Non-Detriment Finding (NDF) of all Rhino Ray species in Bangladesh

Bangladesh Forest Department
Ministry of Environment, Forest and Climate Change

Non-Detriment Finding:

This Non-Detriment Finding (NDF) was prepared at two workshops held in Chattogram and Dhaka in February 2022. It is based on the guidance developed by Mundy-Taylor et al. (2014)[1] and was compiled by the Bangladesh Forest Department (BFD), as the designated CITES Management Authority, in consultation with the Department of Fisheries (DoF), the Bangladesh Fisheries Research Institute, and Fisheries experts from national public universities and the Wildlife Conservation Society (WCS).

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[1] Mundy-Taylor, V., Crook, V., Foster, S., Fowler, S., Sant, G., and Rice, J. 2014. CITES Non-detriment findings guidance for shark species. 2nd, revised version. A framework to assist Authorities in making Non-detriment Findings (NDFs) for species listed in CITES Appendix II. Report prepared for the Germany Federal Agency for Nature Conservation (Bundesamt fur Naturschutz, BfN).

Available at https://cites.org/eng/prog/shark/Information_resources_from_Parties_and_other_stakeholders.

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Summary of Non-Detriment Finding of Rhino rays species in Bangladesh

All rhino rays are protected under Schedule I of the Bangladesh Wildlife (Conservation and Security) Act, 2012. Sharpnose guitarfish, Widenose guitarfish, Giant guitarfish, Clubnose guitarfish, Bowmouth guitarfish, Bottlenose wedgefish, Smoothnose wedgefish are listed under CITES Appendix II. Additionally, all other nationally identified rhino ray species (non-CITES-listed) are considered in the NDF (including the newly described species from Bangladesh) due to their similar threats and concerns, as they would benefit from the same management recommendations. This would also support the implementation of any resulting recommendation actions.

The shallow, inshore soft-bottom habitat preferred by the rhino rays is threatened by habitat loss and environmental degradation. In addition to the estimated 30% reduction in mangrove area since 1980 throughout Southeast Asia, in in mangrove and nearshore coastal ecosystems in Bangladesh there are additional threats associated with changes in freshwater flows that may impact certain stages of their life cycles.

All species are characterized by a life-history of slow growth, late maturity, and low fecundity, making them extremely susceptible to population decline from overexploitation. Compounding their biological vulnerability, residing in nearshore coastal habitats makes them extremely vulnerable to being caught in multiple-gear nearshore fisheries. Their flattened body is perfectly adapted for life on the seabed, either swimming close to the bottom or resting and lying concealed within the sediments.

Rhino rays are highly valued in Bangladesh and international trade. Available information from Bangladesh show that rhino rays are targeted by artisanal fishers with unbaited bottom-set longlines, and retained as bycatch in other fisheries. Their fins (even of extremely small specimens) are very highly valued in the export market.

This species group was recently (September 2021) listed under Schedule I of the Wildlife (Conservation and Security) Act, 2012. Capture, landing, and trade of all rhino rays is therefore strictly prohibited in Bangladesh. Additional time is needed to determine the level of compliance.

The fins of guitarfish and wedgefish are among the most valued in the global fin trade. Wedgefishes form a major part of the global fin trade, making Rhinidae among the 20 most frequently traded elasmobranch families. This profitable and largely unregulated trade has driven population declines of up to 86% in some areas over a period of only 5 years.

A Negative NDF was recommended because specimens of rhino rays cannot be legally obtained due to the listing under Schedule I of the Bangladesh Wildlife (Conservation and Security) Act, 2012. This NDF, also valid for non-CITES rhino ray species, will also be valid until the changes are made to their listing under the Wildlife Act.

