central and Southwest Atlantic Oceans ranging from North Carolina to southern Brazil, including the Gulf of Mexico and Caribbean Sea (Castro 2011, Ebert et al. 2013).

Whitecheek shark *(C. dussumieri)*- bottom right image (Figure 5)
Widespread generally along the north coast of the Arabian Sea and the Arabian/Persian Gulf in the Western and Eastern Indian Ocean (White 2012).

Lost shark *(C. obsoletus)*- bottom left image—shows possibly extinct range (Figure 5)

Was known from the southern South China Sea (Gulf of Thailand, Viet Nam, and Sarawak, Malaysian Borneo) in the Western Central Pacific Ocean (Compagno and Niem 1998, White et al. 2019a).

Figure 5. Range Maps (Cont.)



Pacific smalltail shark *(C. cerdale)*- bottom left image (Figure 6)
Eastern Central and Southeast Pacific from the Gulf of California, Mexico to Peru (Castro 2011).

Borneo broadfin shark *(Lamiopsis tephrodes)*- top right image (Figure 6)
Western Central and Northwest Pacific in Thailand, Indonesia and Malaysia, but likely occurs more widely through the Indo-Malay Archipelago to southern China (White et al. 2010, Ebert et al. 2013, Krajangdara 2019).

Broadfin shark *(Lamiopsis temminckii)*- top left image (Figure 6)
Broadfin Shark occurs in the northern Indian Ocean where it ranges from Pakistan to Thailand (White et al. 2010, Akhilesh et al. 2016, Psomadakis et al. 2019).

Figure 6. Range Maps (cont.)

3.2 Habitat

All species included in this proposal are members of the family Carcharhinidae (requiem sharks). This is the dominant family of sharks in tropical continental shelf and offshore habitats, but some also occur in subtropical and warm temperate seas. Several requiem sharks prefer coral reefs and oceanic islands, while other species, including the Appendix II silky and oceanic whitetip sharks, range far into open ocean ecosystems.

As seen in the species-specific profiles below, the vast majority of the 19 species, and many of the lookalikes included in the proposal are coastal species. These are sharks caught in mixed fisheries in lower capacity countries, where shark and ray catch and trade management is still largely lacking. Section 6 on trade and 6.1 on national utilization explores the importance of CITES Appendix II listing for smaller coastal species caught in lower capacity countries in additional detail.

The grey reef shark (*C. amblyrhynchos)* is found in clear tropical waters from the surface to depths of around 280m (Last and Stevens 2009) and is common around coral reefs, particularly near drop-offs and fringing coral reefs. Its distribution is patchy in continental shelf waters (Simpfendorfer et al 2020).

Ganges shark (*G. gangeticus*) is restricted to turbid waters in large rivers, estuaries; also adjacent coastal areas during the monsoon, when salinity is reduced (Compagno, L.J.V. 2007).

The dusky shark (C. *obscurus*) is found on continental and insular shelves, from the shoreline to the outer reaches of the continental shelf and adjacent oceanic waters, at depths 0-500m where it is generally a mid-level to bottom feeder (Rigby et al 2019).

The smalltail shark (*C. porosus*) inhabits muddy inshore areas and estuaries down to a depth of 84 m (Ebert et al. 2021, Weigmann et al. 2016). The species is strongly associated with mangrove forests, which can be considered as essential habitat for the species on the basis of probability of occurrence and patterns of habitat use (Feitosa et al. 2020, Pollom et al 2020).

The sandbar shark (*C. plumbeus*) is found in demersal and pelagic environments in tropical and temperate seas on the continental shelf from close inshore to a depth of 280 m (Ebert et al. 2013, Weigmann 2016). It occurs in shallow waters associated with bays, estuaries and harbors and offshore on oceanic banks (Ebert et al. 2013). Some stocks make extensive seasonal migrations, such as those in the Northwest Atlantic and South Africa (Last and Stevens 2009, Ebert et al. 2013) (Rigby et al 2021).

The Borneo shark (*C. borneensis*) is a small (to 70 cm total length) requiem shark that inhabits coastal bays and estuaries, known from Kalimantan (Indonesian Borneo) and Sarawak (Malaysian Borneo) (Dulvy et al 2021).

The Pondicherry shark (*C. hemiodon*) has a wide historic range from Oman to southern China, but known records are scattered, and it has only been reliably verified from a handful of countries. It appears to occur in shallow coastal waters from 10 to 150m depth, and has also been reported to enter rivers, although this has not been verified (Garrick, 1985).

The smoothtooth blacktip shark (*C. leiodon*) is a coastally distributed species that is endemic to the Arabian Seas region and was only rediscovered in 2009. Its maximum size is 165 cm total length (TL) (Weigmann 2016).

The sharptooth lemon shark (*Negaprion acutidens*) is a large (to 340 cm total length) coastal shark that is widespread throughout the Indo-West and Central Pacific. It is demersal in shallow inshore and offshore waters to at least 90 m depth and is often found on and around coral reefs and on sandy plateaus near coral (Simpfendorfer et al., 2021).

The Caribbean reef shark (*C. perezi*) is a reef-dwelling shark found throughout the Western Central Atlantic from the southern United States to the Bahamas, the Gulf of Mexico and Caribbean Sea to Brazil (Carlson et al., 2021). It is found mainly on coral reefs on continental and insular shelves from the surface to a depth of 378 m. Similar to other coastal sharks, it is especially vulnerable due to habitat loss from destructive fishing practices and the effect of climate change on reef ecosystems (IPCC Report, 2019).

The daggernose shark (*Isogomphodon oxyrhynchus*) is a medium-sized (to 160 cm TL) shark that occurs in the Western Central and Southwest Atlantic from Trinidad and Tobago and eastern Venezuela to Maranhão State, Brazil. The daggernose shark inhabits inshore waters in turbid estuaries, river mouths, and shallow banks at depths of 4–40 m (Ebert et al. 2013), and has also been recently recorded in freshwater (Feitosa et al. 2019).

The night shark (*C. signatus*) is a species commonly caught in pelagic fisheries that occurs in the Northwest, Western Central, and Southwest Atlantic from New York, USA to Río Negro, Argentina, including the Gulf of Mexico and Caribbean Islands and in the Eastern Central and Southeast Atlantic from Senegal to Namibia (Carlson et al., 2020).

The whitenose shark (*Nasolamia velox*) occurs in the Eastern Central and Southeast Pacific from Baja California, Mexico, to Peru in estuaries and over the continental shelf to a depth of 192 m (Ebert et al. 2013, Weigmann 2016).

The blacknose shark (*C. acronotus*) small (to 137 cm total length) coastal requiem shark found in the Western Central and Southwest Atlantic Oceans from North Carolina to Brazil, including the Gulf of Mexico and Caribbean Sea.

The whitecheek shark (*C. dussumieri*) is small coastal species found in the Western Indian Ocean from at least the Arabian/Persian Gulf to the southeastern coast of India. This species has a relatively low reproductive capacity (litters of 2-5 pups) making it particularly susceptible to over-exploitation.

The lost shark (*C. obsoletus*), like other small requiem sharks was probably found in shallow inshore coastal waters less than 50m deep, and hence is unlikely to have any depth refuge from fisheries – it is thought likely to be extinct.

The Pacific smalltail shark (*C. cerdale*) is a small requiem shark (to 140 cm total length) that inhabits coastal areas and estuaries in the Eastern Central and Southeast Pacific from the Gulf of California to Peru from inshore to a depth of 40m.

The Borneo broadfin shark (*Lamiopsis tephrodes*) is found inshore on the continental shelf in depths of less than 50 m, associated with turbid estuarine waters in the Western Central and Northwest Pacific occurring in Thailand, Indonesia and Malaysia

The broadfin shark (*L. temminckii*) ranges from Pakistan to Thailand in the northern Indian Ocean. It is found inshore on the continental shelf in depths of less than 50m.

3.3 Biological characteristics

All species included in this proposal are members of the family Carcharhinidae (requiem sharks), which currently includes 56 species. Most are viviparous with a yolk sac placenta; litters range in size from just one or two pups to (rarely) over 100. They are active, strong swimmers. Some species are 'ram-ventilators' needing to swim continually to oxygenate their gills, while others are capable of resting motionless for extended periods on the bottom. Many are more active at night, or dawn and dusk, than during the daytime. Some are solitary or socialize in small groups, and some are social schooling species.

Table 1 - Life history characteristics of proposed species

Species	Maximum size (total length TL)	Size of maturity (M - male/F - female)	Litter size	Frequency of reproduction/gestation period	Estimated three generation length	References
C. amblyrhynchos	265 cm	M - 130–145 cm TL, F 120–142 cm TL	1–6 pups	Biennial	43.5 years	Wetherbee et al. 1997, Ebert et al. 2021 Compagno 1984, Anderson and Ahmed 1993, Last and Stevens 2009, Simpfendorfer et al 2020
G. gangeticus	275 cm, possibly larger	M – 178 cm	Unknown	Unknown	Unknown	Ebert et al 2021, Compagno, L.J.V. 2007

C. *obscurus*	420 cm	M- 265–280 cm, F- 257–310 cm	7	Biennial, 18–24-month gestation	90-114 years, depending on region	Cortés 1998, Romine 2009, Hoffmayer 2014 Castro 2009, Compagno 1984, Ebert and Stehmann 2013
C. porosus	150 cm	M- 70cm TL, F- 71cm TL	2–7 pups	Biennial	27 years	Weigmann 2016, Lessa and Santana 1998, Pollom et al 2020
C. plumbeus	240-300 TL	M - 123-180 cm TL, F - 129-190 cm TL	1-14 (5-12 common)	biennial to triennial (varies regionally)	20 years (NW Atlantic, Gulf of Mexico); 26 years (Western Australia)	McAuley et al. 2007, Ebert et al. 2013, Cliff et al. 1988, Joung and Chen 1995, Hazin et al. 2007, Baremore and Hale 2012, Geraghty et al. 2016, Hale and Baremore 2013, McAuley et al. 2006
C. borneensis	70 cm TL	M - 59-62 cm TL, F - 61-65 cm TL	2-9	biennial (1 year gestation length)	9 years	Ebert et al. 2013, Lessa et al. 1999, Santana et al. 2020
C. hemiodon	102 cm TL				9 years	Ebert et al. 2013, Lessa et al. 1999, Santana et al. 2020
C. signatus	276 cm TL	M - 185-190 cm TL, F - 200-205 cm TL	4-15	annual	16.5 years	Hazin et al. 2000; Carlson et al. 2008, Chen and Yuan 2006
C. leiodon	165 cm TL	F - 131 cm TL	4-6		8.25 years	Weigmann 2016, Davenport and Stevens 1988
Isogomphodon oxyrhynchus	160 cm TL	M - 103cm TL, F - 115 cm TL	3-8	biennial	9 years	Lessa et al. 2000; Ebert et al. 2013
C. perezi	295 cm TL	M - 150-179 cm TL, F - 180-190 cm TL	3-6	biennial	9.6 years	Pikitch et al. 2005, Ebert et al. 2013, Tavares 2009

Negaprion acutidens	340 cm TL	M and F - 220-240 cm TL	6-12	biennial	16.5 years	Compagno et al. 2005, Ebert et al. 2013, Brown and Gruber 1988
Nasolamia velox	150 cm TL		5		9 years	Ebert et al. 2013, Lessa and Santana 1998, Lessa et al. 2000
C. acronotus	137 cm TL	M - 97-110 cm TL, F - 101-120 cm TL	1-6	biennial in United States South Atlantic; annual Gulf of Mexico and northern Brazil	8.5 years in US, 10.5 Brazil	Ebert et al. 2013, Carlson et al. 1999, Driggers et al. 2004, Sulikowski et al. 2007, Hazin et al. 2002, Barreto et al. 2011
C. dussumieri	100 cm TL	M - 72 cm TL, F 80 cm TL	2-5	annual	4 years	Moore et al. 2012, Jabado et al. 2016, White 2012; Smart et al. 2013
C. obsoletus	100 cm TL		low productivity	likely biennial	9 years	Compagno and Niem 1998, Lessa et al. 1999, Santana et al. 2020, Lessa and Santana 1998
C. cerdale	140 cm TL	males approach maturity at 100 cm TL			9 years	Castro 2011; Pollom et al. 2020
Lamiopsis tephrodes	157 cm TL	M - 114 cm TL, F - 130 cm TL	4-8		6.5 years	Last et al. 2010, White et al. 2010, Ebert et al. 2013, Dulvy et al. 2021a
Lamiopsis temminckii	178 cm TL	M - 137 cm TL, F - 143 cm TL	4-8		6.5 years	Akhilesh et al. Dulvy et al. 2021b

3.4 Morphological characteristics

See section 6.3 for details.

3.5 Role of the species in its ecosystem

Requiem sharks are, in lightly disturbed or well managed environments, the dominant group of tropical sharks, both in biodiversity and abundance (MacNeil et al. 2020). These are major predators, feeding on a wide range of prey, including bony fishes, elasmobranchs, cephalopods, crustaceans, and a wide range of other marine fauna including seabirds, turtles, sea snakes, marine mammals, benthic invertebrates, and marine carrion. Smaller species tend to specialize on a fairly narrow selection of prey, but larger species take a wider range of prey items (Ebert et al. 2021).

4. Status and trends

4.1 Habitat trends

See section 3.2 for habitat preferences; these species are all found predominantly in the inshore/coastal and riverine zones. For all species included in this proposal, particularly heavy fisheries mortality (targeted and bycatch), takes place virtually throughout their range, driving population declines globally.

4.2 Population size

Data are not available to determine the precise global population size of any species in the family Carcharhinidae. However, all species highlighted in this proposal are caught by artisanal and commercial fisheries, both as target species and as bycatch in trawl, net, and longline fisheries. Their high susceptibility to multiple fishing gear types, and geographic range along some of the world's most heavily fished coastal and riverine regions correlate with estimates of severe population decline, even when data are incomplete.

4.3 Population structure

Data are not available on population structure.

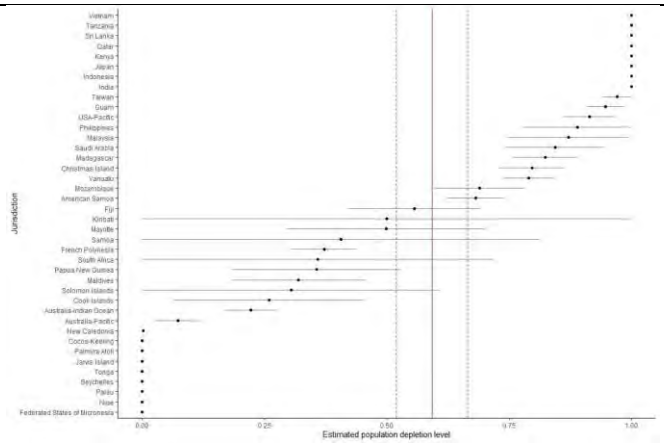
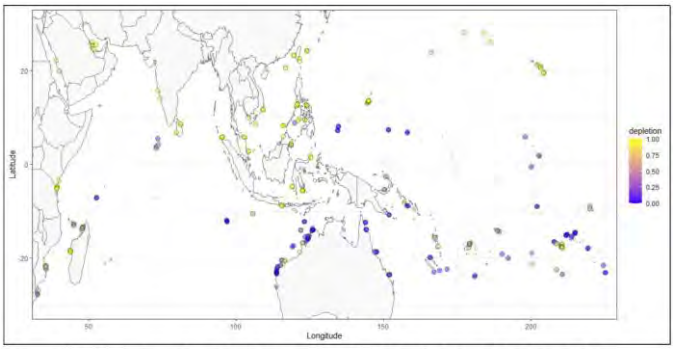
4.4 Population trends

Based on evidence of population reduction due to fisheries exploitation, habitat deterioration, conservative life history characteristics and demand for their fins in trade, all 19 species highlighted in this proposal have been assessed by experts as Endangered or Critically Endangered on the IUCN Red List, with extensive, continuing declines noted throughout much of their range, driven by a lack of appropriate catch and trade management.

