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

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Eighteenth Meeting of the Conference of the Parties
Colombo, Sri Lanka, May 23-June 3

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of the two species commonly referred to as the white-spotted wedgefish, *Rhynchobatus australiae* and *Rhynchobatus djiddensis,* 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 Rhinidae (wedgefish): *Rhynchobatus cooki, Rhynchobatus immaculatus, Rhynchobatus laevis, Rhynchobatus luebberti, Rhynchobatus palpebratus, Rhynchobatus springeri, Rhynchorhina mauritaniensis, Rhina ancylostoma,* and any other putative species of Family Rhinidae 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).

Qualifying Criteria (Conf. 9.24 Rev. CoP17)

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:

Rapid recent declines in populations of *Rhynchobatus australiae* and *Rhynchobatus djiddensis* of 80% or more, meeting Appendix I listing criteria for marine species of low productivity, are already documented in some regions (e.g., Jabado *et al*. 2017; Jabado 2018). Using the precautionary approach where data is lacking, and given the global footprint of tangle and gill net fisheries, similar declines are likely throughout much of the species range. Given these species' large size, restricted habitat use, high fin value in international markets, and the fishing footprint throughout their range, *R. australiae* and *R. djiddensis* are believed to be at a particularly high risk of a similar fate to the sawfishes (family Pristidae), that have been extirpated from almost all of their historic range and were consequently listed on CITES Appendix I (Moore 2017).

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 both *R. australiae* and *R. djiddensis*, due to fisheries driven by the high value of their fins in international trade, are noted throughout much of their range (Jabado *et al*. 2017; Jabado 2018; Giles *et al*. 2016; Moore 2017).

Guitarfish and wedgefish have a specific trade category ("Qun Chi") in the Hong Kong shark fin retail market, the global hub of the shark fin trade, and this trade category has the highest value of any fin type in trade. *R. australiae* and *R. djiddensis* form a significant part of this category, making the family Rhinidae among the 20 most frequently traded elasmobranch families (Fields *et al*. 2017, Fields *et al*. in prep).

With limited management in place, it is highly likely that without trade regulation the exceptionally high value of *R. australiae* and *R. djiddensis* fins will drive continued overfishing, and in turn additional declines globally, thus threatening the survival of wild populations.

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 wide inter- and intra-specific variation in morphological characteristics within the family Rhinidae (Moore, 2017). This, combined with an overlapping range, has led to confusion and inaccurate species-specific data collection for *R. australiae* and *R. djiddensis*, along with other associated species within the family Rhinidae (Jabado, 2018). Additional, cryptic, sympatric species are likely to exists (e.g. Henderson *et al*. 2016) and considerable within-species variability in dorsal colouration and morphology is noted for *R. australiae* (Giles *et al*., 2016). Intra-species variability of fin morphology within the family Rhinidae makes identification to a species level challenging, although visual fin ID is possible at the family (Rhinidae) level.

Although species-specific identification and data collection within the family (Rhinidae) should be prioritized wherever possible, due to the close resemblance and intra species variability in appearance noted here, and the fact that globally species-specific data collection is lacking, all members of the family are included in this proposal, under criteria Annex 2b, Criterion A.

Family Rhinidae presently includes three genera: *Rhina* (one species described)*, Rhynchobatus* (six species described), and *Rhynchorhina* (one species described).

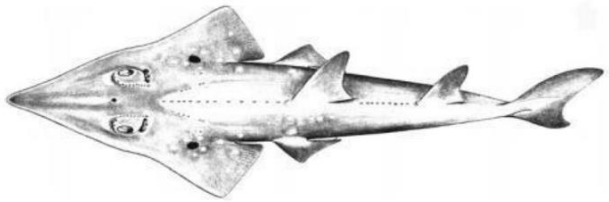

Figure 1: *Rhynchobatus australiae*.
From Compagno and Last 1999

Figure 2: *Rhynchobatus djiddensis*.
From Last *et al* 2016.

B. Proponent

Sri Lanka (lead), Bangladesh, Benin, Bhutan, Burkina Faso, Cape Verde, Chad, Cote D'Ivoire, Egypt, Ethiopia, the European Union and its Member States, Fiji, the Gambia, India, Jordan, Kenya, Lebanon, Liberia, Maldives, Mauritania, Mexico, Monaco, Nepal, Niger, Nigeria, Palau, Philippines, Seychelles, Togo.

C. Supporting statement

1. Taxonomy

1.1 Class: *Chondrichthyes*
1.2 Order: *Rhinopristiformes*
1.3 Family: *Rhinidae*
1.4 Species: *Rhynchobatus australiae* (Whitley, 1939), *Rhynchobatus djiddensis* (Forsskål, 1775)

1.5 Scientific synonyms: *Rhynchobatus djiddensis australiae* Whitley, 1939

1.6 Common names:
English: White-spotted wedgefish (both species), Bottlenose wedgefish (*R. australiae*), Giant guitarfish (*R. djiddensis*).
French: No common name found
Spanish: No common name found

1.7 Code Numbers: Not applicable.

2. Overview

The white-spotted, or bottlenose wedgefish (*Rhynchobatus australiae*) and the giant guitarfish, also sometimes known by the common name of white-spotted wedgefish (*Rhynchobatus djiddensis*) are classified by the IUCN Red List of Threatened Species as Vulnerable globally due to population declines driven by overfishing in artisanal and commercial fisheries, underpinned by limited management throughout most of both species range.

Both species are caught as target species and retained when caught as bycatch, with the primary driver of that retention being the value of their fins (Chen, 1996; Clarke *et al*., 2006; Compagno and Last, 2008; Harrison and Dulvy, 2014, Jabado 2018). These have the highest value of all fins found for sale in the global trade and retail hub of Hong Kong (Fields *et al*., in prep).