Mitigation measures and recommendations to improve the conservation status of this species at a national and regional level include:

- Prioritise rhino rays in national data collection initiatives.
- Provide support to existing national and regional initiatives (e.g., encouraging and supporting population stock assessments for rhino rays rays at the IOTC), including providing rhino rays tissue samples for Indian Ocean population genetic studies.
- Strengthening enforcement of existing fishery management regulations, including gear restrictions, marine protected area regulations, and legal operating depths for trawl fisheries, through systematically planned and recorded interagency patrols (e.g. SMART patrols),
- Train fishers on best handling and release practices for protected species, improve the skills of fishers, traders and relevant marine fishers associations, government officers, customs, and individuals in observer and landing survey programmes to identify rhino rays.
- Support research aiming to -
    - Identify feasible measures to avoid and reduce bycatch and post-release mortalities,
    - Monitor population through genetic studies in the Indian Ocean,
    - Conduct socio-economic studies on ray fisheries, trade, and alternative livelihoods, with a focus on rhino rays
    - Support investigations into key biological and ecological parameters, life-history, and behavioural traits, discard survival,
- Engage with the IOTC to advocate for better regulations, including the prohibition of FADs and developing regional NDFs to better address conservation concerns of shared stocks,
- Address shortcomings in Wildlife Act and align species protection and trade regulations in the Fisheries Rules.

Step 1: Preliminary Considerations

a) CITES Party	**BANGLADESH**
b) Management Authority (name, address, contact details)	Bangladesh Forest Department Ministry of Environment, Forests and Climate Change Telephone +880 (2) 818 17 37; Mobile +880 1712 195946 Fax +880 (2) 818 17 41 Websites http://www.bforest.gov.bd
c) Scientific Authority (name, address, contact details)	Scientific Committee of Wildlife Management in Bangladesh Bangladesh Forest Department, Ban Bhaban, Agargaon, Dhaka-1207 (Conservator of Forests, Wildlife Management and Nature Conservation Circle, Dhaka. Email: cf-wildlife@bforest.gov.bd; cfwildlifefd@gmail.com)

1.1a) Is the specimen subject to CITES controls?

a) Species	Sharpnose guitarfish, *Glaucostegus granulatus* : also locally known as 'Sorunak Pitambori/ Nangla'. FAO Code: RBR Widenose guitarfish, *Glaucostegus obtusus* : also locally known as 'Chyaptanak Pitambori/ Nangla'. FAO Code: RBM Giant guitarfish, *Glaucostegus typus*: also locally known as 'Boro Kudalnak Pitambori/ Nangla'. FAO Code: RBQ Clubnose guitarfish, *Glaucostegus thouin* : also locally known as 'Godanak Pitambori/ Nangla'. FAO Code: RBV Bowmouth guitarfish, *Rhina ancylostoma* : also locally known as 'Dhonukmukhi Pitambori/ Byang Hangor'. FAO Code: RRY Bottlenose wedgefish, *Rhynchobatus australiae* : also locally known as 'Botolnak Nangla/ Pitambori'. FAO Code: RCA Smoothnose wedgefish, *Rhynchobatus laevis* : also locally known as 'Mosrinnak Nangla/ Pitambori'. FAO Code: Unknown Additionally, all other nationally identified rhino ray species (non CITES-listed) are considered in this NDF (including the newly described species from Bangladesh) due to their similar threats and concerns, as they would benefit from the same management recommendations. This would also support the implementation of any resulting recommendation actions. **Sources:** BFD, 2021; https://www.fao.org/fishery/en/species/search?page=1&q=rhinobatidae&advanced=&filter=#search
b) Will species be exported?	CITES Appendix II
Comments/ Source(s) of information	BFD, 2021; https://cites.org/eng/app/appendices.php
c) In what form is the product?	Mixed
Comments/ Source(s) of information	Fins, skins, meat, and cartilage: Rhino rays are heavily utilized across their range for their derivatives. While little species-specific information is available, the following provides a generalized account of use and trade globally. The meat is a food source for many coastal communities in tropical countries where it is generally consumed locally, although it also enters the international trade in dried and salted form. The skin may be dried and traded internationally as a luxury leather product (Haque et al. 2018). The eggs of these shark-like rays are sometimes dried and consumed locally while the heads may also be dried and used as either fish meal or fertilizer, and the snout of giant guitarfishes are considered a delicacy in Singapore where they are steamed and the gelatinous filling consumed. **Sources:** BFD, 2021; Haque et al., 2021; Moore 2017, Jabado 2018; Haque et al. 2018