4.4.1 - Population trends by region

Table 2 – detailed global and regional trends of the 19 species:

Grey Reef Shark – *C. amblyrhynchos*	*Global*	The Global FinPrint project sampled in countries containing 88.6% of the coral reefs within the species' global historic range, creating the largest and most recent data set available to assess the status of this species. Reef-level depletion estimates were aggregated, weighted by jurisdictional coral reef area (relative to global coral reef area), to produce an estimate of global depletion. This research concluded that the grey reef shark has undergone a global population reduction of 59% in the last three generation lengths (44 years) and is classified on the IUCN Red List as **Endangered** (MacNeil et al 2020, Simpfendorfer et al 2020).	Simpfendorfer, C., Fahmi, Bin Ali, A., , D., Utzurrum, J.A.T., Seyha, L., Maung, A., Bineesh, K.K., Yuneni, R.R., Sianipar, A., Haque, A.B., Tanay, D., Gautama, D.A. & Vo, V.Q. 2020. *Carcharhinus amblyrhynchos*. *The IUCN Red List of Threatened Species* 2020: e.T39365A173433550. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T39365A173433550.en. Accessed on 22 May 2022.

		 Figure 4. Estimated depletion of grey reef sharks by jurisdiction from Global FinPrint data. Error bars represent standard error. Red solid line indicates the global coral reef weighted depletion estimate (59% - Endangered), red dashed lines represent standard error, which also fall within the **Endangered** category (IUCN Red List assessment supplementary note, Simpfendorfer et al 2020). As seen in Figure 4, in almost half of the countries sampled, the grey reef shark has declined by more than 60%, making its globally Endangered status a conservative estimate of declines. In locations in Viet Nam, Tanzania, Sri Lanka, Qatar, Japan, Indonesia, India, Taiwan Province of China, Guam, the Philippines, Malaysia, Saudi Arabia and Vanuatu, the species is estimated to have declined by over 75 percent within three generations, satisfying IUCN Red List **Critically Endangered** status and CITES Appendix I listing criteria. It is also a common display species in public and private aquaria and is exported live from countries such as Australia and Indonesia to aquaria worldwide.  **Figure 1**. Estimated reef level depletion of Grey Reef Sharks from Global Finprint data.	*Within above:* Graham et al. 2010, Nadon et al. 2012, Robbins et al. 2006, White et al. 2020, Winter et al. In press, Glaus et al. 2015, Ramenzoni 2017, the International Labour Organisation 2015, Fields et al. 2018.
	Pacific Ocean	Manta tow data from 15 locations and found that Ggrey reef shark populations far from human populations (Jarvis Reef, Phoenix Islands, Line Islands, Johnston Atoll, Wake Island, Northwest Hawaiian Islands and western and Northern Mariana Islands) were close to their carrying capacity, while those close to human populations (Hawaii	

<table>
<tr><td></td><td></td><td>(main islands), American Samoa and southern Mariana Islands) were heavily depleted (<3% of carrying capacity)</td><td></td></tr>
<tr><td></td><td>Chagos Archipelago</td><td>Declined by 90% between 1976 and 2005 based on diver surveys[1]</td><td></td></tr>
<tr><td></td><td>Australia's Great Barrier Reef</td><td>Robbins et al. (2006) reported that grey reef sharks were suffering from ongoing collapse, with annual declines of between 7 and 17%[2].</td><td></td></tr>
<tr><td></td><td>Papua New Guinea Shark Longline Fishery</td><td>Grey reef shark made up 4.2% (by number) of the sharks, making it the second most commonly caught species.</td><td></td></tr>
<tr><td></td><td>Indonesia</td><td>Makes up 0.1% of the elasmobranch catch landed at the port of Muncar.</td><td></td></tr>
<tr><td></td><td>Fiji</td><td>Grey reef shark makes up 6.3% (by number) of the sharks landed in small scale artisanal coastal fisheries.</td><td></td></tr>
<tr><td></td><td>East Africa, and south and southeast Asian</td><td>Large amounts of fishing effort targeted at carcharhinid sharks in continental shelf waters, and it continues to increase (e.g., fishing effort by small-scale fisheries in Indonesia has tripled when taking population into account and in Myanmar, the number of vessels increased by 30% between 2009 and 2013).</td><td></td></tr>
<tr><td>Dusky Shark – C. obscurus</td><td>Global</td><td>The global estimated median reduction was 75.8%, with the highest probability of >80% reduction over three generation lengths (89.4–114 years).
This species accounted for 1.4% in 1991–2001 and 0.7% in 2014, of the shark fin imported in Hong Kong.

Table 1. Carcharhinus obscurus – Population change (%) and posterior probabilities for changes falling within the IUCN Red List categories Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), and Critically Endangered (CR); the "likely status" based on criteria A2–4 is assigned based on the category containing the highest posterior probability, with the exception that VU is also selected where LC obtained the highest probability, but it is <50%. All probabilistic statements are based on the rate of change over three generation lengths (GL) from projections within JARA. The Global change is based on weighting the regional posterior probabilities by the proportional area (PA) weighting (see text for detail).

<table><tr><th>Region</th><th>GL (years)</th><th>Data length (years)</th><th>PA weighting</th><th>Median change</th><th>LC</th><th>NT</th><th>VU</th><th>EN</th><th>CR</th><th>Likely Status</th></tr><tr><td>N.W. Atlantic[1]</td><td>29.8</td><td>56</td><td>0.21</td><td>−89.9</td><td>0</td><td>0</td><td>0</td><td>0.9</td><td>99.1</td><td>CR</td></tr><tr><td>N.E. Atlantic</td><td colspan="2">No trend data</td><td>0.13</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td></tr><tr><td>S. Atlantic</td><td colspan="2">No trend data</td><td>0.14</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td></tr><tr><td>N. Pacific</td><td colspan="2">No trend data</td><td>0.09</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td></tr><tr><td>S. Pacific</td><td colspan="2">No trend data</td><td>0.12</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td><td>–</td></tr><tr><td>E. Indian[2]</td><td>38</td><td>41</td><td>0.11</td><td>−98.7</td><td>0</td><td>0</td><td>0</td><td>0.1</td><td>99.9</td><td>CR</td></tr><tr><td>W. Indian[3]</td><td>38</td><td>26</td><td>0.19</td><td>−60.9</td><td>25.6</td><td>4.1</td><td>11.6</td><td>32.1</td><td>26.6</td><td>EN</td></tr><tr><td>Global</td><td>–</td><td>–</td><td>–</td><td>−75.8</td><td>16.9</td><td>5.9</td><td>12.2</td><td>21.7</td><td>43.3</td><td>CR</td></tr></table>
Data sources:
1. SEDAR 2016: Table 3.3, page 38.
2. Braccini and O'Malley 2018: Figure 2, page 179.
3. Dudley and Simpfendorfer 2006: Figure 2, page 231.</td><td>Rigby, C.L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Marshall, A., Pacoureau, N., Romanov, E., Sherley, R.B. & Winker, H. 2019. Carcharhinus obscurus. The IUCN Red List of Threatened Species 2019: e.T3852A2872747. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T3852A2872747.en. Accessed on 22 May 2022.

Within above: McCandless et al. 2014, Braccini and Waltrick 2019, SEDAR 2016, Simpfendorfer 1999, McAuley et al. 2007, SAFS 2018, Braccini and O'Malley 2018, Dudley and Simpfendorfer 2006, Stobberup 2005, Diop and Dossa 2011, Clarke et al. 2006a, Fields et al. 2018</td></tr>
<tr><td></td><td>US pelagic longline fishery</td><td>At-vessel mortality was estimated at 34%</td><td></td></tr>
<tr><td></td><td>Western Australia</td><td>At-vessel mortality was estimated at 1.3%</td><td></td></tr>
</table>

[1] Ferretti et al. 2018 reconstructed shark populations at this location and concluded that Grey Reef Sharks had in fact recovered at this location to be at 79% of their original abundance. It should be noted that the Chagos Archipelago was declared a Marine Protected Area (closed for fishing) in 2010 and remains one of the best enforced MPA's in the Indian Ocean.

[2] Subsequent research has shown that populations have not declined as dramatically as first estimated (Heupel et al. 2009), and Espinoza et al. (2014) demonstrating that rezoning of the reef had led to increasing abundance in areas protected from fishing.

	demersal longlines		
	Northwest Atlantic bottom longline fishery	Post-release mortality was estimated at up to 67%	
	Northwest Atlantic	Stock assessment estimated that stock is overfished, and overfishing is occurring since the mid-1980s. Prohibition in catches in 2000 has reduced, but not ceased, the overfishing. The trend analysis of the Northwest Atlantic relative biomass for 1960–2015 (56 years) revealed annual rates of reduction of 2.6%, consistent with an estimated median reduction of 89.9% over three generation lengths (89.4 years), with the highest probability of >80% reduction over three generation lengths.	
	Eastern Indian Ocean	Stock was previously subject to overfishing, with catch levels in the 1990s likely unsustainable. The stock is now considered to be recovering following measures implemented in 2006 to reduce catches of juvenile and older dusky sharks. The trend analysis of CPUE for 1975–2015 (41 years) revealed annual rates of reduction of 3.8%, consistent with an estimated median reduction of 98.7% over three generation lengths (114 years), with the highest probability of >80% reduction over three generation lengths	
	Western Indian Ocean	The trend analysis of the Western Indian Ocean CPUE for 1978–2003 (26 years) revealed annual rates of reduction of 0.9%, consistent with an estimated median reduction of 60.9% over three generation lengths (114 years), with the highest probability of 50–79% reduction over three generation lengths.	
	Eastern Atlantic	It was one of the most commonly captured species on longline surveys in 1982, but by the late 2000s was infrequently caught. Given the intense coastal shark fisheries in this region there is concern that this species may have disappeared from this large part of its Eastern Atlantic distribution.	
Smalltail shark – *C. porosus*	*Global*	Declined in all parts of its range from 1970 to 2015, with particularly drastic declines in the Gulf of Mexico and South America. This species is subjected to intense and largely unmanaged fishing pressure across its range. It is inferred that the smalltail shark has undergone a population reduction of >80% over the past three generation lengths (27 years). The fins of the smalltail shark were found in Hong Kong in very low numbers and the price is relatively low, but recent evidence suggests it is one of the most important species in apprehended shipments in Brazil.	Pollom, R., Charvet, P., Carlson, J., Derrick, D., Faria, V., Lasso-Alcalá, O.M., Marcante, F., Mejía-Falla, P.A., Navia, A.F., Nunes, J., Pérez Jiménez, J.C., Rincon, G. & Dulvy, N.K. 2020. *Carcharhinus porosus*. *The IUCN Red List of Threatened Species* 2020: e.T144136822A3094594. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T144136822A3094594.en. Accessed on 22 May 2022. *Within above:*
	Southern Gulf of Mexico	Particularly drastic declines from 1970 to 2015. Fishers report that this shark was historically abundant across Tabasco, Campeche, and Yucatan states. Compared to the	

		1980s and 1990s, landings were reportedly sparser in the 2000s and were largely restricted to Tabasco. Intensive landings surveys on the Yucatan shelf from 2011 to 2013 only recorded 52 individuals, and all were caught in Tabasco.	J.K. Carlson unpubl. data 2020, J.C. Pérez-Jiménez unpubl. data 2019, Pérez-Jiménez et al. 2012, Pérez-Jiménez and Méndez-Loeza 2015, P. Mejía-Falla unpubl. data 2019, O. Lasso unpubl. data 2018, Marceinuk et al. 2019, Santana et al. 2020, R. Lessa unpubl. data 2020, F.M. Santana unpubl. data 2018, P. Charvet and F.M. Santana unpubl. data 2020, F. Motta unpubl. data 2018, G. Rincon unpubl. data 2018, Dent and Clarke 2015, Cardeñosa et al. 2019, da Silva Ferrette et al. 2019
	South America	Particularly drastic declines from 1970 to 2015.	
	US Gulf of Mexico	This species is not abundant and it is suspected that habitat there is marginal at the northern extent of its range and hence there are no data on trends there	
	Caribbean	Data are sparse in the Caribbean, but artisanal fisheries dominate and are largely unmanaged there. This shark is rare in Caribbean Colombia, but there is no baseline of abundance there.	
	Venezuela	Landings of this shark were variable between 2007–2015, but have declined over the past several years	
	Western Central Atlantic	Due to documented declines in catches in several areas, combined with the level of unmanaged fishing pressure it is exposed to, it is suspected that smalltail shark has undergone a population reduction of 50–79% over the past three generations (27 years).	
	Brazil	Brazil does import shark meat under the general name cação, which is in high demand.	
	Northern Brazil	This species was the most commonly captured elasmobranch in shrimp trawl and gillnet fisheries off Amapá, Pará and Maranhão states but has undergone a three-fold decline in catch probability over 30 years. During the 1980s, it comprised up to 70% of the total catch weight in the artisanal gillnet fisheries. Catch rates decline from 2.87 kg per hour to 0.43 kg per hour in the 2000s, this is equivalent to a population reduction of 85% over the equivalent of three generation lengths (27 years). Demographic modelling suggests the fishing mortality far exceeded population growth rates and a population reduction of >90% over three generations was estimated for the core distribution of this species. In Maranhão State, it was the most common shark in the 1980s, but now it is scarce but is still caught in landings in Raposa, Maranhão state and now has undergone a 90% decline there over the past 27 years.	
	Eastern and southern Brazil	This species was common in the 1970s and 1980s. Records are becoming increasingly rare and this species has not been recorded for more than 15 years from the states of Ceará (in the northeastern Brazil), to Paraná (in the southeastern Brazil). This species may have disappeared from at least eleven states in Brazil (e.g, Cearà, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, Bahia, Espírito Santo, Rio de Janeiro, São Paulo, and Paraná). The last record from the state of Cearà was recorded in 1986. In São Paulo State, there were only 18 individuals captured between 1990–2002. In Paraná state, the last records of this species are from the late 1990s	

<table>
<tr><td rowspan="8">Ganges shark - Glyphis gangeticus</td><td>Global</td><td>Records of the Ganges shark are sparse and the species is considered extremely rare. Extensive surveys of sharks and rays have recorded few additional records of this species across its known range, including around the western India, Bay of Bengal, Indo-Malay Archipelago, and the South China Sea.

It is suspected that the Ganges shark has undergone a population reduction of >80% over the past three generation lengths (54 years) due to levels of exploitation and given the rarity of contemporary records, it is estimated that the number of mature individuals of the Ganges shark is very small (< 250) with small numbers (<50) of mature adults in each subpopulation with an inferred continuing decline due to ongoing intensive and unmanaged fishing pressure and habitat degradation across its entire range.</td><td rowspan="8">Rigby, C.L., Derrick, D., Dulvy, N.K., Grant, I & Jabado, R.W. 2021. Glyphis gangeticus. The IUCN Red List of Threatened Species 2021: e.T169473392A124398647. https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T169473392A124398647.en. Accessed on 22 May 2022.

Within above:
Jabado et al. 2017, Akhilesh et al. 2014, Raje et al. 2015, Jabado et al. 2018, Haque and Das 2019, S. Chakma pers. comm. 10 November 2018, Arunrugstichai et al. 2018, Last et al. 2010, Manjaji-Matsumoto et al. 2016, White 2007, Lam and Sadovy de Mitcheson 2011, Compagno et al. 2005, M. Harris pers. comm. 9th June 2017, Cardeñosa et al. 2020a, Cardeñosa et al. 2020b</td></tr>
<tr><td>Pakistan</td><td>Possibly locally extinct. No known records from Pakistan since 2005 (and in 2005 it was a single specimen).</td></tr>
<tr><td>Myanmar</td><td>Possibly locally extinct.</td></tr>
<tr><td>Thailand</td><td>No records.</td></tr>
<tr><td>Borneo</td><td>Possibly locally extinct.</td></tr>
<tr><td>India</td><td>Only one recent record in west Indian waters (2018).</td></tr>
<tr><td>Bangladesh</td><td>Surveys of Bangladeshi fisheries and markets in 2016–2017 identified three records of the Ganges shark; one from a landing site and two from fins at shark processing centres. In Bangladesh, fins of the Ganges shark were identified at shark processing centres.</td></tr>
<tr><td rowspan="2">Sandbar shark – C. plumbeus</td><td>Global</td><td>Overall, it is suspected that the sandbar shark has undergone a population reduction of 50–79% over the past three generations lengths (60–78 years) due to levels of exploitation.
At-vessel mortality of sandbar sharks varies from 3–63% for trawl, and demersal and pelagic longline, with research indicating that on longlines, larger individuals have higher mortality. Short term post-release mortality of 25% was found for sandbar sharks caught on research longlines and released alive and in good condition.
The species is displayed in public aquaria. The proportion of sandbar shark fins in the Hong Kong shark fin trade appears to have declined from 2.4% to 0.2% from 2002 to 2015.