The Order Rhinopristiformes includes the Sawfishes (family Pristidae – CMS & CITES Appendix I listed) and the guitarfishes. Guitarfishes are shark-like batoids comprising 4 families – wedgefish (Rhinidae), 10 species; guitarfish (Rhinobatidae), 31 species; giant guitarfish (Glaucostegidae), 6 species; and banjo rays (Trygonorrhinidae), 8 species (Last *et al*. 2016; Moore 2017). Among these families, *Rhynchobatus australiae* and *Rhinobatos rhinobatos* are listed on CMS Appendix II, but no wedgefish species have been listed on the CITES Appendices to date.

International trade is of particular concern for the status of the wedgefish. Recent research has demonstrated that they are extensively traded for their fins (Fields *et al*., 2017). These species have a specific trade category in the Hong Kong shark fin retail market, the global hub of the shark fin trade, and members of family Rhinidae are the predominant species found in trade (Fields *et al*., in prep). Given their similar fin structure and high value, this trade category likely included sawfishes before the global collapse in their populations, and subsequent listing in CITES Appendix I.

The family Rhinidae (commonly referred to as wedgefishes) has been identified as the third most threatened family of chondrichthyans globally (Dulvy *et al.*, 2014). *Rhynchobatus australiae* and *R. djiddensis* are especially vulnerable because of their use of coastal habitats, susceptibility to multiple gear types, large size, and value in trade – all underpinned by a lack of adequate management (Moore, 2017). They have also been found to have extremely low reproductive potential, putting them at extreme risk from poorly managed fisheries (White, 2014).

Rhynchobatus australiae and *R. djiddensis* are Indo-Pacific species. Both are found in coastal inshore habitats in East Africa and the Arabian/Persian Gulf, with *R. australiae*'s range extending into South East Asia and Oceania, as far into the Pacific as the Fijian Islands (Last *et al*., 2016; Giles *et al*., 2016).

Because the two species are morphologically similar, share a common name, and an overlapping range, there has been confusion and possible misidentification in reporting and catch data; many countries report the landings of just one of the two species, although both occur in their waters (Jabado *et al*. 2017).

While species-specific records, catch and landings data are lacking for individual species of wedgefish (family Rhinidae), qualitative information at the family level indicate that in almost every location studied there are severe population declines and localized extinctions (Moore 2017). There are indications that some populations

have not shown declines (Zhou & Griffiths 2008), but only where management is in place, a step lacking throughout much of their range. A recent assessment of the conservation status of elasmobranchs in the Arabian Sea and adjacent waters concluded that *R. australiae* and *R. djiddensis* (along with a sympatric species, *R. laevis*) have suffered significant population declines estimated between 50-80% over the last three decades. They are considered Endangered, due to past and ongoing declines from intensive fishing pressure that is likely to continue into the future (Jabado *et al*. 2017). Similar declines are noted throughout both species' range.

Rhynchobatus australiae and *R. djiddensis* are heavily exploited throughout their range, yet both species remain poorly studied and very little is known about their basic biology and ecology. It is clear that coordinated and comprehensive management and conservation measures are urgently needed for these and other wedgefishes to prevent further population declines and localized extinctions throughout their range (Moore 2017).

A more precautionary multilateral approach to these species' management is urgently needed if these declines are to be reversed, and both trade and fisheries become sustainable. A listing in Appendix II of CITES would encourage sustainable trade and management of these species, and prevent international trade in their high value fins from driving them to extinction.

3. Species characteristics

3.1 Distribution

Rhynchobatus djiddensis is found in the Western Indian Ocean, from South Africa to Oman. *R. australiae's* range overlaps with that of *R. djiddensis*, and also extends into South Asia, South East Asia and Oceania, (Last *et al*. 2016; Giles *et al*. 2016). Similarities between these species have made identification difficult (Jabado *et al*. 2017), and their respective ranges were only defined in 2016 (Last *et al*. 2016).

Figure 3: Distribution of *R. australiae* (Last *et al*. 2016)

Figure 4: Distribution of *R. djiddensis* (Last *et al*. 2016)

3.2 Habitat

Rhynchobatus australiae inhabits inshore waters on the continental shelf, specifically enclosed bays, estuaries, and also coral reefs (Compagno & Last 1999). They rarely occur deeper than 60 m.

Rhynchobatus djiddensis occupies a similar habitat on the continental shelf to 70 m (generally to 35 m). In South Africa, it occurs mainly off sandy beaches during summer (van der Elst, 1988), where it is especially abundant in the surf zone but also occurs along the edges of deeper reefs down to 30 m (Dudley & Cavanagh 2006).

3.3 Biological characteristics

Rhynchobatus australiae and *R. djiddensis* are both cartilaginous fish within the family Rhinidae (wedgefish), and suffer from a lack of detail on their biological characteristics. *Rhynchobatus australiae* is found throughout southern and southeast Asia. The species attains a length of 2,800 mm. Male *R. australiae* greater than 1,300 mm were found to be mature (White & Dharmadi, 2007), whereas pregnant females were between 2,800 and 3,000 mm, with aplacental viviparous litters ranging from 7 to 19 (mean = 14) embryos (White & Dharmadi, 2007).

Rhynchobatus djiddensis is known to reach 3100 mm total length. It is a large, Western Indian Ocean inshore wedgefish, distributed from the Red Sea to South Africa. Information on the biology of the species is also sparse. It has a low fecundity of four pups/litter. Preliminary tag-recapture data indicate very slow growth rates (Dudley & Cavanagh 2006; Last *et al*. 2016).