d) Is the fishery domestic or high seas, or both?	Domestic and artisanal
Is the fishery artisanal, large scale, or both?	Both
Comments/ Source(s) of information	Rhino rays are taken in Bangladesh as targeted fishery in unbaited longline and as bycatch in artisanal (gillnet , setbag net, longlines with baited hooks) and industrial (bottom trawling net) fisheries **Sources:** BFD, 2021; Haque et al., 2021.
f) Source of identification	Other
Comments/ Source(s) of information	Rhino rays are landed at the coastal landing sites of Bangladesh, which is where they are identified visually. However, these species are not recorded at a species level but are included as "other" species in national data collection (partly by BFDC). The Fish Inspection and Qaulity Control wing of the DoF also asssist in the validation of the species and provide approval for export to take place. There are no identification procedures in place at the point of export, however Customs may request identification support from the Department of Fisheries, BFRI, academia, or WCCU to confirm an export taking place.
How likely is the product to be correctly identified:	**UNLIKELY**
Question 1.1(a): Is the specimen subject to CITES controls?	**YES**

1.1b) From which stock will the specimen be taken/was the specimen taken?

a) Ocean Basin	Indian Ocean
Comments/ Source(s) of information	All rhino ray distribution are in Indo-west pacific region, except only the G. obtusus restricted to northern Indian Ocean. All the seven mentioned rhino rays distribution includes Bay of Bengal. There is limited information available on the stock structure of these species in the Indian Ocean. **Sources:** https://www.iucnredlist.org/
b) Is this a shared stock (i.e. occurring in more than one EEZ and/or the high seas)?	Yes
Comments/ Source(s) of information	Yes, based on the geographical distribution, all of the rhino rays have distribution across the Indian Ocean. Based on catch data and other scientific information, the range includes the Bangladesh EEZ and at least the neighbouring Indian Ocean littoral states, however due to lack of information it is uncertain how far a single population may extend. **Sources:** https://www.iucnredlist.org/
c) If the stock occurs in more than one EEZ, which other Parties share this stock? (If unknown, type "Unknown")	Yes
Comments/ Source(s) of information	Yes, based on the geographical distribution of these species, other Indian Ocean littoral states share the stock. **Sources:** https://www.iucnredlist.org/http://www.iotc.org/about-iotc/structure-commission
d) If a high seas stock, which other Parties fish this stock? (If unknown, type "Unknown")	Not a high seas stock
Comments/ Source(s) of information	https://www.iucnredlist.org/
e) Which, if any, RFB(s) cover(s) the range of this stock? (If unknown, type "Unknown")	With respect to the Indian Ocean region, the following may have some overlaps on the range of rhino rays: * Indian Ocean Tuna Commission (IOTC) - the focus of the IOTC is on neritic tuna and therefore, it is unlikely to extend into the range of rhino ray species, *Asia-Pacific Fishery Commission (APFIC), *The Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO),