Table 1. Carcharhinus plumbeus – Population change (%) and posterior probabilities for changes falling within the IUCN Red List categories Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), and Critically Endangered (CR); the "likely status" based on criteria A2–4 is assigned based on the category containing the highest posterior probability, with the exception that NT is also selected where LC obtained the highest probability, but it is < 50%. All probabilistic statements are based on the rate of change over three generation lengths (GL) from projections within JARA. The Global change is based on the rate of change of change over three generation lengths (GL) using all time-series, as index i, at the same time in a same modelisation run (see text for detail).

<table>
<tr><th>Region</th><th>GL (years)</th><th>Data length (years)</th><th>Median change</th><th>LC</th><th>NT</th><th>VU</th><th>EN</th><th>CR</th><th>Likely status</th></tr>
<tr><td>Northwest and Western Central Atlantic[1]</td><td>20</td><td>1960-2015</td><td>-74.5</td><td>0</td><td>0</td><td>0</td><td>100</td><td>0</td><td>EN</td></tr>
<tr><td>South Africa[2]</td><td>26</td><td>1981-2019</td><td>-88.9</td><td>3</td><td>1</td><td>4</td><td>20</td><td>72</td><td>CR</td></tr>
</table>

Data sources:
1. SEDAR 2017, page 70 table 3.2.5.
2. Carcharhinus plumbeus unpubl. data from the KwaZulu-Natal Sharks Board, South-Africa, compiled by Matt Dicken and standardized by Henning Winker.</td><td rowspan="2">Rigby, C.L., Derrick, D., Dicken, M., Harry, A.V., Pacoureau, N. & Simpfendorfer, C. 2021. Carcharhinus plumbeus. The IUCN Red List of Threatened Species 2021: e.T3853A2874370. https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T3853A2874370.en. Accessed on 23 May 2022.

Within above:
Clarke et al. 2006, Fields et al. 2018, Ebert et al. 2013, SEDAR 2017, M. Dicken and H. Winker unpubl. data 2020, Cliff et al. 1988, Braccini et al. 2018, Braccini et al. 2018, Braccini et al. 2020, F. Hemida pers. comm. 13 April 2021, Capapé et al. 2019, Ferretti et al. 2016, Bonfil 2003, Spaet and Berumen 2015, Jabado et al. 2016, Sutaria et al. 2015, De Silva 2006, Joung et al. 2004, Ellis et</td></tr>
<tr><td>Atlantic</td><td>The stock assessment from the Atlantic (the United States (U.S.) Atlantic, Gulf of Mexico, and U.S. Caribbean) estimated that the stock was overfished but not currently</td></tr>
</table>

		experiencing overfishing[3]. The spawning stock fecundity had most likely reduced by 66% from virgin levels. The trend analysis of the spawning stock fecundity for 1960–2015 (56 years) revealed annual rates of reduction of 2.2%, consistent with an estimated median reduction of 74.5% over three generation lengths (60 years).	al. 2017, Barnes et al. 2016, Walsh et al. 2009
	South Africa	Standardized catch-per-unit-effort (CPUE) from the Kwazulu-Natal Sharks Board (KZNSB) bather protection program (South Africa), fluctuated but steadily declined from 1981 to 2019. A decline in catch rate was also observed between the periods 1966–1972 and 1978–1987. The trend analysis of the data for 1981–2019 (39 years) revealed annual rates of reduction of 3.0%, consistent with an estimated median reduction of 88.9% over three generation lengths (78 years).	
	Australia	The stock in Western Australia is now recovering (the stock was previously found to be over-exploited with the breeding stock abundance declining) while the stock in east Australia is undefined due to insufficient available information to determine status. The breeding stock is currently estimated to have declined by 60% from unfished biomass and although this is close to the minimum acceptable limit of decline and indicative of a depleted stock, biomass projections under current fishing and management measures indicate continued stock rebuilding, though this may take several decades.	
	Mediterranean Sea	Catches of the sandbar shark have declined significantly. The species was common along the Levantine coast until the 1980s. Recent records in those markets and areas are sporadic with no observations of pregnant females. It is still recorded occasionally in Algerian waters and in the Gulf of Gabès, Tunisia, and the Gulf of Gökova in Turkey which appear to be nursery grounds. The population is suspected to have declined by 50–79% in the Mediterranean Sea over the past three generation lengths (69 years).	
	Arabian Seas region	This species is not a common component of fishery catches. In a survey of shark landings from the Red Sea and Gulf of Aden, it represented 2% of shark landings by number from Yemen. It comprised less than 1% of total elasmobranch landings by number in the Saudi Arabian Red Sea and in the shark landings of the United Arab Emirates (UAE). It represented 3% of sharks by number transported from Oman and traded in the UAE. A population decline of 50–79% is suspected for the Sandbar Shark over the past three generation lengths (78 years).	
	Northern Indian Ocean	The sandbar shark was only recently confirmed from landings in India and Sri Lanka.	

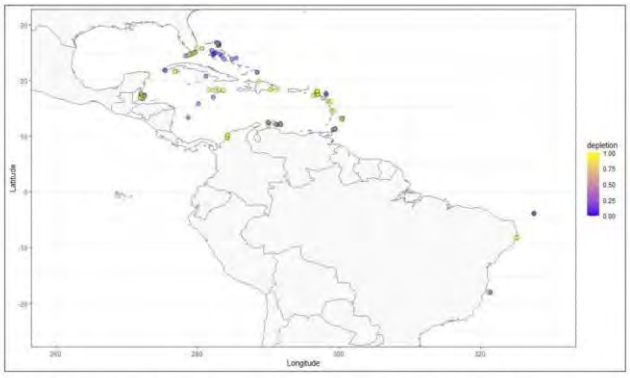
[3] The strict limitation on catches in recent years has halted overfishing.

<table>
<tr><td></td><td>Taiwan Province of China</td><td>The sandbar shark was one of the most abundant species in the commercial shark fishery off northeast waters, where it represented 10% of the annual total shark catch in the 1990s. However, the catches have since declined due to high fishing mortality with a substantial decrease in average sizes also noted from 1991 to 2002</td><td></td></tr>
<tr><td></td><td>Hawaii</td><td>The sandbar shark is incidentally captured as a minor component (~0.1% of observed catches) of the shark bycatch in the pelagic tuna longline fishery</td><td></td></tr>
<tr><td>Borneo shark – C. borneensis</td><td>Global</td><td>This species was historically known only from five specimens, the last of which was collected in 1937 and the species was presumed extinct until recently rediscovered in 2004 with numerous specimens collected from Mukah, Sarawak (Malaysian Borneo).
Landings data of all carcharhinid sharks combined from the Indonesia and Malaysia Exclusive Economic Zones (EEZ) and reconstructed catches of all sharks, skates and rays from the China EEZs indicate populations reductions of 36–82% over the past three generation lengths (27 years).
While there is no species-specific information available on use and trade of the Borneo shark, it would likely have been utilized if caught.</td><td>Dulvy, N.K., Bin Ali, A., Derrick, D., Dharmadi & Fahmi. 2021. Carcharhinus borneensis. The IUCN Red List of Threatened Species 2021: e.T39367A124407121. https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T39367A124407121.en. Accessed on 23 May 2022.</td></tr>
<tr><td>Pondicherry shark – C. hemiodon</td><td>Global</td><td>There are no verified records of this species since 1960 despite extensive surveys across its range, likely due to intensive and unregulated coastal fisheries. This species was probably utilized locally for human consumption.

Table 4. Results from Threats Model and Records and Surveys Model for the Pondicherry Shark (Carcharhinus hemiodon). Recommended thresholds for CR(PE) = 0.5 and EX = 0.9 (IUCN Standards and Petitions Committee 2019). Since the two models have substantially different amounts of uncertainty, a weighted average of the two P(E) estimates were calculated.
<table><tr><th>Model</th><th colspan="3">P(E): probability that the species is Extinct</th></tr><tr><th></th><th>minimum</th><th>best</th><th>maximum</th></tr><tr><td>Threats</td><td>0.64</td><td>0.81</td><td>1</td></tr><tr><td>Records & Surveys</td><td>0.0</td><td>0.1171</td><td>0.3119</td></tr><tr><td>Average P(E)</td><td colspan="3">0.464</td></tr><tr><td>Weighted average P(E)</td><td colspan="2">Minimum
0.44</td><td>maximum
0.45</td></tr></table></td><td>Kyne, P.M., Jabado, R.W., Akhilesh, K.V., Bineesh, K.K., Booth, H., Dulvy, N.K., Ebert, D.A., Fernando, D., Khan, M., Tanna, A. & Finucci, B. 2021. Carcharhinus hemiodon. The IUCN Red List of Threatened Species 2021: e.T39369A115736695. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T39369A115736695.en. Accessed on 23 May 2022.

Within above:
Garrick 1985, Henderson et al. 2007, Moore et al. 2012, Moore and Peirce 2013, Jabado et al. 2015, M. Khan unpubl. data 2017,</td></tr>
<tr><td></td><td>Oman</td><td>One single historical record from Muscat.</td><td></td></tr>
<tr><td></td><td>Gulf and Sea of Oman</td><td>No records.</td><td></td></tr>
<tr><td></td><td>Pakistan</td><td>Historically present in the 1950–60s in the Indus River area of Pakistan. Efforts to search for the species in this area since the early 1980s have failed to document it.</td><td></td></tr>
<tr><td></td><td>India</td><td>Several historic records in museum collections. It was present historically on the west coast. The most recent record of the species in India (and indeed anywhere) was from 1979.</td><td></td></tr>
<tr><td>Smoothtooth blacktip shark – C. leiodon</td><td>Global/Arabian Gulf/Persian Gulf</td><td>The smoothtooth blacktip shark is endemic to the Arabian Seas region and was only rediscovered in 2009. Overall, there are a limited number of specimens reported. The smoothtooth blacktip shark is morphologically very similar to the blacktip shark (C. limbatus), spottail shark (C. sorrah) and the graceful shark (C. amblyrhynchoides) and there is likely to have been confusion in species</td><td>Simpfendorfer, C., Jabado, R.W., Valinassab, T., Elhassan, I. & Moore, A. 2017. Carcharhinus leiodon. The IUCN Red List of Threatened Species 2017: e.T39371A109876922. https://dx.doi.org/10.2305/IUCN.UK.2017-</td></tr>
</table>

		identification across its potential range. Its recent re-discovery and re-description means that historically it has likely been under-recorded, however reliable identification of Carcharhinus species since then indicates that this species is rare and localized. Based on the significant decline in other similar species in the region, population declines of 50–80% are suspected over a period of three generation spans (~25 years). The meat of this species may be sold fresh for human consumption at local markets in the region. In some countries, such as Oman and Yemen, the meat is cut into fillets, dried and salted for domestic sales or trade with neighboring countries. Species with black fins such as this one have higher value fins and fetch higher prices	2.RLTS.T39371A109876922.en. Accessed on 23 May 2022. *Within above:* Moore et al. 2013, Jabado et al. 2015
Sharptooth lemon shark - *Negaprion acutidens*	*Global*	Landings surveys, dive surveys, diver interviews, and anecdotal evidence indicate substantial declines over the past three generations lengths (50 years). Results from baited remote underwater video system surveys of coral reefs across its range (242 reefs in 36 nations) indicate that the species has declined to very low levels through much of its range in Asia and Africa, but remains common in Australia, and in some island nations of the Pacific and Indian Oceans. The species was not observed in sufficient numbers to quantitatively estimate levels of population reduction in the BRUV study. It is estimated that the sharptooth lemon shark has undergone a population reduction of 50–79% over the last three generation lengths (50 years). Sharptooth lemon shark made up 0.6% of fin trimmings sold in Hong Kong. The species is occasionally displayed in aquaria.	Simpfendorfer, C., Derrick, D., Yuneni, R.R., Maung, A., Utzurrum, J.A.T., Seyha, L., Haque, A.B., Fahmi, Bin Ali, A., D., Bineesh, K.K., Fernando, D., Tanay, D., Vo, V.Q. & Gutteridge, A.N. 2021. Negaprion acutidens. The IUCN Red List of Threatened Species 2021: e.T41836A173435545. https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T41836A173435545.en. Accessed on 23 May 2022. *Within above:* FinPrint 2020, White 2007, Winter et al. 2020, Bureau of Fisheries and Aquatic Resources 2017, Arunrugstichai et al. 2018, A.B. Haque unpubl. data 2020, Howard et al. 2015, A. Bin Ali unpubl. data 2020, Bonfil 2003, Spaet and Berumen 2015, J.L.Y. Spaet pers. comm. 06 February 2017, Basson et al. 1977, Moore et al. 2012, Moore and Peirce 2013, Jabado et al. 2015, Jabado et al. 2016, Marshall and Barnett 1997, Anderson and Ahmed 1993, Henderson et al. 2007, Jabado et al. 2015, T. Al Mamari, M. Khan, and K.V. Akhilesh pers. comm. 06 February 2017, M. Khan pers. comm. 12 December 2020, Harry et al. 2011, Fields et al. 2018
	Indonesia	Market surveys at landing sites in Indonesia since the mid-1990s have only recorded this species in small amounts, suggesting that it has undergone substantial decline.	
	Philippines	Only occasionally recorded at landing sites.	
	Thailand	Only occasionally recorded at landing sites.	
	Bangladesh	Known from historic records but not observed in recent surveys.	
	Myanmar	Known from historic records but not observed in recent surveys.	
	Malaysia	Known from historic records but not observed in recent surveys.	
	Arabian Seas region	This species represented <1% of landings by number in the Red Sea (Yemen, Sudan, and Saudi Arabia). Divers in the Red Sea have reported significant declines over the past 30–40 years. In the Gulf, this species appears to be uncommon with only one historical record reported in Saudi Arabia. More recently, the species was not recorded from landing site surveys in Kuwait, Bahrain, and Qatar. However, the species represented 0.33% of shark landings by number in the United Arab Emirates (UAE), and 0.6% of sharks by number traded through the UAE from Oman.	