3.4 Morphological characteristics

Rhynchobatus australiae has a bottlenose-shaped snout, which differentiates it from the other smaller sympatric species within its range, which have bicolour wedge-shaped snouts – *R. springeri, R. immaculatus* and *R. palpebratus*. (Last *et al*. 2016). The dorsal surface is pale grey to yellowish brown with sparse coverage of white spots. There are small thorns on the back and around the eyes. The pectoral fins are triangular and the dorsal fins are falcate, with the first dorsal fin being much larger than the second. As bottom-dwellers they rest on mud, sandy, or rough bottoms and feed on benthic invertebrates, crustaceans and small bottom-dwelling fish (Last *et al*. 2016).

Rhynchobatus djiddensis shares many characteristics with the closely related *R. australiae*, but can be differentiated by prominent bar markings between the orbits, and a particularly high vertebral count (Last *et al*. 2016).

The family Rhinidae are easily distinguishable from other families of guitarfish, and other regularly traded elasmobranchs in their landed (whole) and commonly traded (fins) form (see section 6). The wider family Rhinidae are therefore included in this proposal as lookalikes, to facilitate compliance with the proposed listings of *R. australiae* and *R. djiddensis*.

3.5 Role of the species in its ecosystem

The role of any species within the family Rhinidae in its ecosystem is still poorly understood (White & McAuley 2003). However, wedgefish and guitarfish have been noted to play an important role in the trophic functioning of soft-sediment ecosystems (Kyne & Bennett 2002).

Wedgefish and guitarfish are also important prey items for apex predators vital to ecosystem functioning, including bull (*Carcharhinus leucas*), and great hammerhead (*Sphyrna mokarran*) sharks off southern Africa (Moore, 2017).

4. Status and trends

4.1 Habitat trends

Rhynchobatus australiae and R. djiddensis inhabit shallow bays, estuaries, and coastal coral reefs. In addition to overfishing, habitat degradation and modification are likely among the primary reasons for the declines in abundance and distribution of species in the family Rhinidae worldwide (White *et al*., 2013 & 2014). The shallow coastal habitats of both species are often associated with high levels of human activity, which may result in degradation or loss of habitat through pollution and coastal or riverine developments, including mangrove clearance, canal development and construction of seawalls. Recent research highlights that the habitat use and geographic distribution of wedgefish and guitarfish, including family Rhinidae, put them at a heightened risk of extinction (Dulvy *et al.,* 2014; Moore, 2017).

4.2 Population size

Data are not available to determine the precise population size of any species in the family Rhinidae. However, *R. australiae* and *R. djiddensis* are caught by artisanal and commercial fisheries, both as target species and as bycatch in demersal 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 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 exploitation, conservative life history characteristics and demand in trade, where their fins carry a very high value, the IUCN Red List predicts current population trends for both *R. australiae* and *R. djiddensis* as decreasing globally (White & McAuley, 2003; Dudley& Cavanagh, 2006).

Due to their large size compared to other guitarfish, conservative biology and habitat use, *R. australiae* and *R. djiddensis* are among the chondrichthyans facing the greatest extinction risk. Their populations may already be suffering a similar fate to that of fellow Rhinopristiformes, the sawfishes, where poorly documented declines led to near-extirpation from much of their global range before management was put in place (Moore, 2017).

The species previously referred to as *Rhynchobatus djiddensis* is now understood to have been a complex of several similar species (see section 9), however species-specific reporting, beyond 'guitarfish' or 'wedgefish' is often lacking. Likewise, there is often confusion in reporting to the species level for *R. australiae*, which is often confused with other large species, including *R. djiddensis* (Giles *et al*., 2016).

Because of this widespread mis-reporting of *R. australiae* and *R. djiddensis* in landings, the population declines noted here may be of either (or both) species in the western Indian Ocean where their range overlaps.

4.4.1 Population trends by region.

Southeast Asia and Oceania

Species-specific information has been difficult to collect, due to recent taxonomic revisions within the genus, and the difficulties identifying morphologically similar species. All Indo-West Pacific *Rhynchobatus* species were considered *R. djiddensis* prior to the late 1990s, when five separate species were either reinstated or newly described (Giles *et al*., 2016). In Australia, landings are reported as *Rhynchobatus* spp., comprised of a complex of three species: *R. australiae, R. laevis* and *R. palpebratus*. This has made assessing the threat to populations of each species a challenge (White *et al*., 2014).

Thus, it is hypothesized that given similar levels of fishing pressure, a lack of management and non- species-specific identification of species in landings, even in developed countries such as Australia, that many if not all species within the family are suffering declining population trends globally.

Rhynchobatus australiae are heavily exploited in Southeast Asia for their fins, which are considered some of the most valuable in trade (Giles *et al*., 2016; White & McAuley, 2003; Chen, 1996; Vannuccini, 1999; Clarke *et al*., 2006). Much of their range occurs in areas of high fishing pressure and they are susceptible to capture both as target and bycatch by trawl, net and longline gear (Giles *et al*., 2016).

Data from Indonesia indicates significant declines in catch rates in the target gillnet fishery for rhinids and rhynchobatids, of which *R. australiae* is a key part, indicating local population declines. Given its susceptibility to multiple gear types and evidence of local population declines, it is likely populations of *R. australiae* have been locally reduced throughout its range (White & McAuley, 2003).

The Aru Islands (Indonesia) rhinid and rhynchobatid gill net fishery first began in the mid-1970s and rapidly expanded to reach a peak in 1987, with more than 500 boats involved. In subsequent years the catches declined very rapidly with only 100 boats fishing in this area in 1996 (Chen, 1996). A similar fishery also exists in Merauke (south Papua) with gillnet boats operating in the Arafura Sea, close to Australian waters, and the frozen catch sent by boat to processing areas in Jakarta. There is also evidence that fishermen in these regions occasionally fish in Australian waters (Chen, 1996; W. White, unpubl. data).