	*the Regional Organization for the Conservation of the Environment in the Red Sea and Gulf of Aden (PERSGA), * Regional Commission for Fisheries (RECOFI), * South Indian Ocean Fisheries Agreement (SIOFA), and *Southwest Indian Ocean Fisheries Commission (SWIOFC).
Comments/ Source(s) of information	**Sources:** http://iotc.org http://www.apfic.org http://www.bobpigo.org https://www.ccsbt.org/ http://www.persga.org/ http://www.fao.org/fishery/rfb/ recofi/en http://www.fao.org/fishery/rfb/ siofa/en http://www.fao.org/fishery/rfb/ swiofc/en
f) Are all Parties listed above (which fish or share the stock concerned) members of the relevant RFB(s)?	Yes.
Source(s) of information	Most are CITES Parties and/or CMS, and some are also Signatories of the CMS Sharks MoU They are Members or Cooperating Non-Contracting Parties of IOTC. **Sources:** https://cites.org/eng/disc/parties/chronolo.php; http://www.cms.int/sharks/en/signatories-range-states
g) Are there geographical management gaps? If so, list in comments	Yes
Source(s) of information	Regional management: There is no regional management in place for rhino rays. International measures: The FAO IPOA-Sharks (International Plan of Action-Sharks) underscores the responsibilities of fishing to coastal states for sustaining shark populations, ensuring full utilisation of retained shark species and improving shark data collection and monitoring. The formally adopted FAO Port State Measures Agreement is an agreement to prevent, deter and eliminate Illegal, Unreported and Unregulated (IUU) fishing. This agreement requires that any inspections conducted on fishing vessels entering ports includes verification that all species exploited have been taken in compliance with international law, international conventions and measures of RFMOs.

	While not strictly geographical gaps, there are management gaps as a result of all rhino rays not being listed on CMS, and similarly the lack of guitarfishes (apart from giant guitarfishes) on CITES Appendix II. National measures in Bangladesh: All rhino rays are currently listed on Schedule I of the Bangladesh Wildlife (Conservation and Security) Act, 2012. However, while the Act lacks legal definitions for the respective schedules and guidance on penalties resulting from infractions, the listing on Schedule I is interpreted as full protection of the species. There is also a need to improve conformity between the Fisheries Acts and Rules and the Wildlife Act. **Sources:** WCS, 2021
h) Stock location/ distribution/ boundaries (attach a map)	Indo-west Pacific region or Northern Indian Ocean All rhino ray distribution are in Indo-west pacific region, except only the G. obtusus restricted to northern Indian Ocean. All the seven mentioned rhino rays distribution includes Bay of Bengal. There is limited information available on the stock structure of these species in the Indian Ocean. **Sources:** https://www.iucnredlist.org/
i) How reliable is the information on origin?	Very reliable
Comments/ Source(s) of information	
Question 1.1(b): Can origin and stock be *confidently* identified?	**YES**

1.2) Was (will) the specimen (be) legally obtained and is export allowed?

a) Strictly protected under wildlife legislation, a regional biodiversity Agreement, or (for a CMS Party) listed in CMS Appendix I?	Yes
Comments/ Source(s) of information	Strictly protected in the Bangladesh Wildlife (Conservation and Security) Act, 2012; placed in Schedule I which provides complete protection from exploitation, capturing, killing, trading, or displaying. Smooth hammerhead sharks are listed on CMS Appendix II; Bangladesh is a CMS Party since 2005. **Sources:** BFD, 2021; http://www.cms.int/en/page/appendix-i-ii-cms; http://www.cms.int/en/parties-range-states
b) Sourced from illegal fishing activities (e.g. in contravention of finning regulations, or where a TAC is zero or exceeded)?	Yes
Comments/ Source(s) of information	There are no TACs in place for sharks and rays in Bangladesh. While there is no finning prohibition in place, all of the sharks and rays captured are fully utilised and therefore landed whole. However, these species are fully protected since September 2021 (see above) and some are still being landed.
c) Taken from a no-take marine protected area or during a closed season?	No
Comments/ Source(s) of information	Bangladesh has two ban periods; 65 days (20 May to 23 July) for all marine fishing, and 22 days (depends on lunar months) for Hilsha management (this management impacts all fisheries). No take zones are recommended within the MPA, but mostly are in shallow areas and likely outside of the common habitat of smooth hammerhead sharks. **Sources:** DoF. 2021. Bangladesh Marine Fisheries Management Plan: Part I- Industrial. Department of Fisheries, Ministry of Fisheries and Livestock.
d) Taken in contravention of RFB recommendations, if any?	No
Comments/ Source(s) of information	Not in the Indian Ocean/IOTC.
e) Listed as a species whose export is prohibited?	Yes

Comments/ Source(s) of information	This species is listed on Schedule I of the Bangladesh Wildlife (Conservation and Security) Act, 2012 **Sources:** http://www.dpp.gov.bd/upload_file/gazettes/41222_60287.pdf
f) Of concern for any other reason?	No
Comments/ Source(s) of information	
Question 1.2: Were specimens legally obtained?	**NO**

1.3) What does the available management information tell us?