		This species was recorded as being one of the most commonly landed species in Somalia shark fisheries.	
	India	Uncommon with no catch data.	
	Maldives	Uncommon with no catch data.	
	Pakistan	Used to be caught in large quantities using live baits, however, there has been an ~90 % decrease in catches in recent years	
	Australia	This species is regularly caught in small amounts as a non-target species in gillnet fisheries in the north of the country.	
Caribbean reef shark – *C. perezi*		Population depletion level for Caribbean reef shark[4] estimates a population reduction of 52.5% (standard error 40.4–64.5%) assuming that this depletion occurred over the past three generation lengths (29 years). This species is used for meat, fins, leather (skin), oil (livers) and fishmeal (from carcasses). In Colombia, the jaws and livers are used for ornaments and oil, respectively, while the meat is only occasionally used as it is not easily marketed. **Table 1.** ***Carcharhinus perezi*** – Population change (%) and posterior probabilities for changes falling within the IUCN Red List categories Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), and Critically Endangered (CR); the "likely status" based on criteria A2–4 is assigned based on the category containing the highest posterior probability, with the exception that NT is also selected where LC obtained the highest probability, but it is < 50%. All probabilistic statements are based on the rate of change over three generation lengths (GL) from projections within JARA. The Global change is based on the rate of change of change over three generation lengths (GL) using all time-series, as index i, at the same time in a same modelisation run (see text for detail). **Region** | **GL (years)** | **Data length (years)** | **Median change** | **LC** | **NT** | **VU** | **EN** | **CR** | **Likely status** Belize[1] | 10 | 2009-2018 | -99.2 | 3 | 0 | 1 | 4 | 92 | CR Bahamas[2] | 10 | 1979-2013* | +18.6 | 79 | 7 | 10 | 4 | 0 | LC **Data sources:** 1. *Carcharhinus perezi* unpubl. data from Predator Ecology and Conservation Lab (PEC Lab), Florida International University, compiled by Gina Clementi; 2. *Carcharhinus perezi* unpubl. data from Cape Eleuthera Institute and Fisheries Conservation Foundation, compiled by Brendan Talwar. *data from 1979 to 1984 and from 2011 to 2013.  **Figure 1.** Estimated reef level depletion of Caribbean Reef Sharks from Global Finprint data.	Carlson, J., Charvet, P., Blanco-Parra, MP, Briones Bell-lloch, A., Cardeñosa, D., Derrick, D., Espinoza, E., Morales-Saldaña, J.M., Naranjo-Elizondo, B., Pérez Jiménez, J.C., Schneider, E.V.C., Simpson, N.J., Talwar, B.S., Crysler, Z., Pacoureau, N. & Kyne, P.M. 2021. Carcharhinus perezi. The IUCN Red List of Threatened Species 2021: e.T60217A3093780. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T60217A3093780.en. Accessed on 23 May 2022. *Within above:* Bond et al. 2017, G. Clementi and D. Chapman unpubl. data 2019, Talwar et al. 2020, Gomez et al. 2017, Tavares 2009, P. Charvet unpubl. data 2019, F.M. Santana pers. comm. 25/04/2018, Sadovsky 1967, Cardeñosa et al. 2020
	Belize	This species appears to have initially had a stable population up to 2013 based on longline catches. However, Belize relative abundance time-series based on baited remote underwater video stations (BRUVs) from 2009 to 2018 indicated that annual abundance declined by 15.4%, consistent with an estimated median reduction of 99.2% over the past three generation lengths (29 years).	
	Bahamas	Longline catch data from the Bahamas from 1979–1984 and 2011–2013 suggest that the population has been	

[4] A preliminary estimate indicates that 20% of the Caribbean is designated as "shark sanctuary" where commercial shark fishing is prohibited providing some protection for Caribbean Reef Shark.

		relatively stable, increasing annually by 0.8% over the past three generation lengths (29 years). However, these two short time-series with a 30-year gap should be interpreted with caution; the stability and slow increase may be due to an actual population increase but may also reflect a habitat shift from areas of higher human activity to the sampled area that has less human activity	
	Caribbean Colombia	This species is common and increasing, but may have undergone some past reductions due to illegal fishing	
	Venezuela	There are no data, but this species is caught in high numbers and it is suspected that with a lack of management this has led to declines there.	
	Brazil	Notable declines in landings in the State of Maranhão and the Trindade and Martin Vaz archipelago, with a suspected reduction in population size of 30%. this species is suspected to have been lost from coastal Brazil and is now likely only found off four islands (Paracel, Noronhua, Abrolhos, Trindade), as the last confirmed record was from Ceará State in 1987. It was formerly common in places such as São Paulo.	
	Jamaica	Severe depletion.	
	Dominican Republic	Severe depletion.	
	Mainland Colombia and the Islands	Severe depletion.	
Daggernose shark - *Isogomphodon oxyrhynchus*	*Global*	Demographic analysis revealed a population decline of 18.4% per year between 1992 and 2002, equivalent to a >99% population reduction over three generations.	Pollom, R., Charvet, P., Faria, V., Herman, K., Lasso-Alcalá, O., Marcante, F., Nunes, J., Rincon, G. & Kyne, P.M. 2020. Isogomphodon oxyrhynchus. The IUCN Red List of Threatened Species 2020: e.T60218A3094144. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T60218A3094144.en. Accessed on 23 May 2022. *Within above:* Shing 1994, Lessa et al. 2016, Feitosa et al. 2019, Santana and Lessa 2002
	Trinidad and Tobago	Annual shark landings between 1972 and 1993 were variable but showed a general pattern of decline over time, which is suspected to have continued to the present day.	
	Northwestern Brazil	The decline of this species is well-documented, with the species having been commonly encountered in landings in the 1980s and becoming increasingly rare up to the present. Although the species is still present there (a neonate was captured in late 2016), the rarity of recent records leads to inference of a drastic population reduction. Furthermore, demographic analysis revealed that between 1992 and 2002 the population decreased at an average rate of 18.4% per year, which is equivalent to a >99% population reduction if scaled over three generations.	

<table>
<tr><td rowspan="8">Night shark – C. signatus</td><td></td><td>Overall, the combination of high fishing mortality throughout its range, estimated declines in the U.S. pelagic longline fishery, and suspected declines elsewhere, this species is suspected to have undergone a population reduction of 50–79% over the past three generation lengths (50 years).
The night shark is caught in primarily pelagic longline fisheries and when retained is used for its meat, fins, liver oil, and skin.

Table 1. Carcharhinus signatus – Population change (%) and posterior probabilities for changes falling within the IUCN Red List categories Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), and Critically Endangered (CR); the "likely status" based on criteria A2–4 is assigned based on the category containing the highest posterior probability, with the exception that NT is also selected where LC obtained the highest probability, but it is < 50%. All probabilistic statements are based on the rate of change over three generation lengths (GL) from projections within JARA. The Global change is based on the rate of change of change over three generation lengths (GL) using all time-series, as index i, at the same time in a same modelisation run (see text for detail).

<table><tr><th>Region</th><th>GL (years)</th><th>Data length (years)</th><th>Median change</th><th>LC</th><th>NT</th><th>VU</th><th>EN</th><th>CR</th><th>Likely status</th></tr><tr><td>Western North Atlantic</td><td>16.5</td><td>1995-2018</td><td>-79.1</td><td>5</td><td>2</td><td>8</td><td>37</td><td>48</td><td>CR</td></tr></table>
Data sources:
Carcharhinus signatus unpubl. data from US pelagic fisheries, compiled by John K. Carlson.</td><td rowspan="8">Carlson, J., Charvet, P., Blanco-Parra, MP, Briones Bell-lloch, A., Cardeñosa, D., Crysler, Z., Espinoza, E., Herman, K., Morales-Saldaña, J.M., Naranjo-Elizondo, B., Pacoureau, N., Pérez Jiménez, J.C., Schneider, E.V.C., Simpson, N.J. & Talwar, B.S. 2021. Carcharhinus signatus. The IUCN Red List of Threatened Species 2021: e.T60219A3094326. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T60219A3094326.en. Accessed on 23 May 2022.

Within above:
Beerkircher et al. 2002, Sherley et al. 2020, Winker et al. 2020, Mejía-Falla and Navia 2019, D. Cardeñosa unpubl. data 2019, Brazil Ministry of the Environment 2016, Santana 2009, Carlson et al. 2008, Fields et al. 2018, Cardeñosa et al. 2020</td></tr>
<tr><td>The United States longline fishery/Northwest Atlantic</td><td>Population trend data are available from at-sea observers within the United States (U.S.) pelagic longline fishery. This analysis for 1995–2018 (24 years) revealed annual rates of reduction of 2.4%, consistent with an estimated median reduction of 79.1% over three generation lengths (50 years). At-vessel mortality rate was 76% in the pelagic longline fishery.</td></tr>
<tr><td>Southwest Atlantic</td><td>No population trend estimates for this species</td></tr>
<tr><td>Caribbean Colombia</td><td>This species is very rare and is only known from a few specimens.</td></tr>
<tr><td>Venezuela</td><td>No data but the intense and unmanaged longlining and gillnetting that is occurring off offshore islands is suspected to be leading to reductions in the population</td></tr>
<tr><td>Brazil</td><td>No time-series specific to this species, reported landings of ‘Machote’, which includes the species and the silky shark, declined by 77% between 2001–2009 and the government subsequently assessed them as regionally Vulnerable due to a suspected reduction in population size of >30%. According to the study of demography of the species in Brazil, the population of night shark has an annual decline of 8.1%, with a generation time of 12.1 years. Taking into account the data from this study, in three generations (36 years), the population decline would be 94.7%.</td></tr>
<tr><td>Eastern Central and Southeast Atlantic</td><td>Few records of the species captured from fisheries off West Africa.</td></tr>
<tr><td>Eastern Atlantic</td><td>The species is rarely captured, although it has been documented as occurring there.</td></tr>
<tr><td rowspan="2">Whitenose shark - Nasolamia velox</td><td>Global</td><td>The whitenose shark is suspected to have undergone a population reduction of 50–79% over the past three generations (27 years). This shark is retained and the meat is consumed locally. Fins may be exported internationally.</td><td rowspan="2">Pollom, R., Avalos, C., Bizzarro, J., Burgos-Vázquez, M.I., Cevallos, A., Espinoza, M., González, A., Herman, K., Mejía-Falla, P.A., Navia, A.F., Pérez Jiménez, J.C., Sosa-Nishizaki, O. & Velez-Zuazo, X. 2020.</td></tr>
<tr><td>Gulf of California</td><td>Landing records of whitenose shark from Gulf of California artisanal fisheries indicate a peak catch of about 500 t in 1969 and another smaller peak of over 300 t in the late</td></tr>
</table>

		1970s and early 1980s. Catch was lower over the next several decades, remaining at about 100 t annually through the 1990s and early 2000s. At the end of the time-series, Whitenose shark catches increased to around 200 t in 2014. Targeted fisheries for sharks including the whitenose shark off Mazatlan were already in operation in the early 1960s.	Nasolamia velox. The IUCN Red List of Threatened Species 2020: e.T161355A124470861. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161355A124470861.en. Accessed on 24 May 2022. *Within above:* Saldaña-Ruiz et al. 2017, Kato 1965, Soriano-Velásquez et al. 2004, C. Avalos-Castillo unpubl. data 2018, Clarke et al. 2016, X. Velez-Zuazo unpubl. data 2019
	Mexico/ Gulf of Tehuantepec	This species made up a small portion of the catch in artisanal fisheries, but was the fourth most captured shark between 1996 and 2003.	
	Guatemala	In the 1990s, this species was the second-most abundant shark in artisanal fisheries, representing about 12% of the catch. In 2006–2007 landings surveys these animals were encountered at lower levels with only 29 individuals reported. Two years of surveys from 2017–2018 only recorded two individuals.	
	Costa Rica	346 trawls between 2008 and 2012 failed to record the species even though it was present in the 1980s.	
	Colombia	This species was relatively common in the 1990s, but it has rarely been recorded since.	
	Ecuador	Landings do occur but a lack of management there leads to suspicion of a population reduction.	
	Peru	A few individuals were recorded in Peruvian landings in the late 1990s, but it has not been recorded since.	
Blacknose shark – *C. acronotus*	*Global*	It is suspected that this species has undergone a population reduction of 50–79% over the last three generation lengths (26 years) due to levels of exploitation. Blacknose shark is utilized primarily for meat. Based on trimming of shark fins from Hong Kong in 2014– 2015, blacknose shark comprised 0.19% of the fin trade. **Table 1. *Carcharhinus acronotus*** – Population change (%) and posterior probabilities for changes falling within the IUCN Red List categories Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), and Critically Endangered (CR); the "likely status" based on criteria A2–4 is assigned based on the category containing the highest posterior probability, with the exception that NT is also selected where LC obtained the highest probability, but it is < 50%. All probabilistic statements are based on the rate of change over three generation lengths (GL) from projections within JARA. The Global change is based on the rate of change of change over three generation lengths (GL) using all time-series, as index i, at the same time in a same modelisation run (see text for detail). **Region** / **GL (years)** / **Data length (years)** / **Median change** / **LC** / **NT** / **VU** / **EN** / **CR** / **Likely status** Northern Gulf of Mexico and US southern Atlantic[1] / 8.5 / 1995-2018 / +166.3 / 100 / 0 / 0 / 0 / 0 / LC US east coast and Gulf of Mexico[2] / 8.5 / 1989-2014 / -82.2 / 0 / 0 / 0 / 32 / 68 / CR South US Atlantic[3] / 8.5 / 1950-2009 / -59.7 / 0 / 0 / 8 / 92 / 0 / EN Gulf of Mexico[4] / 8.5 / 1950-2009 / -40.8 / 0 / 6 / 88 / 6 / 0 / VU **Global** / 8.5 / 1950-2018 / -51.2 / 0 / 0 / 43 / 57 / 0 / EN **Data sources:** 1. *Carcharhinus acronotus* unpubl. data from NOAA Fisheries, SEFSC, Mississippi Laboratories, compiled by Adam Pollack; 2. Peterson et al. (2017), Figure 5c, page 853; 3. SEDAR (2011a), Table 5, page 74; 4. SEDAR (2011b), Table 3.7, page 348.	Carlson, J., Charvet, P., Avalos, C., Blanco-Parra, MP, Briones Bell-lloch, A., Cardeñosa, D., Espinoza, E., Morales-Saldaña, J.M., Naranjo-Elizondo, B., Pérez Jiménez, J.C., Schneider, E.V.C., Simpson, N.J., Talwar, B.S., Crysler, Z., Derrick, D., Kyne, P.M. & Pacoureau, N. 2021. Carcharhinus acronotus. The IUCN Red List of Threatened Species 2021: e.T161378A887542. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T161378A887542.en. Accessed on 24 May 2022. *Within above:* SEDAR 2011a,b, G. Rincon pers. comm. 28/02/2018, P. Charvet unpubl. data 2018, V. Faria pers. comm. 21/05/2018, Fields et al. 2018
	USA	In 2009, estimated commercial landings were 29,230 individuals while recreational catches were 1,070 individuals. The numbers caught as bycatch in commercial shrimp trawl were estimated at 1,025 individuals.	
	Northern Gulf of Mexico	Relative abundance time-series from trawl gear (1995–2018) indicated that the population initially increased, peaked and declined before an upturn at the end of the time-series resulting in an overall annual rate of increase of 4.8%.	
	Northern Gulf of Mexico and southeast USA	Trawl survey using multiple gear (1989–2014) exhibited a steady annual rate of decline of 6.1% (potential population reduction of 82.2% over 3 generations). Stock assessments from the U.S. South Atlantic and Gulf of Mexico had annual rates of declines of 1.8% and 2.1% to 2009. An increasing trend of 4.8% per year was found from a fishery independent bottom longline survey	

		covering the same geographic area from 1995 to 2018. Taken together, the blacknose shark is estimated to have declined 2.8% per year over 3 generation lengths (26 years). The corresponding probabilities for population reduction fall between 57% probability of 50–79% and 43% probability of 30–49%.	
	Mexico	In the state of Campeche, Mexico, blacknose shark is targeted in gillnet and longline fisheries.	
	Central America	This species is not common in fisheries.	
	Cuba	This species is not common in fisheries.	
	Eastern Caribbean	This species is not common in fisheries.	
	Bahamas	Seasonal aggregations (100s of animals) occur but they are protected due to the shark sanctuary.	
	Colombia	This species is rare and only known from a few confirmed specimens.	
	Venezuela	Artisanal fisheries are intense and do catch this species, and trawl pressure was intense until prohibited in 2006. It is suspected that these unmanaged fisheries have caused a reduction in population size.	
	Guianas and northwestern Brazil	Suspected that reductions of this species have occurred there. For example, this species was known to be much more common in the State of Maranhão a decade ago. In the State of Parà, this species was formerly very common, but today there are very few adults being encountered in landings. Demographic analysis from Pernambuco State indicate a 44% decline over three generation lengths (26 years) due to mortality in the gillnet fishery, and that fishery now lands mostly juveniles. In Cearà State, landings of this species declined by 64% between 1998–1999, and by 2015–2016 had declined by 78% since 1998–1999.	
Whitecheek shark – *C. dussumieri*	*Global*	Suspected population decline of at least 50-70% over the past three generations (12 years) and further population reduction is suspected over the future three generation lengths (2018-2030) based on current levels of exploitation. The meat of this species is often sold fresh for human consumption at local markets across its range. In some countries, such as Oman, Saudi Arabia (Arabian/Persian Gulf), Pakistan, and India the meat is cut into fillets, dried and salted for domestic sales or trade with neighboring countries. Fins are not considered as valuable as other requiem sharks due to their small size but are still traded internationally.	Simpfendorfer, C., Jabado, R.W., Moore, A., Valinassab, T. & Elhassan, I. 2019. Carcharhinus dussumieri. The IUCN Red List of Threatened Species 2019: e.T70680197A68612632. https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T70680197A68612632.en. Accessed on 24 May 2022. *Within above:* Blegvad and Løppenthin 1944, Herdson 1981, FAO 2009, T. Valinassab unpubl. Data, Moore et al. 2012, Moore and Peirce 2013, Jabado et al. 2016, Jabado et al. 2015, Henderson and Reeve 2014, M. Khan pers. comm. 06/02/2017, Raje et al. 2002, Raje et al.
	Arabian/Persian Gulf	A Danish survey in 1937-38 recorded the whitecheek shark as by far the most common species of shark in the Arabian/Persian Gulf (mostly Iranian coast).	
	Bahrain	Reported as common around Bahrain in surveys carried out in 1974-78. Represented almost 3% of elasmobranchs landed by number in more recent surveys.	