Southern Asia

Significant declines of guitarfish, around 86% over a five-year timeframe have been documented on the west coast of India at a landing site in Tamil Nadu, despite increasing fishing effort. This is likely to include *R. australiae* as a significant component of the catch, and possibly *R. djiddensis* depending on its full range (*Jabado et al., 2018*).

Fishing pressure that will directly impact both species is intense and increasing in the region. The number of trawlers operating in Gujarat waters has increased from ~6,600 boats in 2004 to ~11,500 boats in 2010, and about 2,000 trawlers operate in Pakistan shelf waters. Anecdotal reports of significant declines in several areas, including India, Pakistan and Iran are noted for this species complex (Jabado *et al*., 2017).

In Pakistan data on wedgefish and guitarfishes (which includes all of the family Rhinidae present in their waters – including *R. australiae)* shows significant declines over one generation – from over 2018 metric tons landed in the year 2000, to 403 metric tons in the year 2011. It is noted that wedgefishes and guitarfishes used to be quite abundant in commercial landings along the coast of Pakistan, however, catches of these species have substantially decreased, with almost all wedgefish having now disappeared from landings and rarely seen (AC30 Inf.12 – submitted by the Government of Pakistan).

North-western Indian Ocean

A recent IUCN Red List assessment of the region's elasmobranch fisheries (Jabado *et al*., 2017) provides an up to date picture of family Rhinidae declines in this region – this is the most up to date and accurate assessment for these species.

Regional studies indicate that that wedgefish, including *R. australiae* and *R. djiddensis*, are increasingly targeted due to their high value fins, raising concerns for their conservation status (Jabado *et al*. 2015a, b).

Historical and current fishing pressures have driven declines in abundance of *R. australiae* and *R. djiddensis* in fisheries in the United Arab Emirates and Oman. *Rhynchobatus* species made up 55.6% of the landings of rhinopristoids, with *R. australiae* and *R. djiddensis* a significant component of that catch. Individual specimens were reported as selling for as much as AED 2500 (US $ 680), with landings noted to have declined in a short timeframe of less than 10 years, despite increasing fishing effort (Jabado, 2018).

Jabado *et al*. (2017) concluded that all species of wedgefish have declined in the Arabian Sea and adjacent waters, and that populations of *R. australiae* and *R. djiddensis* (along with a sympatric species *R. laevis*) have suffered declines estimated between 50-80% over the last three decades. These species are now assessed as Endangered in this region due to intensive fishing pressure, that is likely to continue into the future and drive additional declines (Jabado *et al*., 2017).

Eastern Africa

Although high quality data from the region are lacking, fisher, trader and local community survey work suggest declining population trends attributed to fisheries targeting both *R. australiae* and *R. djiddensis* for their high value fins.

Fishing pressure in East Africa is noted to be particularly high for *R. djiddensis*, where it is targeted alongside hammerhead sharks, due to the high value of their fins in export markets. Reports from artisanal fisheries in

Mozambique indicate that fishing pressure has had a significant impact on local populations; many specimens observed caught by locally-based marine scientists were mature females, and numbers are reduced to very low levels on reefs where they had been abundant before long-line fisheries began locally in the early 2000's (Pierce *et al*., 2008).

A survey of fishers and traders in Zanzibar, Tanzania, noted that giant guitarfish (potentially both *R. australiae and R. djiddensis*) are of particular interest due to the high value of their fins – noted as among the highest value by fin traders surveyed. Fishermen reported that they catch this species in high numbers; however, its numbers are declining, and it is now considered by some a rare species—one fisher stating that this was because so many people were catching it for its fins. (Schaeffer 2004; Barrowclift *et al*. 2017).

A similar study found comparable trends in Madagascar (not shown as a range state in current referenceable range maps, but clearly landing the species), where a premium price of up to 400 000Ar ($204)/kg was paid for "tandraly" or giant guitarfish (Rhinidae spp. – likely *R. australiae* and *R. djiddensis*) fins, due to their high quality ceratotrichia. Two local collectors also stated that this species was decreasing (Hopkins, 2011).

Summary of *R. australiae and R. djiddensis* declines by region:

Region	Noted declines	Source
Southeast Asia – Oceania	Significant – degree uncertain	Giles *et al*., 2016; White *et al*., 2014; White and McAuley, 2003; Chen, 1996; White, unpubl. data.
Southern Asia	86% in less than one generation, near extirpation elsewhere	Jabado *et al*., 2017; AC30 Inf.12 (Gov. of Pakistan)
Northwest Indian Ocean	50-80% over three generations	Jabado *et al*., 2017; Moore, 2017
East Africa	Declines noted – degree uncertain	Barrowclift *et al*., 2017; Hopkins, 2011; Pierce *et al*., 2008; Schaeffer, 2004

4.5 Geographic trends

See 4.4.1

5. Threats

R. australiae and *R. djiddensis* are both listed as Vulnerable globally on the IUCN Red List of Threatened Species, and the family Rhinidae is considered to be the third most threatened of all chondrichthyan families (White and McAuley, 2003; Dulvy *et al*., 2014). These IUCN Red List assessments are due to be updated in the immediate future, which should provide additional information on the threat levels these species, and others within the family Rhinidae, face globally.

The primary threat to these species is unsustainable and unregulated fisheries mortality throughout their range (see section 4.4 for additional detail). Both 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 very high value of their fins in international trade. Their use of inshore habitat and susceptibility to multiple gear types makes them particularly vulnerable, and that is compounded as their range includes some of the world's most heavily fished coastal regions (Dulvy *et al*. 2014; Jabado *et al*., 2017; Jabado, 2018; Giles *et al*., 2016).