1.3a) Global information

a) Reported global catch	Rhino ray catches have increased over the period 2008–2017, with an average catch of 2,619 mt per year (Traffic, 2019). Capture production by species and groups of species (Guitarfishes, etc. nei) in mt, 2008–2017: 1,580; 2,274; 1,864; 1,926; 1,777; 2,516; 5,041; 5,089; 2,784; and 1,335 respectively; and 26,186 mt in total
Comments/ Source(s) of information	FAO (2019) FishStat
b) Species distribution	All rhino ray distribution are in Indo-west pacific region, except only the G. obtusus restricted to northern Indian Ocean. All the seven mentioned mobulid rays distribution includes Bay of Bengal. There is no information available on the stock structure of these species in the Indian Ocean.
Comments/ Source(s) of information	**Sources:** https://www.iucnredlist.org/
c) Known stocks/populations	No stock specific studies from the Indian Ocean region. Presumed to be a single stock.
Comments/ Source(s) of information	**Sources:** https://www.iucnredlist.org/
d) Main catching countries	The majority of catches in recent years were from the Indo-West Pacific, including India and Southeast Asia
Comments/ Source(s) of information	**Sources:** Stobutzki et al. 2006, Mohamed and Veena 2016; BFD, 2021; FAO fishstat.
e) Main gear types by which the species is taken	Rhino rays ~~are taken~~ in Bangladesh as targeted fishery in unbaited longline and as bycatch in artisanal (gillnet, setbag net, longlines with baited hooks) and industrial (bottom trawling net) fisheries
Comments/ Source(s) of information	BFD, 2021; Haque et al., 2021.
f) Global conservation status	Current global IUCN Status: *G. granulatus*: Critically Endangered (2018) *G. obtusus*: Critically Endangered (2018) *G. typus*: Critically Endangered (2018) *G. thouin*: Critically Endangered (2018) *R. ancylostoma*: Critically Endangered (2018) *R. australiae*: Critically Endangered (2018) *R. laevis*: Critically Endangered (2018)

Comments/ Source(s) of information	**Sources:** https://www.iucnredlist.org/
g) Multilateral environmental agreements	Rhino rays are listed on CITES Appendix II. Annex 1 of the Memorandum of Understanding on the Conservation of Migratory Sharks (Sharks MOU) lists include *Rhynchobatus australiae* and *R. laevis* (however Bangladesh is not a CMS Sharks MoU Signatory)
Comments/ Source(s) of information	**Sources:** https://cites.org/eng/app/appendices.php; Convention on Migratory Species http://www.cms.int/en/species; http://www.cms.int/sharks/en/mos2

1.3b) Stock/context-specific information

a) Stock assessments	No stock assessments have been conducted for rhino rays. There are no current or historical estimates of the global abundance of the rhino rays, but it is inferred that the rhino rays has undergone a >80% population reduction over the last three generations (45 years) and it is assessed as Critically Endangered.
Comments/ Source(s) of information	**Sources:** https://www.iucnredlist.org/
b) Main management bodies	Bangladesh Forest Department, Department of Fisheries, Ministry of Fisheries and Livestock, Ministry of Environment, Forest and Climate Change; Scientific Committee. CITES, CMS, CBD, IOTC, and FAO – IPOA.
Comments/ Source(s) of information	
c) Cooperative management arrangements	The Regional Plan of Action for Sharks and Rays (developed by BOBP).
Comments/ Source(s) of information	
d) Non-membership of RFBs	None
Comments/ Source(s) of information	
e) Nature of harvest	Rhino rays are taken in Bangladesh as targeted fishery in unbaited longline and as bycatch in artisanal (gillnet , setbag net, longlines with baited hooks) and industrial (bottom trawling net) fisheries.
Comments/ Source(s) of information	BFD, 2021; Haque et al., 2021).
f) Fishery types	Traditional/artisanal, small scale to commercial, and some industrial; caught in variety of gears.
Comments/ Source(s) of information	**Sources:** BFD 2021
g) Management units	Bangladesh Forest Department (Bangladesh Wildlife (Conservation and Security) Act, 2012), Department of Fisheries, Ministry of Fisheries and Livestock, Ministry of Environment, Forest and Climate Change; Scientific Committee.
Comments/ Source(s) of information	