	Iran	This species is commonly caught and is considered the most abundant species. Overall, it makes up about 60% of shark landings by number in Iran (Arabian/Persian Gulf and Sea of Oman) and continues to be an important part of the catch.	2007, D. Sutaria pers. comm. to R.W. Jabado 06/02/2017, Raje et al. 2002, Mohanraj et al. 2009, S. J. Kizhakudan pers. comm. to Akhilesh K.K. 06/02/2017, D. Fernando pers. comm. to R.W. Jabado 02/08/2018.
	Kuwait	This species also represented 22% (in 2008) and 20% (in 2011) of elasmobranch landings by number.	
	Qatar	26% of elasmobranch landings by number.	
	UAE/Oman	4.5% of shark landings by number and <1% of sharks traded from Oman to the UAE.	
	Oman	Only reported nine specimens of this species landed from data collected over five years of landing site surveys along the coast of Oman.	
	Pakistan	Was among the most common species caught in gillnet fisheries in the 1980s but is currently uncommonly encountered	
	India	Reported whitecheek shark as one of the major species contributing to Indian fisheries. In 2003-2004, 58 t were recorded from gillnet fisheries along the southwest coast. However, the whitecheek shark was not observed in surveys of landings in Porbandar (Gujarat), Sasoon Dock (Mumbai) and Malvan (Maharashtra) undertaken in 2014-2015. This species was also reported as one of the dominant species landed by various fishing gears along the coast of Tamil Nadu (southeast coast of India in the 1980s and 1990s). However, more recent landing site surveys (2002-2006) along the eastern Indian coast (Chennai) failed to record it. A decline in abundance of over 50-70% based on catch levels has occurred in India.	
	Sri Lanka	This species has not been reported from over a year of landing site surveys along the coast of Sri Lanka.	
Lost shark – *C. obsoletus*	*Global*	This species is known only from three type specimens recorded from fish landing sites and markets, the last of which was collected in 1934. The lost shark is suspected to have undergone population reduction of >80% over the past three generation lengths (27 years) and the remaining population size is suspected to be fewer than 50 individuals and is inferred to be continuing to decline due to actual or potential fishing levels. The weighted probability of extinction of both the threats and records and surveys models combined is 0.77–0.78 and hence the lost shark species is suspected to be Critically Endangered (Possibly Extinct). Sharks are heavily exploited and utilized in Southeast Asia for their meat, fins, and other products. While there is no species-specific information available on use and trade of the lost shark, it would likely have been utilized if caught.	Dulvy, N.K., Kyne, P.M., Finucci, B. & White, W.T. 2020. Carcharhinus obsoletus. The IUCN Red List of Threatened Species 2020: e.T115696622A115696628. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T115696622A115696628.en. Accessed on 24 May 2022. *Within above:* Blaber et al. 2009, Lam and Sadovy de Mitcheson 2011, Dharmadi et al. 2015

		Table 4. Results from Threats Model and Records and Surveys Model for the Lost Shark (*Carcharhinus obsoletus*). Recommended thresholds for CR(PE) = 0.5 and EX = 0.9 (IUCN Standards and Petitions Committee 2019). Since the two models have substantially different amounts of uncertainty, a weighted average of the two P(E) estimates were calculated. **Model** | **P(E): probability that the species is Extinct** | **minimum** | **best** | **maximum** Threats | 0.8 | 0.9 | 1 Records & Surveys | 0.158 | 0.359 | 0.912 Average P(E) | 0.629 Weighted average P(E) | Minimum | maximum 0.77 | 0.78	
Pacific smalltail shark – *C. cerdale*	*Global*	The Pacific smalltail shark is inferred to have undergone a population reduction of more than 80% over the past three generations (27 years) based on levels of exploitation. This shark's meat is salted or consumed fresh for local consumption, and fins and skins have been utilized in the past. Currently, fins are likely to be exported internationally.	Pollom, R., Avalos, C., Bizzarro, J., Burgos-Vázquez, M.I., Cevallos, A., Espinoza, M., Herman, K., González, A., Mejía-Falla, P.A., Morales-Saldaña, J.M., Navia, A.F., Pérez Jiménez, J.C., Sosa-Nishizaki, O. & Velez-Zuazo, X. 2020. Carcharhinus cerdale. The IUCN Red List of Threatened Species 2020: e.T144137478A144137594. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T144137478A144137594.en. Accessed on 24 May 2022. *Within above:* Pérez-Jiménez et al. 2005, Kato 1965, Kato and Hernández-Carvallo 1967 cited in Pérez-Jiménez et al. 2005, Navia and Mejía-Falla 2016, Mejía-Falla et al. 2017, Kato 1965
	Pacific Mexico	This species was relatively common in ichthyological collections until the 1980s. There were very few records in the late 1990s and early 2000s, and there are no records since a 2001 fishing survey.	
	Gulf of California	Shrimp trawling is prevalent in this region and this species has also been targeted there in artisanal fisheries since at least the 1960s.	
	Mexico	Targeted fisheries for sharks including this species off Mazatlán were in operation in the early 1960s, and this species was one of the most regularly caught sharks. Overall in Mexico, records of this species were relatively common from the 1950s to the 1980s, then became increasingly rare through the 1990s and early 2000s, and the last confirmed record is from 2001.	
	Colombia	There was a decrease in the relative abundance of Pacific smalltail shark in the industrial shrimp trawl fishery between 1995 (0.24 individuals/hour) and 2004 (0.02 individuals/hour), the equivalent of a >99% population reduction over three generations (27 years). There was also a decrease in the average size of individuals caught from 41 cm total length (TL) in 1995 to 38 cm TL in 2004. This species is still recorded in Pacific Colombian artisanal fisheries but with less frequency than in the past.	
Borneo broadfin shark - *Lamiopsis tephrodes*	*Global*	This species was recently resurrected and hence there is little information on former and current catches. Reconstructed catches of mainly carcharhinids and elasmobranchs in Gulf of Thailand, Indonesia, Malaysia (Peninsular and Sarawak), and China were used to infer population reductions of 76%, 28%, 72% and 29%, respectively, when they are scaled to the suspected three generation lengths of the Borneo broadfin Shark (20 years). Therefore, it is suspected that the Borneo shark has undergone a population reduction of 50–79% over the past three generation lengths (20 years) due to actual or potential fishing levels.	Dulvy, N.K., Bin Ali, A., Derrick, D., Seyha, L., Yuneni, R.R. & VanderWright, W.J. 2021. Lamiopsis tephrodes. The IUCN Red List of Threatened Species 2021: e.T169755340A169766323. https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T169755340A169766323.en. Accessed on 24 May 2022. *Within above:*

		The meat of this species is often sold fresh for human consumption at local markets across the region. The fins are dried and traded internationally.	Last et al. 2010, Cardeñosa et al. 2020, Butcher 1996, Davidson et al. 2016, Hilborn et al. 2020, Pauly and Cheunpagadee 2003, Myers and Worm 2003, Krajangdara 2019, Pauly et al. 2020, Zeller and Pauly 2016, Jaiteh et al. 2017, Fahmi unpubl. data 2020, Booth et al. 2020, Pauly and Liang 2019, J. Zhang pers. comm. 28 August 2019
	Indonesia	There are few records of the Borneo broadfin shark giving rise to concern that this species may be as depleted as Indonesian guitarfish (*Rhinobatos penggali*).	
	Sarawak, Malaysia	A total of 42 records of the Borneo broadfin shark were found in Sarawak market surveys from 2017 to 2019, which represented 0.9% of recorded elasmobranchs on sale.	
Broadfin shark - *Lamiopsis temminckii*	*Global*	The broadfin shark is a rare and poorly known species. Reconstructed catches of mainly carcharhinids for the western and northern Indian Ocean infer declines of 67% when scaled to three generation lengths (20 years). The meat of this species is often sold fresh for human consumption at local markets across the region. In Pakistan and India, the meat is cut into fillets, dried and salted for domestic sales or trade with neighboring countries. The fins are dried and traded internationally.	Dulvy, N.K., Al Mamari, T., Bineesh, K.K., Derrick, D., Haque, A.B., Maung, A., Moore, A. & VanderWright, W.J. 2021. Lamiopsis temminckii. The IUCN Red List of Threatened Species 2021: e.T169760690A124508850. https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T169760690A124508850.en. Accessed on 24 May 2022. *Within above:* Akhilesh et al. 2016, Compagno et al. 2005, Raje et al. 2007, K.V. Akhilesh pers. comm. 9 February 2017, D. Sutaria pers. comm. 24 April 2017, M. Khan pers. comm. 12 December 2020, A.B. Haque unpubl. data 2020, Cardeñosa et al. 2020
	India	It is considered rare throughout most of its Indian range and rarely observed or reported from commercial fish catches along the Indian coast, except from the northwest of India (Maharashtra region) where it was once considered to be common. Most of the available records are from Mumbai, India; it was once known to be common in this area, but it has drastically declined in the past two decades. In 2003–2004, landings of 513 t of this species were reported from Gujarat to Mumbai. Evidence of declines in catches of this species are now reported with catches reaching 82 t in Mumbai in 2016. Additionally, landing surveys from 2013 to 2014 in Gujarat and Mumbai only recorded seven specimens	
	Pakistan	Used to be caught as bycatch of trawl fisheries that operated on the inner continental, however, it is now seldom caught and has almost disappeared from commercial catches.	
	Bangladesh	Was historically present but only 14 specimens have been collected in recent landings surveys; they were captured in large mesh gillnets at 40–75 m depth.	

Table 3 - Summary of declines:

	Noted declines from recent IUCN Red List assessments of the 19 CR/EN species
Global (unless otherwise noted)	Grey reef – 59% globally, and **over 75% declines** in more than half of the countries surveyed (Simpfendorfer et al 2020, MacNeil et al 2020) Ganges shark – **near 100% depletion**, possibly extinct in several countries (Compagno, L.J.V. 2007, Rigby et al 2021) Dusky- **over 80%** (Rigby et al 2019) Smalltail- **50-90%** (Santana et al. 2020) Sandbar shark - **50–79%** (Rigby et al 2021) Borneo shark - **36–82%** (Dulvy et al 2021) Pondicherry shark - **near 100% depletion**, possibly extinct (Kyne et al 2021)

	Smoothtooth blacktip shark- **50–80%** (Simpfendorfer et al 2021) Sharptooth lemon shark- **50–79%** (Simpfendorfer et al 2021) Caribbean reef shark- **50%** or greater (Carlson et al 2021) Daggernose shark- greater than **99%** (Pollom et al 2020) Night shark - **50–79%** (Carlson et al 2021) Whitenose shark **50–79%** (Pollom et al 2020) Blacknose shark - **50-79%,** potentially as high as 82% (Carlson et al 2021) Whitecheek shark - **50-70%** (Simpfendorfer et al 2019) Lost shark - **near 100% depletion**, possibly extinct (Dulvy et al 2020) Pacific smalltail shark –**over 80%** (Pollom et al 2020) Borneo broadfin shark - **50–79%** (Dulvy et al 2021) Broadfin shark – **67%** with potential greater sub regional declines (Dulvy et al 2021)

4.5 Geographic trends

See 4. 4.1

5. Threats

All species are listed as Endangered or Critically Endangered on the IUCN Red List of Threatened Species, with the primary threat to these species taking the form of unsustainable and unregulated fisheries mortality throughout their range (see section 4.4 for additional detail).

All species are caught by artisanal and commercial fisheries both as a target species and as bycatch in demersal trawl, net, and longline fisheries – with retention incentivized due to the significant value of their fins in international trade. Their use of inshore and riverine habitats and susceptibility to multiple gear types makes them particularly vulnerable, which is compounded as their range includes some of the world's most heavily fished rivers and coastal regions (Dulvy et al. 2014, Jabado et al., 2017, Quieroz et al 2019).

Their dependence upon inshore and freshwater habitats adds additional significant threats, namely those of habitat loss and degradation, with the river systems in South Asia that support species such as the Ganges shark already deeply compromised by anthropogenic activity (Aggarwal et al 2020). The inshore habitats used by species in the family, such as coral reef ecosystems on which grey reef sharks act as key predators, are already suffering catastrophic reductions globally due to climate change (Hoegh-Guldberg 2017). This additional threat, compounded by this global overfishing only heightens the concern for these species' survival (MacNeil et al 2020).

6. Utilization and trade

When looking at the 19 highly threatened species be considered under article II paragraph 2a, the grey reef shark (*C. amblyrhynchos),* river sharks (*Glyphis* spp.)*,* dusky shark (C. *obscurus*), smalltail shark (*C. porosus*), sandbar shark (*C. plumbeus),* smoothtooth blacktip shark *(C. leiodon),* sharptooth lemon shark *(Negaprion acutidens),* whitenose shark *(Nasolamia velox),* blacknose shark *(C. acronotus),* whitecheek shark *(C. dussumieri),* Pacific smalltail shark *(C. cerdale),* and broadfin shark *(Lamiopsis temminckii)* were all recorded in ongoing assessments of the global shark fin trade, during a study that has now been underway for seven years (published via Fields et al. 2018, Cardeñosa et al. 2018a and 2020, Cardeñosa et al. in press), with several of these lead species being found in very large numbers. With the high value of shark fins in retail markets in East Asia, the global fin trade remains a key threat to shark and ray populations globally, where species aren't subject to formal catch or trade management, as is the case for these species in most locations globally (Dulvy et al 2021).

The following table demonstrates the outsized role this family plays in the global trade in shark fins – with 34 unlisted species within the family recorded in the shark fin trade in recent studies of shark fin trade hubs in Hong Kong SAR and China. Additional species within the family are likely to be traded regionally and globally via other trade routes, and even if not traded now, if excluded from this listing proposal, CITES action for a subset of the family could leave them open to shifts in trade patterns to avoid CITES regulations.