Their dependence on inshore habitats makes them highly susceptible to habitat loss and degradation. The inshore habitats used by species in the family Rhinidae, such as seagrass and coral reef ecosystems, are suffering catastrophic reductions globally due to anthropogenic impacts. This additional threat only heightens the concern for these species' survival (Dudley & Cavanagh, 2006; Moore, 2017).

6. Utilization and trade

Overview

The global trade demand for their high value fins drives wedgefish mortality in many fisheries and represents the principle threat to *R. australiae* and *R. djiddensis,* wherever they are found.

These species are targeted, or retained when captured incidentally, in large part due to the high market value for wedgefish fins. For example, information from interviews with fishermen and traders in the United Arab Emirates (UAE) suggests that guitarfishes have replaced sawfish as the most sought-after species for the international fin trade market, and are increasingly targeted and retained due to the high value of their fins (Jabado *et al*. 2015b, 2017).

Low value meat from these species is often consumed locally but, due to their exceptionally high value, the fins of species in the family Rhinidae, particularly *R. australiae* and *R. djiddensis*, enter international trade and are sold for extremely high prices (Vannuccini, 1999; Clarke, 2006; Hopkins, 2011; Jabado, 2018). Individual Rhinidae specimens have been reported to sell for as much as USD $680 at first point of sale (Jabado, 2018), with fins from Rhinidae species being sold for as much as $USD 964/kg in trade hubs in Hong Kong and China; this is the highest value recorded for any fin type (Fields *et al*. in prep).

Recent research has, for the first time, revealed the scale of guitarfish trade. Clarke (2003) hypothesized that the fin trade category "Qun Chi" in the Hong Kong shark fin market referred to this group. This was recently confirmed by Fields et al. (in prep), who used DNA barcoding (N= 19 fins) to identify the presence of multiple species, including *Rhynchobatus australiae*, *Glaucostegus cemiculus*, and *Rhina ancylostoma*. This was further demonstrated in a recent market study conducted in Hong Kong (Bloom, 2018). Fields *et al*. (2017) undertook a genetic analysis of processed fin trimmings (by-products from preparing imported fins for consumption) purchased in Hong Kong, the global hub of the shark fin trade, in 2014. This revealed the presence of multiple species in the family Rhinidae: *Rhynchobatus australiae, Rhynchobatus* cf. *laevis*, and *Rhynchobatus djiddensis*. Collectively, these made up at least 0.1% of the trimmings collected, ranking them in the top 20 most common among 86 species or species groups recorded in the fin trade (Fields *et al*., 2017).

A recent study in Singapore, the world's secondary trade hub after Hong Kong, collected 207 samples of shark and ray products that were on sale to the general public. Of the 106 products labelled as 'shark', 17% were identified as *R. australiae,* with the species noted as being highly prized for its fins. This was the largest percentage of any 'shark' species found within the Singapore trade in the study (Wainwright *et al*. 2018).

There is potentially a low level of trade in other products from Rhinidae family species. Meat is widely utilized both fresh (see section 6.1), and dried and salted, sometimes for export. Furthermore, there is an as of yet unquantified level of trade in other wedgefish and guitarfish products in Southeast Asia, including novel dishes made of head cartilage, and jewellery made from the dorsal thorns of *Rhina ancylostoma* (Moore, 2017).

6.1 National utilization

Rhynchobatus australiae and *R. djiddensis* form important, but decreasing, components of mixed inshore fisheries throughout their range (White & McAuley, 2003; Jabado *et al*., 2017). Their meat is considered to be good quality, if far lower in terms of value than fins, and is often consumed fresh (Moore, 2017). This makes domestic utilization of this product more likely than international trade in meat. A total of 5000 t of 'guitarfish' was landed in 2014 according to official FAO statistics, but this is likely a significant underestimation of total global landings (FAO, 2016).

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).

6.3 Parts and derivatives in trade

The primary *R. australiae* and *R. djiddensis* products in trade are fins, particularly dorsal fins and entire caudal fins. Visual identification of the primary, first entry point of trade product (unprocessed, dried fins) is possible at the family level (Rhinidae).

The fins from *R. australiae* are distinctive (Giles *et al*., 2016), and dried, unprocessed (skin on) Rhinopristiform fins can be visually identified at least to the Family level (i.e., Rhinidae, Glaucostegidae, Pristidae – the three families most regularly found in trade) (D. Abercrombie, personal communication). This ability to visually identify the primary product in trade will aid in the implementation and enforcement of this proposed listing.

Variability in fin morphology within the family Rhinidae makes identification to a species level challenging. For example, the highly prized dorsal fins are morphologically similar (in size, shape and colour) for many of the species within the Family Rhinidae. This, along with the whole specimen species-specific identification issues noted in section 4.4, supports the inclusion of the reminder of the family Rhinidae under Annex 2b, Criterion A

Fins from the Family Rhinidae are morphologically similar to those from the Family Glaucostegidae (giant guitarfishes) and Pristidae (sawfishes), once removed from the whole animals. Although, as noted above, visual identification to the family level for unprocessed fins is possible, it makes identification of fins between these three groups that have been heavily processed (skin removed) challenging (D. Abercrombie personal communication).

Genetic techniques can combat fin identification challenges. With Sawfishes already listed at the family level on CITES Appendix I, monitoring, enforcement and compliance measures should already be in place for fins originating from the Order Rhinopristiformes.

6.4 Illegal trade

R. australiae and *R. djiddensis* 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. Where shark finning is banned, but still occurs these could be species illegally finned due to the exceptionally high value of their fins when traded internationally, and the comparatively low value of their meat.