h) Products in trade	Fresh and dried whole fish, fins, meat, skin, cartilage, liver oil, jaws. According to official records, Bangladesh exported between zero and nearly one thousand metric tons of dried shark fins (all species combined) annually between 1990 - 2010, almost none between 2011-2018, and then over 2,000 metric tons in 2018/2019 Wedgefish fins are considered amongst the best quality and highest value in the shark fin trade and are increasingly being found fetching high prices on markets in Hong Kong SAR and Singapore
Comments/ Source(s) of information	DoF 2006, 2010, 2017, 2018 and 2019; Dent and Clarke, 2015; Wainwright et al., 2018; Fields et al., 2017.

1.3c) Data and data sharing

a) Reported national catch(es)	Bangladesh ranked among the top twenty shark fin exporting countries according to 2000-2011 FAO trade data, but the country was not among the top twenty shark catching nations. Official statistics report gradual declines in shark and ray landings from 6,234 metric tons of in 2001-2002 to 3,373 metric tons in 2019-2020. WCS recorded rhino ray catches (36.1 tonnes; 3,289 individuals: *G. granulatus*, 5.1 t; *G. typus*, 1.1 t; *G. obtusus*, 0.3 t; *R. ancylostoma*, 0.1 t; and other unidentified Glaucostegus sp., 29.4 t) at landing sites in the coastal areas of Bangladesh between Dec 2016 and Jan 2019 (BFD, 2021). BFRI have also recorded rhino rays at 8 landing sites in Bangladesh between 2012 and 2013: sharpnose guitarfish (48.3 tonnes; 4.6% of total shark and ray catch), with a mean length of 96.4 cm and a mean weight of 8.5 kg; the whitespotted guitarfish (23.2 tonnes; 2.2% of total shark and ray catch), with mean length of 112.0 cm and a mean weight of 5.5 kg
Comments/ Source(s) of information	BFD, 2021; DoF, 2018 and 2019; Barua, 2020; Hoq, 2014.
b) Are catch and/or trade data available from other States fishing this stock?	Indo-west Pacific region and Northern Indian Ocean countries catch this group of species. However, data is limited largely due to aggregation with other sharks and rays. Fishing pressure has mostly been increasing in recent decades, particularly in Mauritania, Senegal, Madagascar, India, and the Red Sea. Rhino Rays are specifi cally targeted in Africa, India, and the Indo-Malay Archipelago. Guitarfishes have accounted for substantial proportions of the coastal fi sheries catch of many countries, including Sierra Leone, Guinea-Bissau, Turkey, and Kuwait. FAO reports 5000t of “Guitarfish” landed globally in 2014; this is likely an underestimate given general under-reporting and misidentification of ray and shark species
Comments/ Source(s) of information	
c) Reported catches by other States	Rhino ray catch and/or trade data from other states is unavailable.Five contemporary datasets are available for landings data or catch rates at varying levels of taxonomic resolution (e.g. 'guitarfishes' etc.) from Iran, Pakistan, western and eastern India, and Indonesia. These datasets likely include various species of giant guitarfishes and in each case probable species are listed. However, this can be used to infer declines in guitarfishes given overlapping distributions, habitat, and susceptibility to capture in the same fishing gear. Total global catch of giant guitarfish species is largely unknown often due to misidentification and limited research effort, and this same lack of data and effort has resulted in equally limited management for the species. Ranging from the Mediterranean to the Indian Ocean, giant guitarfish populations are suspected to have declined up to 50% in some