Table 4 - Species in the family Carcharhinidae found in the global shark fin trade in recent studies:

Species	Common name	Study
Carcharhinus acronotus	Blacknose shark	Cardeñosa (in press), Fields et al 2018
Carcharhinus albimarginatus	Silvertip shark	Cardeñosa (in press), Fields et al 2018
Carcharhinus plumbeus	Sandbar shark	Cardeñosa (in press), Fields et al 2018
Carcharhinus amblyrhynchos	Grey reef shark	Cardeñosa (in press), Fields et al 2018
Carcharhinus amboinensis	Pigeye shark	Cardeñosa (in press), Fields et al 2018
Carcharhinus cf. dussumieri	Whitecheek shark	Cardeñosa (in press) and 2020
Carcharhinus obscurus/galapagensis	Dusky/Galapagos shark	Cardeñosa (in press), Fields et al 2018
Carcharhinus porosus	Smalltail shark	Cardeñosa (in press)
Glyphis spp.	River shark	Cardeñosa (in press)
Lamiopsis temminckii	Broadfin shark	Cardeñosa (in press), fields et al 2018
Negaprion acutidens	Sicklefin lemon shark	Cardeñosa (in press)
Nasolamia velox	Whitenose shark	Fields et al 2018 Cardeñosa et al. 2018a and 2020
Carcharhinus cerdale	Pacific smalltail shark	Fields et al 2018 Cardeñosa et al. 2018a and 2020
Prionace glauca	Blue shark	Fields et al 2018 Cardeñosa et al. 2018a and 2020
C. limbatus C. leiodon, C. tilstoni	Blacktip complex	Fields et al 2018, Cardeñosa (in press)
Carcharhinus brevipinna	Spinner shark	Fields et al 2018
Carcharhinus sorrah	Spottail shark	Fields et al 2018, Cardeñosa et al 2020
Carcharhinus leucas	Bull shark	Fields et al 2018
Rhizoprionodon acutus	Milk shark	Fields et al 2018
Rhizoprionodon taylori	Australian sharpnose shark	Fields et al 2018
Rhizoprionodon terraenovae	Atlantic sharpnose shark	Fields et al 2018
Rhizoprionodon porosus	Caribbean sharpnose shark	Fields et al 2018
Carcharhinus brachyurus	Bronze whaler	Fields et al 2018
Rhizoprionodon longurio	Pacific sharpnose shark	Fields et al 2018
Carcharhinus amblyrhynchoides	Graceful shark	Fields et al 2018
Carcharhinus isodon	Finetooth shark	Fields et al 2018
Carcharhinus macloti	Hardnose shark	Fields et al 2018

Negaprion brevirostris	Lemon shark	Fields et al 2018
Carcharhinus melanopterus	Blacktip reef shark	Cardenosa et al 2020
Triaenodon obesus	Whitetip reef shark	Cardenosa et al 2020
Scoliodon laticaudus	Spadenose shark	Cardenosa et al 2020

Grey reef sharks were encountered in 28.3% of sampling events in the Hong Kong SAR retail fin market from 2014-2018. The dusky shark accounted for 1.4% of the shark fin imported in Hong Kong SAR in 1999-2001, translating to hundreds of thousands of individuals per year (Clarke et al 2006). More recently, dusky sharks were encountered in 70.7% of sampling events in the retail market 2014-2018. Both the smalltail shark and river sharks are rarely sampled in the fin trade (Fields et al 2018, Cardeñosa et al 2018a and 2020), but due to their Critically Endangered status and limited geographical range, any unregulated trade in their products is of acute conservation concern.

Cardeñosa et al. (in press) have reviewed the global distribution (number of FAO regions occupied) and IUCN status of shark species occurring in the dried shark fin trade in Hong Kong during 2014-2018 (methodology described by Fields et al. (2018) and Cardeñosa et al. (2018)). Table 3 is sourced from that work, and highlights species found in this analysis that are IUCN threatened and heavily traded, but non-CITES listed.

Species	**Common Name**
Carcharhinus acronotus	Blacknose shark
Carcharhinus albimarginatus	Silvertip shark
Carcharhinus altimus/plumbeus	Bignose/Sandbar shark
Carcharhinus amblyrhynchos	Grey reef shark
Carcharhinus amboinensis	Pigeye shark
Carcharhinus cf. dussumieri/dussumieri	Whitecheek shark
Carcharhinus obscurus/galapagensis	Dusky/Galapagos shark
Carcharhinus porosus	Smalltail shark
Glyphis spp.	River shark
Hemipristis elongata	Snaggletooth shark
Lamiopsis temminckii	Broadfin shark
Mustelus mustelus	Common smoothhound shark
Mustelus schmitti	Narrownose smooth-hound shark
Negaprion acutidens	Sicklefin lemon shark
Dalatias licha	Kitefin shark
Galeorhinus galeus	School shark

Table 5: Sixteen species combining threatened (Critically Endangered – CR; Endangered – EN; or Vulnerable – VU) and Data Deficient status that were commonly encountered in Hong Kong fin market surveys 2014-2018 (~1-15% incidence in sampling events). Eight of the focal species in this proposal are all included in this analysis and highlighted (yellow) for reference, with wider species in the family, included in the proposal as look-alikes also highlighted (beige).

This analysis reveals 16 species/species groups that combine threatened IUCN Red List status and common incidence (> ~ 1% of sampling events) in the dried fin trade. All but four of these species also exhibit restricted geographic range (occupying < 7 FAO regions), which implies they have much a smaller global population than some of the more common species in trade. This may cause them to be even less likely to sustain exploitation and suggests that there are fewer geographic refuges for these species. Eleven of these species/groups (69%) are members of family Carcharhinidae. The conclusion of this study is a

recommendation that Parties consider the CITES Appendix II listing of river sharks (Genus *Glyphis),* the dusky shark (*C. obscurus*) and the smalltail shark (*C. porosus*), along with many other coastal species within the family Carcharhinidae, as such action is needed to properly manage the shark fin trade (Cardeñosa et al in press).

The shark meat trade is also increasingly recognized to be a contributory threat to many shark and ray species (FAO 2015), although there are limited data on the species composition of the meat trade. Given the utilization of requiem sharks, and the retention of carcasses for their meat (Rigby et al 2019, Simpfendorfer et al 2020), these species' meat, as well as oil, skins, jaws and other secondary products are likely being utilized (albeit mostly in domestic markets). A recent study noted that global shark catches are dominated by members of the family Carcharhinidae, with the blue shark alone making up 16% of global shark landings in 2017, with the study noting that the blue shark may now be dominating the meat trade via international commerce to meat markets in Japan, Spain, Taiwan PoC, and Uruguay (Okes, N. and Sant, G. 2019).

In summary, it is clear that when requiem sharks are targeted in fisheries, or retained when incidentally caught, their products, particularly fins, enter international trade (Fields et al 2018). Given the comparatively high value of the shark fin trade, and the growing threat of the meat trade (FAO 2015), it is clear that this trade continues to drive both illegal and poorly regulated fisheries and therefore drives declines in these species' and wider members of the family Carcharhinidae populations throughout much of their range (Davidson et al 2016).

6.1 National utilization:

The grey reef shark (*C. amblyrhynchos),* river shark (*Glyphis* spp.)*,* dusky shark (*C. obscurus*), smalltail shark (*C. porosus*), sandbar shark (*C. plumbeus)* Borneo shark *(C. borneensis),* Pondicherry shark *(C. hemiodon),* smoothtooth blacktip shark *(C. leiodon),* sharptooth lemon shark *(Negaprion acutidens),* Caribbean reef shark *(C. perezi),* daggernose shark *(Isogomphodon oxyrhynchus),* night shark *(C. signatus),* whitenose shark *(Nasolamia velox),* blacknose shark *(C. acronotus),* whitecheek shark *(C. dussumieri),* lost shark *(C. obsoletus),* Pacific smalltail shark *(C. cerdale),* Borneo broadfin shark *(Lamiopsis tephrodes)* and the broadfin shark *(Lamiopsis temminckii)* often form important, but decreasing, components of mixed inshore, and occasionally offshore (particularly for the dusky shark) fisheries throughout their range (Rigby et al 2019, Simpfendorfer et al 2020, Jabado et al., 2017, McNeil et al 2020, Pacoureau et al 2021). Key products produced from this catch includes fins (usually for export) and meat, oil and skins that are used domestically, but are also, for some species likely to be exported to key shark meat consuming countries (Rigby et al 2019, Simpfendorfer et al 2020, FAO 2015).

The requirement to issue CITES Non-Detriment Findings (NDFs) encourages Parties to assess and improve the sustainability of all sources of fisheries mortality for listed species; therefore, a CITES Appendix II listing for these species will also facilitate sustainable domestic use.

Over the last decade, as CITES has started to manage the global shark fin trade via Appendix II listings, many of the species listed have been pelagic species caught in RFMO fisheries, which are important to resource rich countries – such as the shortfin mako or silky sharks. The unlisted species in the requiem shark family are mainly coastal species (see section 3.2 for additional detail), that provide important, but rapidly collapsing food and trade revenue resources for lower capacity countries in the global tropics (Dulvy et al 2021).

In most of their range states these coastal requiem sharks are caught in mixed fisheries that communities rely on for food, with higher value fins entering international trade, and in some cases the species offer a high value ecotourism resource, but management measures are often lacking. There is an urgent need to protect the livelihoods these fisheries support, and use CITES Appendix II listings to facilitate more sustainable use of these species, via the NDF process, which when applied to requiem sharks before

declines are too great, can result in sustainable management of their catch and trade in coastal tropical fisheries, to the benefit of all.

For species such as the grey reef shark (*C. amblyrhynchos*) and the Caribbean reef shark *(C. perezi)*, dive tourism revenue can outweigh the value found in fisheries. With the species of particular significance to dive and snorkel tourism globally, studies have shown the huge economic value of healthy populations of reef associated sharks. For example, shark diving is a major contributor to the economy of Palau, generating US$18 million per year and accounting for approximately 8% of the gross domestic product of the country (Vianna et al 2012). This is common in many small island, dive tourism-focused countries, which are often those where such sustainable, long term high value industries are badly needed for local livelihoods (and far outweighs any benefits from commercial trade). It offers another strong rationale for precautionary management of any extractive use (such as sale and trade) for these species, to safeguard their use as a source of tourism revenue in the long term.

6.2 Legal trade

Products enter trade legally, unless taken in contravention of national legislation or regional fisheries management measures (see sections 6.4 and 7) and enforced accordingly.

6.3 Parts and derivatives in trade

a) <u>Identification at the point of landing to aid traceability:</u>

At the point of landing, all species within the family Carcharhinidae can be identified to a species level, allowing for species specific management and monitoring, and the issuance of CITES permits before products enter international trade (with the appropriate non-detriment and legal acquisition findings). This will allow for the effective implementation of this listing proposal. Multiple regional guides for members of this family are already available (FAO elasmobranch field identification guide series and WCS CITES species full carcass ID guide (Jabado & Abercrombie 2021)).

b) Identification at the point of trade – fin ID:

As per the introduction to section 6, the fin trade is the major trade based threat to the grey reef shark (*C. amblyrhynchos),* river sharks (*Glyphis* spp.)*,* the dusky shark (*C. obscurus*) and the smalltail shark (*C. porosus*) along with many other members of the wider family (Carcharhinidae). Identifying traded fins visually is important to allow for effective implementation of the proposal in all capacity settings, as seen with the effective implementation of CITES shark listings at the customs level since regularly commercially traded species were first listed on CITES Appendix II in 2013 (Cardeñosa et al 2020).

At the first point of trade, all 19 species included according to article II paragraph 2a in this listing proposal can be visually identified to the family (Carcharhinidae) level using their unprocessed dorsal fins (and pectoral fins for some species), as per the techniques used in existing CITES shark ID guides: https://static1.squarespace.com/static/5be1cec125bf028361db95dc/t/5f34579e0d86192a0f01a02e/1597265832828/2018_PEW_SharkFinGuide_English_09-2018_r2_WEB.pdf

However, depending on the type of product, identification is not always possible to the species level, with multiple look-alike species within the wider family Carcharhinidae (Ebert et al. 2021, Jabado 2021, personal communication). This necessitates the family level approach of this listing proposal. The 19 highly threatened species in this proposal fully meet the CITES Appendix II criteria, and in some cases meet the Appendix I criteria. However, the need to list these depleted species creates a lookalike issue that runs throughout the family, as with 19 lead species, there are multiple lookalikes in terms of visual ID for fins of almost every species in the requiem shark family.

For example, as extracted from the matrixes found in Annex 1, the commonly traded blue shark is a lookalike for four currently listed and nine unlisted shark species, included the Critically Endangered lead species, the Ganges shark, in terms of the species lower caudal lobe, and an even wider range of species when meat (a commonly traded product for that species) is concerned. Annex 2 conducts this species-specific analysis for each of the 19 species proposed according to Article II paragraph 2a.

This example can be replicated for any of the 19 species in the proposal by selecting that species in any of the four matrixes found in Annex 1, and looking for red blocks when comparing it two other requiem shark species in each matrix. When undertaken for all 19 species, every member of the family Carcharhinidae is a visual lookalike for at least one fin position with the exception of the daggernose shark (*Isogomphodon oxyrhynchus)* and the whitenose shark (*Nasolamia velox)*. All members of the family are lookalikes for traded meat. Annex 2 includes this analysis in full. This demonstrates that to protect the 19 Critically Endangered and Endangered lead species, while providing simple visual identification enforcement, that is equitable for all CITES parties, a family level listing approach is needed.

In summary, at the point of landing visual identification is possible to species level, aiding traceability and reporting to CITES at a species level, and facilitating continued CITES-regulated trade. At the point of trade, visual identification is possible to the family level, to facilitate simple enforcement action (as per previously CITES listed families, such as wedgefish and mobulid rays). Full details of the visual identification of fins from the family Carcharhinidae, showing the close similarity of many species fins, and the techniques for identification using dorsal and pectoral fins to the family level is included in Annex 1 to this proposal.

Additionally, a specific visual identification guide using the same techniques as existing CITES shark fin ID guides is in development to accompany this proposal, and support its implementation. This guide will be annexed to this proposal when complete, ahead of CoP 19. The guide will expand the matrixes found in Annex 1 and show the key lookalikes for each of the 19 lead species, and how species specific data collection can be conducted at the point of landing, and how visual fin ID can be conducted at the point of trade.

c) Identification at the point of trade – meat and carcass ID

As noted in the introduction to section 6, the 19 species proposed according to article II paragraph 2a are not major components of the shark meat trade. However, other members of the family Carcharhinidae are, with blue sharks and members of the Rhinozprionodon genus likely the most traded shark species for their meat. Identification of meat and carcasses (along with processed fins) is more challenging than for unprocessed fins and depending on the carcass processing isn't possible to the species level. However, the meat trade is predominated by fewer countries than the fin trade, and most countries that reportedly trade meat in significant quantities have a higher capacity to implement CITES listings, such as Japan, Spain, Taiwan PoC, and Uruguay (Okes, N. and Sant, G. 2019).

Genetic ID would be needed to identify traded meat in those higher capacity countries that trade large quantities of meat, and that is simplest when conducted to the family level. This gives further justification to a family level listing approach, to allow for the simplest testing regime for traded meat products, and to prevent small quantities of meat from the grey reef shark (*C. amblyrhynchos),* river sharks (*Glyphis* spp.)*,* the dusky shark (*C. obscurus*) and the smalltail shark (*C. porosus*) being concealed within shipments of other members of the family Carcharhinidae that are more heavily traded for their meat. For those countries with the capacity to support comprehensive genetic testing regimes, who form the core of the shark meat trade genetic testing provides a fast and effective approach to identify meat to species level.

There is a robust publicly available database of cytochrome oxidase I sequences that allows lab-based genetic identification of products from all sharks in the family Carcharhinidae (Wong et al. 2009). There are research laboratories all over the world conducting DNA barcoding studies of these species that could be engaged to identify products for CITES enforcement applications (Sembiring et al 2015, Almeron-Souza et al 2018, among many others). Hong Kong SAR and some other countries and territories are currently using

real time PCR to detect and prosecute illegal trade in CITES-listed sharks (Cardeñosa et al. 2018b). The technology used is low cost (USD$1 per sample), fast (15-94 samples processed in 3.5 hours) and easily implemented in port settings (Cardeñosa et al. 2018b) with efforts now underway in Spain, Indonesia, Belize, Peru, Guatemala and Colombia to implement it.

A test for the family Carcharhinidae could be developed if this proposal were adopted, and there are emerging real time PCR methods that are applied to bony fish that initial testing also shows works for sharks and could be also used to identify any shark product to the species level in the field (Naaum et al. 2021).

Additional information on species ID and lookalike species is included in Annex 1.

6.4 Illegal trade

Most species within the family are subject to limited management globally, and with their inshore range are subject to the national laws of countries throughout their range, rather than those of regional fisheries bodies and agreements. It is assumed that the vast majority of international trade in their fins and other products is legal, but from widely unregulated fisheries. While shark finning is banned in most fisheries with many requiring landings of animals with fins attached, it still occurs and these species could be illegally finned due to the high value of their fins when traded internationally, and the comparatively low value of their meat.

See section 7 for details on countries that are thought to have management measures in place for these species.