6.5 Actual or potential trade impacts

As noted in the introduction to section 6, demand from international shark fin markets is the driving economic force behind the unsustainable mortality of *R. australiae* and *R. djiddensis*. 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.

A recent study (Jabado, 2018) reinforces the need for trade regulation via CITES listing, observing that despite the historical importance of rhinopristoid fins in the international fin trade, only sawfishes have been listed on the CITES Appendices (Jabado, 2018). A CITES Appendix II listing of the family Rhinidae is recommended to bring attention to the plight of these species and potentially aid in regulating international trade of fins by ensuring they are sustainably and legally sourced (Jabado, 2018).

7. Legal instruments

7.1 National

Few legal instruments exist that specifically apply to *R. australiae* and *R. djiddensis*, 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, 5 and 8 for detail).

7.2 International

The coastal distribution of *R. australiae* and *R. djiddensis* limits the application of high seas RFMO regulations, and neither species has been prioritized for conservation action in other RFBs.

In 2017, the 124 Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) listed *R. australiae* on Appendix II of the Convention, thereby recognizing this species in need of collaborative, international conservation action. Given the recent nature of this listing, no collaborative action has yet been taken and listing on CITES Appendix II would represent a strong commitment towards cooperative and global action by those CITES Parties that are also signatories to CMS. In December 2018 both species were listed on the CMS shark Memorandum of Understanding, which via the collaborative work of its signatories, can assist in the implementation of these proposed CITES Appendix II listings.

8. Species management

8.1 Management measures

R. australiae and *R. djiddensis* are subject to limited species-specific management and, as detailed in sections 4 and 5, this has led to significant and continued population declines.

Rhynchobatus djiddensis is listed on Schedule 1 of the Bangladesh Wildlife Protection Act, 2012, and on India's Wildlife Protection Act 1972, which prohibits the hunting, trade and any other form of exploitation of these species. Pakistan have species-specific regulations banning the catching of rhinids and rhynchobatids (Jabado & Spaet, 2017), specifically the Department of Fisheries of two of Pakistan's maritime provinces, Sindh and Balochistan, have banned the catching, landing and marketing of all guitarfish (AC30 Inf.12), and a complex of wedgefishes including *R. australiae* is managed in a mixed fishery in Australia (White *et al*., 2014a).

Apart from these limited examples of management, species in the family Rhinidae are subject to little or no management across their range, including in hotspots of inshore fishing pressure where significant declines in their populations have been noted, such as Eastern Africa and the north-western Indian Ocean.

The implementation of a CITES Appendix II listing will complement existing management measures, incentivise new ones, and facilitate the development of protections where needed, and sustainable fisheries where possible.

8.2 Population monitoring

There are no formal programs dedicated specifically to monitoring of wedgefish catch and 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 (Rhinidae) is needed, due to identification issues within the family.

As detailed here, although *R. australiae* and *R. djiddensis* are the primary species traded internationally, other species within the family, such as *Rhynchobatus luebberti*, are at an even higher risk of extinction, being assessed as Endangered globally, and having disappeared from much of their former West African range. Although not identified by current trade studies, given the exceptionally high value of their fins it is highly likely that their fins enter international trade when available.

Therefore, as well as simplifying enforcement action, a listing at a family level will safeguard additional, exceptionally vulnerable wedgefish species.

The reminder of the family Rhinidae, included in this proposal under Annex 2b, Criterion A are detailed as follows:

Taiwanese wedgefish, *Rhynchobatus immaculatus* *(Last, Ho & Chen, 2013)* – Medium-sized wedgefish with a broad snout, small thorns of varying sizes on back and around eyes but absent from snout, very high vertebral count. Found in North-West Pacific; off Taiwan. Benthic, recently discovered and not well known, but apparently lives in shallow water on the continental shelf. This species has not been evaluated by the IUCN.

Smoothnose Wedgefish, *Rhynchobatus laevis* *(Bloch & Schneider, 1801)* – A large wedgefish with a broad snout, small round thorns on back and around eyes but not on the snout. Range includes Indo-West Pacific; Oman to Japan. This species is listed as Vulnerable globally on the IUCN Red List (Compagno & McAuley, 2016).

African Wedgefish, *Rhynchobatus luebberti* *(Ehrenbaum, 1915)* – Large wedgefish with a bottle-shaped snout, prominent rows of thorns on rostral ridges. Found in the Eastern Atlantic; Congo to Mauritania. This species is listed as Endangered globally on the IUCN Red List (Compagno & Marshall, 2006a).

Eyebrow Wedgefish, *Rhynchobatus palpebratus* *(Compagno & Last, 2008)* – Large wedgefish with broad snout, small variable-sized thorns on back and around eyes but absent from snout. Very similar to the smoothnose wedgefish. Found in the Eastern Indian Ocean and South-West Pacific. This species' populations have not been assessed by the IUCN.

Broadnose Wedgefis*h, Rhynchobatus springeri* *(Compagno & Last, 2010)* – A robust, large wedgefish with a broad snout, prominent rows of small thorns on back and around eyes but absent from snout. Found in the Indo-Malay Archipelago. This species is most similar to the Eyebrow wedgefish and is listed as Vulnerable globally on the IUCN Red List (Compagno & Marshall, 2006b).

Clown Wedgefish, *Rhynchobatus cooki* (Last, Kyne & Compagno, 2016) – A newly identified species, the smallest of the genus Rhynchobatus with a very long pointed with rostral spines extending almost to the tip. A distinct species, similar to *R. australiae* and *R. djiddensis,* often dark greyish green when first caught. This species has not yet been evaluated by the IUCN.

Shark Ray, *Rhina ancylostoma* *(*Bloch & Schneider, 1801) – An inshore species of the Indo-West Pacific with a distinctive rounded snout. This species is taken by multiple artisanal and commercial fisheries throughout its range, both as a target species and as bycatch. Listed as Vulnerable globally on the IUCN Red list (McAuley *et al*, 2016).