	regions. However, most are suffering population loss ranging from 80% to localized extinctions. In Senegal, landings have dropped by 80% in 7 years-- from 4,050 tons in 1998 to 821 tons in 2005, indicating a similarly severe drop in the population of these species in the wild. Given the data that is available, it is clear that range states cannot wait any longer to put in place management for these slow growing but highly valued species in the international trade (https://citessharks.org/giant-guitarfish).
Comments/ Source(s) of information	
d) Catch trends and values	There are no current or historical estimates of the global abundance of the rhino rays, but it is inferred that the rhino rays has undergone a >80% population reduction over the last three generations (45 years) and it is assessed as Critically Endangered.
Comments/ Source(s) of information	https://www.iucnredlist.org
e) Have RFBs and/or other States fishing this stock been consulted during or contributed data during this process?	No, but this NDF will be made public in order to enable other range states to make informed decisions for the management of the stock as a whole for the Indian Ocean**.**
Comments/ Source(s) of information	https://cites.org/eng/prog/shark/resource_Parties_stakeholders#NDFs%20and%20NDF%20guidance

Step 2: Biological and conservation concerns

2.1) What is the level of intrinsic biological vulnerability of the species?

a) Median age at maturity	5-15 years
Comments/Source(s) of information	*G. granulatus*: Unknown *G. obtusus*: Unknown *G. typus:* Age at maturity is estimated at 6–8 years for males and females *G. thouin*: Unknown *R. ancylostoma*: Unknown *R. australiae*: Unknown *R. laevis*: Unknown
b) Median size at maturity	40-200 cm TL
Comments/Source(s) of information	*G. granulatus*: Unknown *G. obtusus*: males mature at ~48 cm TL *G. typus*: males and females mature at 150–180 cm TL *G. thouin*: Unknown *R. ancylostoma*: males mature at 150–175 cm TL; females at ~180 cm TL *R. australiae*: males mature at 110-130 cm TL; females mature at ~155 cm TL *R. laevis*: males mature at ~130 cm TL
c) Maximum age/longevity in an unfished population	10-25 years
Comments/Source(s) of information	*G. granulatus:* 15 years *G. obtusus*: 10 years *G. typus*: 15 years *G. thouin*: 15 years *R. ancylostoma*: 15 years *R. australiae*: 15 years *R. laevis*: 15 years Gestation periods are estimated (from other rhino ray species) at around 1 year. **Sources:** https://www.iucnredlist.org/species/pdf/124421912/attachment
d) Maximum size	100-300 cm TL
Comments/Source(s) of information	*G. granulatus*: 229 cm TL. WCS unpublished data shows length range is 65.5 - 264.2 cm TL from 8 coastal landing sites of Bangladesh.