A recent analysis of the implementation of existing CITES shark and ray listings reveals compliance issue due to similarity of appearance of shark products in trade, compounded by large shipments of mixed CITES and non-CITES listed species (Villate-Moreno 2021). All unlisted species found in the shipment analyzed in this study, and misidentified as potentially CITES listed belong to the family Carcharhinidae. Listing the entire family as per this listing proposal, would remove this issue of mixed shipments and misidentification, as with the vast majority of the shark fin trade consisting of CITES listed species, almost all legal shipments of shark fins would need to be accompanied by CITES paperwork. Those shipments without paperwork would almost certainly contain CITES-listed species. Coupled to the ability to visually identify Carcharhinidae fins to the family level, this would make the basic steps of inspection and confiscation far simpler and more efficient for customs staff, especially in locations where genetic tools, or wider customs capacity are lacking or limited.

6.5 Actual or potential trade impacts

While overfishing is the major threat to sharks and rays globally (Pacoureau et al 2021), the demand from international shark fin markets is a major driving economic force behind the unsustainable mortality of these species (Fields et al 2018), driving that overfishing. Regulation of the fin trade through an Appendix II listing of these species is necessary to ensure that the trade is sustainable, and does not drive them to extinction, helping facilitate national level sustainable management and conservation.

7. Legal instruments

7.1 National

Few legal instruments exist that specifically apply to the 19 species, although where species or family specific measures are known, they are listed in section 8.1. They are often managed as part of mixed inshore fisheries, with limited or no species-specific controls to limit overexploitation (see sections 4 and 5 for detail). A CITES Appendix II listing for the requiem shark family would facilitate prioritization of species specific data collection and management in these fisheries, to ensure compliance with CITES trade

measures at the point of trade. This is badly needed if the goal of sustainable utilization of sharks is to be met, and is a core benefit of this approach to comprehensively regulate the shark fin trade, and the fisheries that supply it.

7.2 International

The mainly coastal distribution of the grey reef shark (*C. amblyrhynchos),* river sharks (*Glyphis* spp.*),* the dusky shark (*C. obscurus*) and the smalltail shark (*C. porosus*) limits the application of high seas Regional Fisheries Management Organizations (RFMO) regulations, and none of these species has been prioritized for conservation action in other Regional Fisheries Bodies (RFB's).

In 2017, the 124 Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) listed the dusky shark (*C. obscurus*) on Appendix II of the Convention, thereby recognizing this species in need of collaborative, international conservation action. No collaborative action has yet been taken outside of the subsequent listing on the CMS Shark Memorandum of Understanding (MoU); however, listing the species on CITES Appendix II would represent a strong commitment to co-operative, global action by those CITES Parties that are also signatories to CMS.

8. Species management

8.1 Management measures

The 15 countries that have declared their waters shark sanctuaries (no retention or sale of sharks), that amount to 3% of the world's oceans (Ward Paige 2017) protection should be in place for any of these species found in their waters. Of the species included in this proposal, this is likely to hold the greatest benefit for the grey reef shark (*C. amblyrhynchos),* as the majority of these shark sanctuary countries are small island states with high levels of coral reef habitat and a recent global survey found reef sharks were abundant in sanctuary nations (MacNeil et al. 2020). However, few additional countries with significant coral reef habitat have offered any protections or management to sharks more generally, or gray reef shark specifically.

Australia and the United States (U.S.) have implemented fishery management measures aimed specifically at reducing dusky shark mortality, and U.S. commercial and recreational fishers are prohibited from retaining the species. South Africa has imposed a recreational bag limit for dusky sharks. Outside of these countries, however, there is no evidence of specific management of the dusky shark, despite its vulnerability and extensive global range (Rigby et al 2019, CMS dusky shark listing proposal 2017).

There are no species-specific protections or conservation measures in place in the Western Central Atlantic range of the smalltail shark, although some wider fisheries management measures may offer the species limited management and protection (Pollom et al 2020).

In India, the Ganges shark is one of 10 species of chondrichthyans protected under Schedule I, Part II A of the Indian Wildlife (Protection) Act, 1972 (Government of India Ministry of Environment and Forests 2006). However, the effectiveness of this measure is unknown, with ongoing issues in enforcement and compliance. In Bangladesh, the Ganges shark has been protected since 2012 under Schedule I of the Wildlife (Conservation and Security) Act, 2012, however the effectiveness of this measure is limited due to a general lack of awareness of the protection among fishers and traders. To conserve the population and to permit recovery, a suite of measures will be required which may include species protection, spatial management, bycatch mitigation, and harvest and trade management measures (including international trade measures) (Rigby et al 2021).

Outside of this limited range of management measures, it is assumed that The grey reef shark (*C. amblyrhynchos),* river sharks (*Glyphis* spp.)*,* the dusky shark (*C. obscurus*), the smalltail shark (*C. porosus*) the sandbar shark (*C. plumbeus)* the Borneo shark *(C. borneensis),* the Pondicherry shark *(C. hemiodon),* the

smoothtooth blacktip shark *(C. leiodon),* the sharptooth lemon shark *(Negaprion acutidens)* the Caribbean reef shark *(C. perezi),* the daggernose shark *(Isogomphodon oxyrhynchus),* the night shark *(C. signatus),* the whitenose shark *(Nasolamia velox),* the blacknose shark *(C. acronotus),* the whitecheek shark *(C. dussumieri),* the lost shark *(C. obsoletus),* the Pacific smalltail shark *(C. cerdale),* the Borneo broadfin shark *(Lamiopsis tephrodes)* and the broadfin shark *(Lamiopsis temminckii)* are largely unmanaged throughout their range.

Even when protected by the measures noted here, or measures not publicly available, trade could be continuing without inspection or enforcement, due to a lack of complementary trade management, monitoring and enforcement that a CITES Appendix II listing can offer.

8.2 Population monitoring

Outside of the U.S. and Australia, there are no formal programs dedicated specifically to monitoring any of these species' populations. In addition, the lack of species-specific catch and effort data and the difficulties in species identification and clear nomenclature have resulted in difficulties in monitoring the population status to a species level. The management priority that a CITES Appendix II listing will provide will help prioritize data collection for these species.

9. Information on similar species

As noted throughout the proposal, particularly in sections 4 and 6, a listing at the family level (Carcharhinidae) is needed, due to identification issues within the family, and fully in line with Article II.2.(b) of the CITES treaty.

The full list of species contained in the proposal is found in Annex 1.

10. Consultations

The following comments were received in response to Panama's initial range state consultations, with addition outreach to range states planned ahead of CoP19:

Range state consulted	Response
Canada	Noted that here is currently no trade of Carcharhinidae fins into or out of Canada. Unless otherwise permitted, Canada's domestic legislation bans the import and export of all shark fins not attached to a carcass, including Blue Shark. Due to the small amount of Blue Shark harvest in Canada (approximately 8 per year), there is no significant trade of Blue Shark products.
European Union and its Member States	Technical comments were submitted to Panama, and led to establishment of this version of the listing proposal, which the EU supports on a technical level.
United States	Technical comments on US fisheries management measures for requiem shark species.
El Salvador	Provided technical comments on their domestic catch of requiem sharks and noted that they support this listing proposal.
Dominican Republic	Communicated support, and will co-sponsor the proposal.
Bangladesh	Communicated support, and will co-sponsor the proposal.
Senegal	Communicated support, and will co-sponsor the proposal.
Monaco	Communicated support, and will co-sponsor the proposal.
New Zealand	Provided information on the domestic management of six species of requiem sharks caught in their domestic fisheries. Raised that the tiger shark (*Galeocerdo cuvier*) has recently been removed from Carcharhinidae and placed in its own family Galeocerdonidae. Panama have used that taxonomy and excluded the tiger shark from this draft of the listing proposal.
Japan	Provided information on the management of the blue shark, and noted that Japan did not support the listing proposal.

11. Additional Remarks

12. References

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Annex 1- full species list and visual ID guidance

This Annex 1 briefly summarizes the species included in the proposal, and details on product ID and justification of lookalike criteria. Additional information on the status of the 19 lead species, in terms of FAO reported catch product ID is included in Annex 2.

The unlisted members of the family Carcharhinidae, included in this proposal in accordance with Article II paragraph 2(a) of the Convention and satisfying Criterion A and B in Annex 2a of Resolution Conf. 9.24 (Rev. CoP17), along with Annex 2b, Criterion A of Resolution Conf. 9.24 (Rev. CoP17) are detailed as follows:

1. **BLACKNOSE SHARK** *Carcharhinus acronotus*
2. **BIGNOSE SHARK** *Carcharhinus altimus*
3. **SILVERTIP SHARK** *Carcharhinus albimarginatus*
4. **GREY REEF SHARK** *Carcharhinus amblyrhynchos*
5. **GRACEFUL SHARK** *Carcharhinus amblyrhynchoides*
6. **PIGEYE SHARK** *Carcharhinus amboinensis*
7. **BORNEO SHARK** *Carcharhinus borneensis*
8. **NERVOUS SHARK** *Carcharhinus cautus*
9. **BRONZE WHALER** *Carcharhinus brachyurus*
10. **SPINNER SHARK** *Carcharhinus brevipinna*
11. **PACIFIC SMALLTAIL SHARK** *Carcharhinus cerdale*
12. **COATES'S SHARK** *Carcharhinus coatesi*
13. **WHITECHEEK SHARK** *Carcharhinus dussumieri*
14. **CREEK WHALER** *Carcharhinus fitzroyensis*

15. **GALAPAGOS SHARK** *Carcharhinus galapagensis*
16. **PONDICHERRY SHARK** *Carcharhinus hemiodon*
17. **HUMAN'S WHALER SHARK** *Carcharhinus humani*
18. **FINETOOTH SHARK** *Carcharhinus isodon*
19. **SMOOTHTOOTH BLACKTIP SHARK** *Carcharhinus leiodon*
20. **BULL SHARK** *Carcharhinus leucas*
21. **BLACKTIP SHARK** *Carcharhinus limbatus*
22. **HARDNOSE SHARK** *Carcharhinus macloti*
23. **SMALLTAIL SHARK** *Carcharhinus porosus*
24. **BLACKTIP REEF SHARK** *Carcharhinus melanopterus*
25. **LOST SHARK** *Carcharhinus obsoletus*
26. **DUSKY SHARK** *Carcharhinus obscurus*
27. **CARIBBEAN REEF SHARK** *Carcharhinus perezi*
28. **SANDBAR SHARK** *Carcharhinus plumbeus*
29. **NIGHT SHARK** *Carcharhinus signatus*
30. **BLACKSPOT SHARK** *Carcharhinus sealei*
31. **SPOTTAIL SHARK** *Carcharhinus sorrah*
32. **AUSTRALIAN BLACKTIP SHARK** *Carcharhinus tilstoni*
33. **INDONESIAN WHALER SHARK** *Carcharhinus tjutjot*
34. **GANGES SHARK** *Glyphis gangeticus*
35. **NEW GUINEA RIVER SHARK** *Glyphis garricki*
36. **SPEARTOOTH SHARK** *Glyphis glyphis*
37. **DAGGERNOSE SHARK** *Isogomphodon oxyrhynchus*
38. **BROADFIN SHARK** *Lamiopsis temmincki*
39. **BORNEO BROADFIN SHARK** *Lamiopsis tephrodes*
40. **SLITEYE SHARK** *Loxodon macrorhinus*

41. **WHITENOSE SHARK** *Nasolamia velox*
42. **SICKLEFIN LEMON SHARK** *Negaprion acutidens*
43. **LEMON SHARK** *Negaprion brevirostris*
44. **BLUE SHARK** *Prionace glauca*
45. **MILK SHARK** *Rhizoprionodon acutus*
46. **BRAZILIAN SHARPNOSE SHARK** *Rhizoprionodon lalandii*
47. **PACIFIC SHARPNOSE SHARK** *Rhizoprionodon longurio*
48. **GREY SHARPNOSE SHARK** *Rhizoprionodon oligolinx*
49. **CARIBBEAN SHARPNOSE SHARK** *Rhizoprionodon porosus*
50. **AUSTRALIAN SHARPNOSE SHARK** *Rhizoprionodon taylori*
51. **ATLANTIC SHARPNOSE SHARK** *Rhizoprionodon terraenovae*
52. **SPADENOSE SHARK** *Scoliodon laticaudus*
53. **PACIFIC SPADENOSE SHARK** *Scoliodon macrorhynchos*
54. **WHITETIP REEF SHARK** *Triaenodon obesus*

A visual ID guide for the family will be produced ahead of CoP19, that can be used to identify all species in the family to a species level at point of landing, and identify dorsal fins to a family level at point of trade, and will be included in this proposal. Specific fin identification cues for each species are detailed below, but show that for many products there is confusion within the family, so necessitating a family level listing approach to aid implementation.

The following matrices (tables 6, 7, 8, and 9) compare the ability to identify fins and meat from all known requiem shark species and all currently CITES listed sharks in additional detail. The green indicates where it is possible to visually distinguish between the fins of species (see table 5 for dorsal, table 6 for pectoral,

table 7 for caudal and table 8 for meat). The left-hand side columns are predominantly green, showing that it is easy to distinguish between currently CITES listed species and unlisted species from the requiem family for most fin positions. The red sections on the right-hand side indicate that it is not possible to distinguish between the fins and meat of many (currently unlisted) requiem shark species.

Given that there are 19 lead species that badly need CITES listing, given their Critically Endangered and Endangered status, with this wide range of lookalikes, and given that shark fins are typically traded in mixed shipments containing a range of species, a family level listing is by far the most resource-efficient way to regulate this trade. If a subset of species within the family were listed, customs level enforcement would be incredibly time consuming due to the numerous lookalikes identified in the matrices.

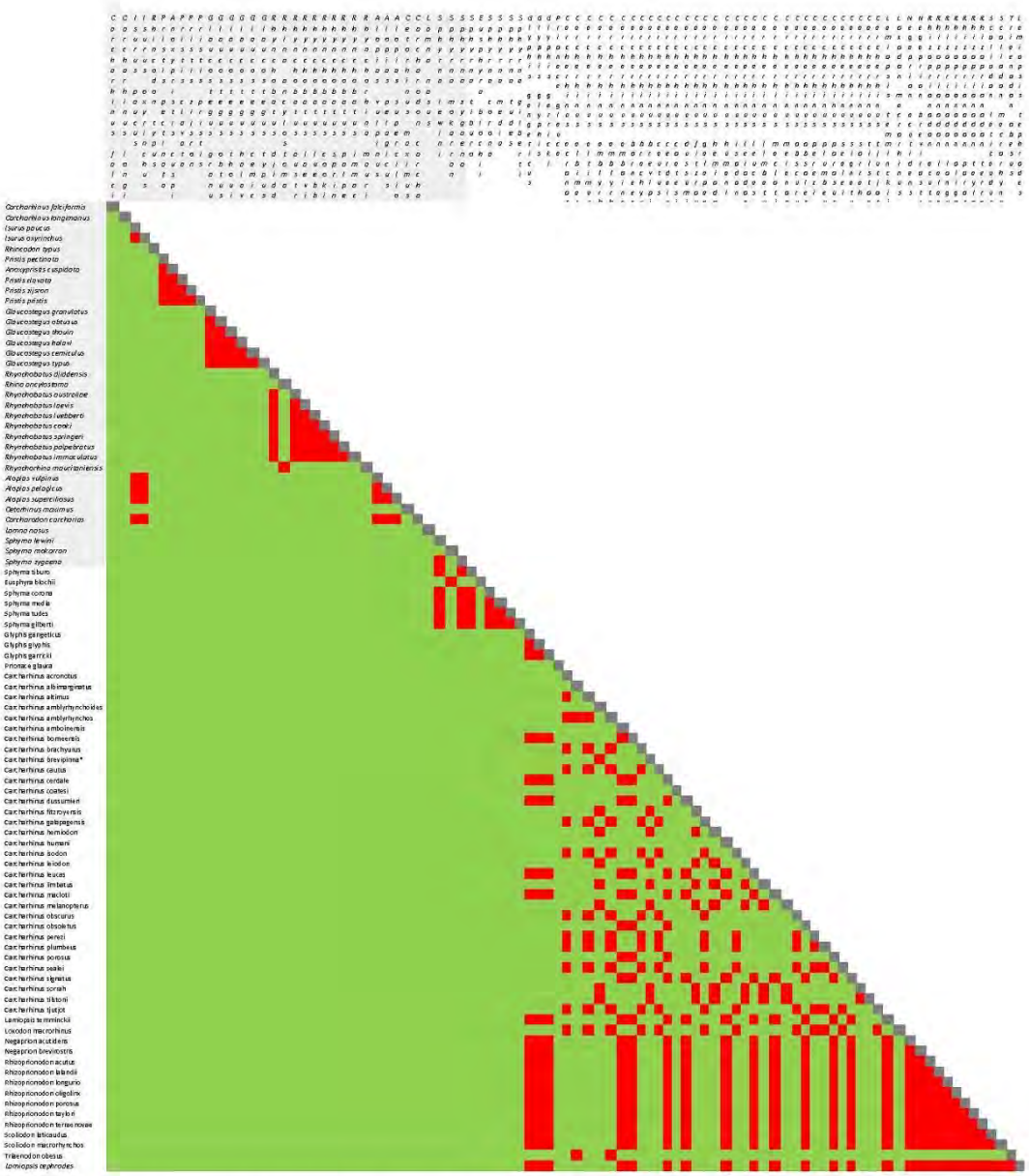
This proposal, at the family level, would incorporate up to 85.5% of the fin trade on Appendix II, and therefore most shipments of shark fins would contain CITES listed species and require the associated paperwork. Such an approach has multiple benefits for data collection and traceability of the overall trade, in addition to preventing further overexploitation driven by the international trade. With visual ID possible to the requiem shark family level, this listing could be implemented in the manner of current CITES shark listings, with visual ID guides and customs trainings used to enforce listings in all capacity settings.