False Shark Ray, *Rhynchorhina mauritaniensis* (Séret & Naylor, 2016) – Distinctive snout shape, more broadly rounded like that of the shark-ray *Rhina ancylostoma*, instead of being typically wedge-shaped as in *Rhynchobatus* species. Resembles the common African wedgefish, *Rhynchobatus luebberti*, in having a similar colour pattern, but differs in snout shape. This species has not been evaluated by the IUCN.

10. Consultations

11. Additional Remarks

12. References

Barrowclift, Ellen & Temple, Andrew & Stead, Selina & Jiddawi, Narriman & Berggren, P. 2017. Social, economic and trade characteristics of the elasmobranch fishery on Unguja Island, Zanzibar, East Africa. Marine Policy. 83. 128-136. 10.1016/j.marpol.2017.06.002.

Bloom, 2018. "King of Shark Fins" – A Rapid Survey on the availability of shark-like batoid fins in Hong Kong SAR and Guangzhou, China retail markets. Available online at: <http://www.bloomassociation.org/en/wp-content/uploads/2018/10/King-of-shark-fins-not-quite-sharks.pdf>

Chen, H.K. (ed.) 1996. Shark Fisheries and the Trade in Sharks and Shark Products in Southeast Asia. TRAFFIC Southeast Asia Report, Petaling Jaya, Selangor, Malaysia

Clarke S.C., McAllister, M.K., Milner-Gulland, E.J., Kirkwood G.P., Michielsens, C.G.J., Agnew, D.J., Pikitch, E.K., Nakano, H., & Shivji, MS. 2006b. Global estimates of shark catches using trade records from commercial markets. Ecology Letters 9:1115-1126.

Clarke, S., 2003: Quantification of the trade in shark fins. PhD thesis, Imperial College London

Clarke, S.C., Magnussen, J.E., Abercrombie, D.L., McAllister, M.K., Shivji, M.S., 2006. Identification of shark species composition and proportion in the Hong Kong shark fin market based on molecular genetics and trade records. Conserv. Biol. 20, 201–211

Compagno, L.J.V. & Last, P.R. 1999. Rhinidae (=Rhynchobatidae). Wedgefishes. p. 1418-1422. In K.E. Carpenter and V. Niem (eds.) FAO identification guide for fishery purposes. The Living Marine Resources of the Western Central Pacific. FAO, Rome.

Compagno, L.J.V. & Marshall, A.D. 2006a. Rhynchobatus luebberti. The IUCN Red List of Threatened Species 2006: e.T60180A12303076. http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T60180A12303076.en. Downloaded on 22 June 2018.

Compagno, L.J.V. & Marshall, A.D. 2006b. Rhynchobatus springeri. The IUCN Red List of Threatened Species 2006: e.T60182A12303651. http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T60182A12303651.en. Downloaded on 22 June 2018.

Compagno, L.J.V. & McAuley, R.B. 2016. Rhynchobatus laevis. The IUCN Red List of Threatened Species 2016: e.T41854A68643153. http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T41854A68643153.en. Downloaded on 22 June 2018.

Compagno, L.J.V., Last, P.R., 2008. A new species of wedgefish, Rhynchobatus palpebratus sp. nov. (Rhynchobatoide: Rhynchobatidae), from the Indo–West Pacific. In: Last, P.R., White, W.T., Pogonoski, J.J. (Eds.), Descriptions of New Australian Chondrichthyans. CSIRO Mar Atmos Res Paper 22, pp. 227–240

Dudley, S.F.J. & Cavanagh, R.D. 2006. Rhynchobatus djiddensis In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. Downloaded 14 May 2018.

Dulvy, N.K., Fowler, S.L., Musick, J.A., Cavanagh, R.D., Kyne, P.M., Harrison, L.R., Carlson J.K., Lindsay Davidson, L.N.K., Fordham S.V., Francis, M.P., Pollock, C.M., Simpfendorfer, C.A., Burgess, G.H., Carpenter, K.E., Compagno, L.J.V., Ebert, D.A., Gibson C., Heupel, M.R., Livingstone, S.R., Sanciangco, J.C., Stevens, J.D., Valenti, S., & White, W.T. 2014. Extinction risk and conservation of the world's sharks and rays. eLife 3, e00590

Fields, A. T., Fischer, G. A., Shea, S. K. H., Zhang, H., Abercrombie, D. L., Feldheim, K. A., Babcock, E.A., & Chapman, D. D. 2017. Species composition of the international shark fin trade assessed through a retail-market survey in Hong Kong. Conservation Biology. DOI: 10.1111/cobi.13043

Giles, J. L., Riginos, C., Naylor, G.J.P., Dharmadi, &Ovenden, J.R. 2016. Genetic and phenotypic diversity in the wedgefish Rhynchobatus australiae, a threatened ray of high value in the shark fin trade. Marine Ecology Progress Series 548: 165-180. doi: 10.3354/meps11617

Harrison, L.R., Dulvy, N.K., 2014. Sawfish: a Global Strategy for Conservation. International Union for the Conservation of Nature Species Survival Commission's Shark Specialist Group, Vancouver.