Tables 6-9 - identification analysis matrices:

Key to using the matrices

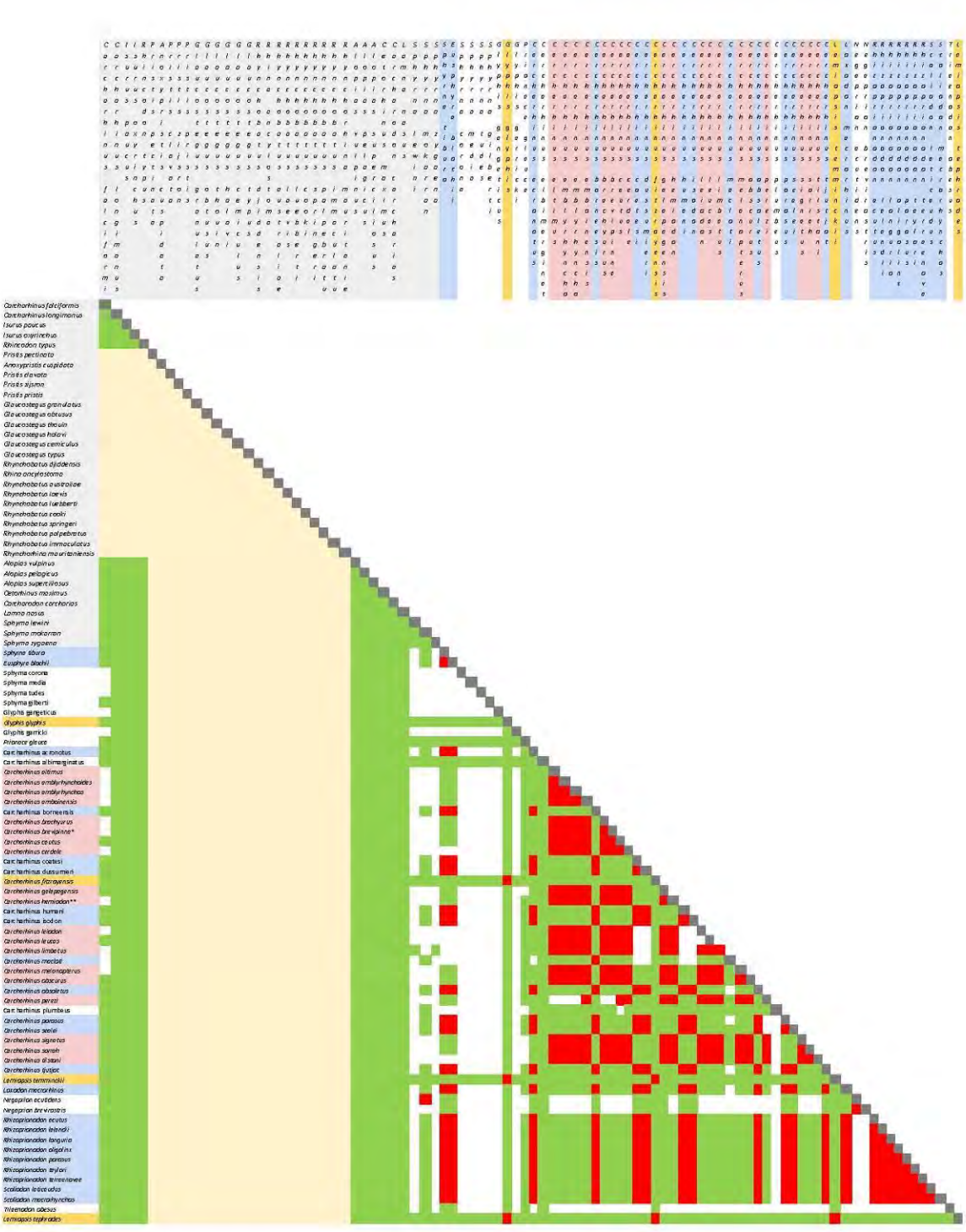
- Gray shading of species names – these species are already CITES listed
- No shading of species names – these species are not currently CITES listed (includes all members of the requiem shark family)
- Green at intersection of x and y axis – product can be visually identified to a species level (between the species on each axis)
- Red at intersection of x and y axis – product cannot be visually identified to a species level (between the species on each axis)

Table 6 – dorsal fin lookalikes:



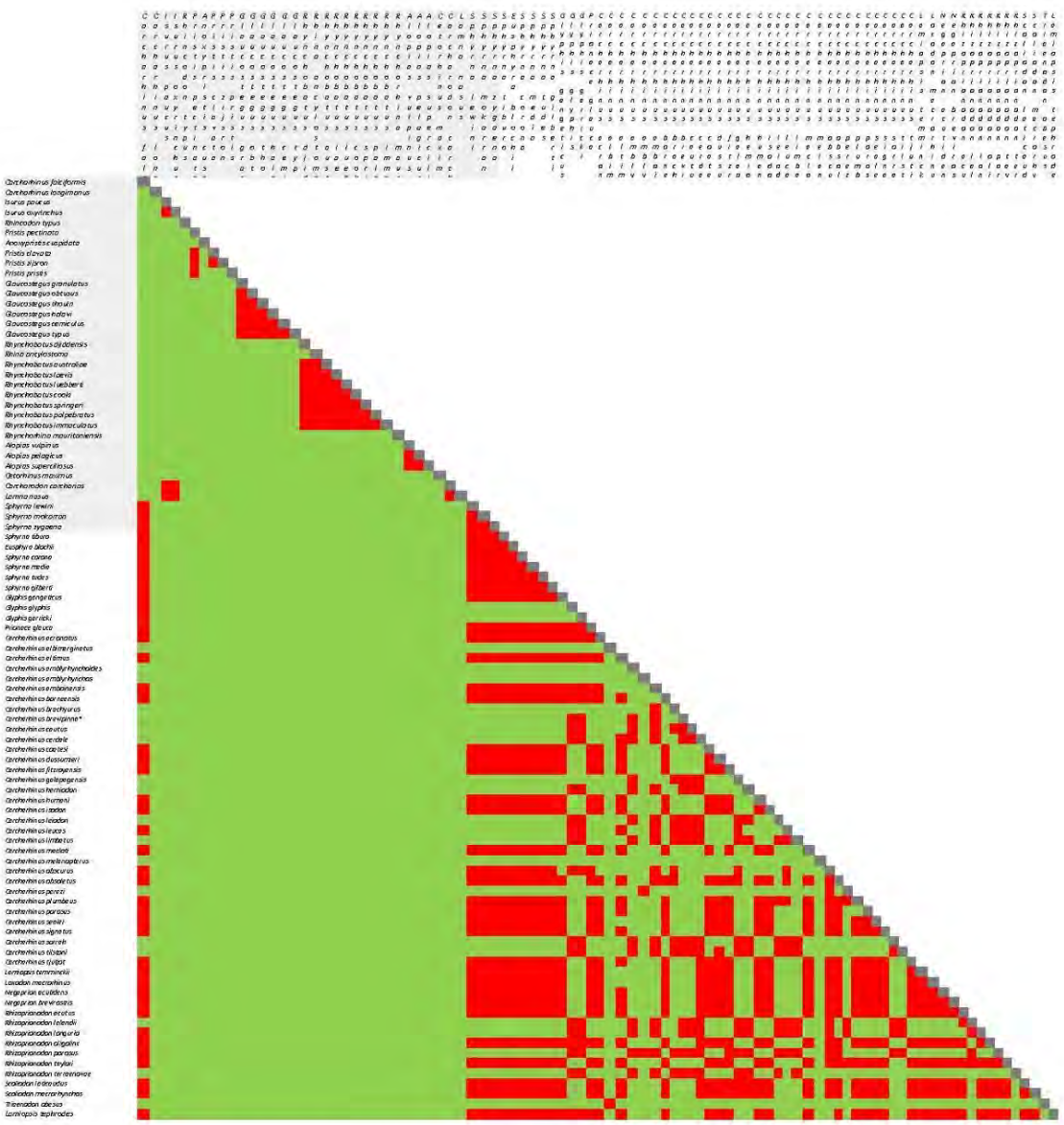
Note- A few Carcharhinidae have unique D1 characteristics (e.g. C. falciformis, C. longimanus, P. glauca). Most have one or more lookalikes. D1 fins were therefore grouped:
Group 1: Tall fins with indistinct markings (e.g., C. obscurus, Pacific C. amblyrhynchos)
Group 2: Tall fins with distinct black apical markings (e.g. C. brevipinna, C.limbatus)
Group 3: Tall fins with distinct white apical markings (e.g., Indian C. amblyrhynchos, C. albimarginatus)
Group 4: Broad fins with indistinct markings (e.g. C. porosus, Glyphis spp.)

Table 7 – pectoral fin lookalikes:



Not applicable - rhinopristid pectoral fins are different to sharks, not comparable, and do not enter the triads (unless as meat fillets)
* Fins change color between juveniles and adults
** only known from holotype - preserved animal appears to have black on apex on the ventral side of pectorals
Grouping 1: short with white margin and no color on underside
Grouping 2: medium to large with black markings or dusky markings concentrated on apex - recognizing that this group can be further broken down but would still making ID very challenging and not possible at the species-specific level without genetics.
Also recognizing that some species may or may not have black marking depending on the animal which can make identification even more challenging (e.g. C. cerdale - included here as a species with black on the apex of the pectoral fins)
Grouping 3: wide/broad relatively short pectorals with no markings on ventral side (Lamiopsis spp., G. glyphis, and C. fitzroyensis)
Grouping 4: Broad/falcate with black / dusky apex

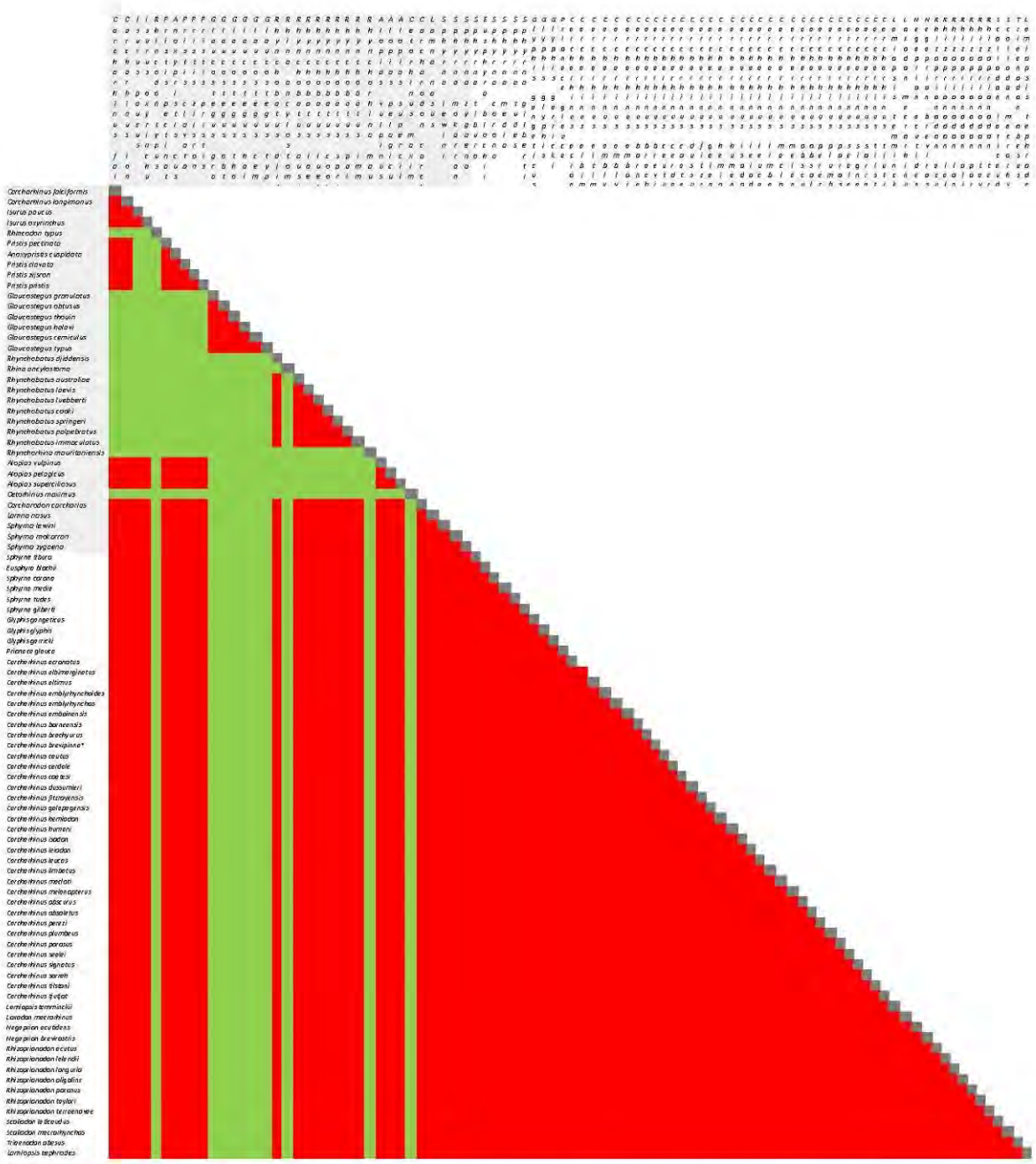
Table 8 – lower caudal fin lookalikes



Notes - most of this pertains to having the caudal fins either traded whole (rare) or with just the lower caudal fin. It is extremely difficult to distinguish caudal fins from most species, especially when considering that we are only looking at the lower caudal lobe. Generally, for species not already listed on CITES, this is really about the overall shape of the caudal fin and whether it has a black spot on the lower caudal or not. Those with black spots can be differentiated from those without but not between each other. Same with it is acknowledged that there may be some slight differences that impact the results of this matrix depending on the life-stages of some species. For example, some species have dusky fins as juveniles that disappear as adults or vice-versa.

Grouping 1: lower caudal fin with black spot prominent or dusky
Grouping 2: lower caudal fin with white spots
Grouping 3: no marking on lower caudal fin
Grouping 4: caudal fin with black margin - sometimes leading into black spot on lower caudal fin

Table 9 – meat lookalikes:



Notes - This is to showcase that meat can't be distinguished - have included the meat with skin which is why for some species we have green - but if the skin is removed - there is no way to distinguish between species

Requiem shark family level shark fin ID guide (in the process of being finalized)