Henderson AC, Reeve AJ, Jabado RW, Naylor GJP. 2016. Taxonomic assessment of sharks, rays and guitarfishes (Chondrichthyes: Elasmobranchii) from south-eastern Arabia, using the NADH dehydrogenase subunit 2 (NADH2) gene. Zool J Linn Soc 176: 399−442

Hopkins C, 2011: External actors, high value resources and threatened species: shark fin commodity chains of Northern Madagascar, interception for conservation. MSc dissertation, Imperial College London

Jabado RW, Al Ghais SM, Hamza W, Henderson AC (2015a) The shark fishery in the United Arab Emirates: an inter- view based approach to assess the status of sharks. Aquat Conserv 25:800−816

Jabado RW, Al Ghais SM, Hamza W, Henderson AC, Spaet JLY, Shivji MS, Hanner R (2015b) The trade in sharks and their products in the United Arab Emirates. Biol Conserv 181:190−198

Jabado RW, Kyne PM, Pollom RA, et al. 2018: Troubled waters: Threats and extinction risk of the sharks, rays and chimaeras of the Arabian Sea and adjacent waters. https://doi.org/10.1111/faf.12311

Jabado, R. W., Kyne, P.M., Pollom, R.A., Ebert, D.A., Simpfendorfer, C.A., Ralph, G.M., Dulvy, N.K. 2017. The conservation status of sharks, rays, and chimaeras in the Arabian sea and adjacent waters. Environment Agency—Abu Dhabi, UAE and IUCN Species Survival Commission Shark Specialist Group. Vancouver, Canada. 236pp.

Jabado, R.W. 2018. The fate of the most threatened order of elasmobranchs: shark-like batoids (Rhinopristiformes) in the Arabian Sea and adjacent waters. Fisheries Research 204 (2018) 448-457.

Jabado, R.W., Kyne,P. M., Pollom, R. A., Ebert, D. A., Simpfendorfer, C. A., Ralph, G.M., & Dulvy, N.K. (eds.) 2017. The Conservation Status of Sharks, Rays, and Chimaeras in the Arabian Sea and Adjacent Waters. Environment Agency – Abu Dhabi, UAE and IUCN Species Survival Commission Shark Specialist Group, Vancouver, Canada 236 pp

Jabado, R.W., Spaet, J.L.Y., 2017. Elasmobranch fisheries in the Arabian Seas region: Characteristics, trade and management. Fish and Fisheries. 18, 1096-1118.

Kyne P.M. and Bennett M.B. (2002) Reproductive biology of the eastern shovelnose ray, Aptychotrema rostrata (Shaw & Nodder, 1794), from Moreton Bay, Queensland, Australia. Marine and Freshwater Research 53, 583–589.

Last, P.R., Kyne, P.M., Comagno, L.J.V. 2016. A new species of wedgefish Rhynchobatus cooki (Rhinopristoformes, Rhinidae) from the Indo-West Pacific. Zootaxa 4139(2):233-247.

Last, P.R., White, W.T., & Seret, B. 2016. Rays of the World. CSIRO Publishing. Pp 65-76.

McAuley, R.B., Compagno, L.J.V. & Chin, A. 2016. Rhina ancylostoma. The IUCN Red List of Threatened Species 2016: e.T41848A68641634. http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T41848A68641634.en. Downloaded on 22 June 2018.

Moore, A. B.N. 2017. Are guitarfishes the next sawfishes? Extinction risk and an urgent call for conservation action. Endangered Species Research 34: 75-88.

Pierce, S. J., Trerup, M., Williams, C., Tilley, A., Marshall, A. D., Raba, N., 2008: Shark fishing in Mozambique: A preliminary assessment of artisanal fisheries. Eyes on the Horizon, Maputo

Schaeffer D, 2004.: Assessment of the artisanal shark fishery and local shark fin trade on Unguja Island, Zanzibar. Independent Study Project (ISP) Collection. Paper 536.

Van der elst, R.P., 1988, A Guide to the Common Sea Fishes of Southern Africa, 2nd ed. Cape Town; Stroik: 398 pp.

Vannuccini, S. 1999. Shark utilization, marketing and trade. FAO, Rome.

Wainwright, B.J., Ip, Y.C.A., Neo, M.L., Chang, J.J.M., Gan, C.Z., Clark-Shen, N., Huang, D. and Rao, M., 2018. DNA barcoding of traded shark fins, meat and mobulid gill plates in Singapore uncovers numerous threatened species. *Conservation Genetics*, *19*(6), pp.1393-1399. https://doi.org/10.1007/s10592-018-1108-1

White J, Simpfendorfer CA, Tobin AJ, Heupel MR, 2014a: Age and growth parameters of shark-like batoids. J Fish Biol 84:1340–1353

White, J., Simpfendorfer, C.A., Tobin, A.J. and Heupel, M.R., 2013. Application of baited remote underwater video surveys to quantify spatial distribution of elasmobranchs at an ecosystem scale. *Journal of Experimental Marine Biology and Ecology*, *448*, pp.281-288.

White, J., Simpfendorfer, C.A., Tobin, A.J. and Heupel, M.R., 2014. Spatial ecology of shark-like batoids in a large coastal embayment. *Environmental biology of fishes*, *97*(7), pp.773-786.

White, J., 2014. *The Ecology of Shark-like Batoids: Implications for Management in the Great Barrier Reef Region.* Doctoral dissertation, James Cook University.

White, W.T. and Dharmadi, 2007. Species and size compositions and reproductive biology of rays (Chondrichthyes, Batoidea) caught in target and non-target fisheries in eastern Indonesia. *Journal of Fish Biology*, *70*(6), pp.1809-1837.

White, W.T. and McAuley, R., 2003. SSG Australia & Oceania Regional Workshop, March 2003 - *Rhynchobatus australiae*. The IUCN Red List of Threatened Species 2003: e.T41853A10580429

Zhou, S. and Griffiths, S.P., 2008. Sustainability Assessment for Fishing Effects (SAFE): A new quantitative ecological risk assessment method and its application to elasmobranch bycatch in an Australian trawl fishery. *Fisheries Research*, *91*(1), pp.56-68.