	G. obtusus: 93 cm TL. WCS unpublished data shows length range is 63.5 - 99.7 cm TL from 8 coastal landing sites of Bangladesh. *G. typus*: 270 cm TL. WCS unpublished data shows length range is 48 - 260 cm TL from 8 coastal landing sites of Bangladesh. *G. thouin*: 300 cm TL. Length data from Bangladesh is unavailable. *R. ancylostoma*: 270 cm TL. WCS unpublished data shows length range is 66 - 165.1 cm TL from 8 coastal landing sites of Bangladesh. *R. australiae*: 300 cm TL. Length data from Bangladesh is unavailable *R. laevis:* 200 cm TL. Length data from Bangladesh is unavailable. Data from BFRI: Whitespotted (identification to be confirmed): lengths 61.0 to 111.0 cm (n = 481) Sharpnose guitarfish: lengths 36.0 to 104.0 cm (n = 419) Glaucostegus younholeei: 73.0 to 93.3 cm (n = 13) (Habib and Islam, 2021) **Sources:** https://www.iucnredlist.org/
e) Natural mortality rate (M)	Unknown
Comments/Source(s) of information	Unknown
f) Maximum annual pup production (per mature female)	2-15
Comments/Source(s) of information	*G. granulatus*: litter size is 6–18 pups *G. obtusus*: litter size is of 4–10 pups *R. ancylostoma*: litter sizes of 2–11 pups *R. australiae*: litter size is 7-19 pups (mean of 14) *R. laevis*: small litter sizes Gestation period of ~12 months.
g) Intrinsic rate of population increase (r)	under 0.15
Comments/Source(s) of information	Wedgefishes and giant guitarfishes have the biological capacity to recover relatively quickly from population declines, if fishing mortality is substantially reduced. These rates of recovery would be faster than for most other CITES listed shark or ray species. Rhynchobatus australiae and G. cemiculus have higher than average maximum intrinsic rates of population increase, while G. typus has an average maximum intrinsic rate of population increase, compared to other chondrichthyans examined. Estimates of median rmax varied from -0.04 to 0.60 year-1 32 among the nine species from the four families of rhinopristiforms. Sources:

	Brooke et al., 2019; Available at: https://www.biorxiv.org/content/10.1101/584557v2.
h) Geographic distribution of stock	Regional, partially restricted, fairly fragmented
Comments/Source(s) of information	There is limited information available on the stock structure of these species in the Indian Ocean. All rhino ray distribution are in Indo-west pacific region, except only the G. obtusus restricted to northern Indian Ocean.
i) Current stock size relative to historic abundance	25-50% baseline abundance
Comments/Source(s) of information	There are no current or historical estimates of the global abundance of the rhino rays, but it is inferred that the rhino rays has undergone a >80% population reduction over the last three generations (45 years) and it is assessed as Critically Endangered In Bangladesh, bottom trawling has reduced since 2015. Additionally, trawlers are prohibited from fishing in depths less than 40 m.
j) Behavioural factors	High level of risk incurred through behavioral factors
Comments/Source(s) of information	The shallow, inshore soft-bottom habitat preferred by the rhino rays is threatened by habitat loss and environmental degradation (Stobutzki et al. 2006, White and Sommerville 2010, Moore et al. 2012, Jabado et al. 2017, Moore 2017), while in Southeast Asia has seen an estimated 30% reduction in mangrove area since 1980 (FAO 2007, Polidoro et al. 2010). In Bangladesh there are additional threats associated to freshwater flows in mangrove and nearshore coastal ecosystems that may impact certain stages of their life cycles. Wedgefish and guitarfish species are slow growing, late to reach reproductive maturity and when they do mature, they produce very few young. Compounding their biological vulnerability, wedgefish species reside in coastal habitats, which makes them easier to catch from shore as well as being extremely vulnerable to multiple gear types. Their flattened body is perfectly adapted for life on the seabed, either swimming close to the bottom or resting and lying concealed within the sediments. All species are characterized by a life-history of slow growth, late maturity, and low fecundity, making them extremely susceptible to population decline from overexploitation **Sources:** (https://citessharks.org/wedgefishes, https://citessharks.org/giant-guitarfish, https://www.iucnredlist.org/).
k) Trophic level	Low
Comments/Source(s) of information	*G. granulatus*: 3.5±0.37 se; based on food items *G. obtusus*: 3.5±0.5 se; based on size and trophs of closest relatives *G. typus*: 3.6 ±0.50 se; based on food items. *G. thouin*: 3.5 ±0.37 se; based on food items. *R. ancylostoma*: 3.6 ±0.50 se; based on food items. *R. australiae*: 3.5 ±0.50 se; based on food items. *R. laevis*: 3.6 ±0.6 se; based on size and trophs of closest relatives. BFRI data for all sharks and rays: 3.45 (published data)
Overall biological vulnerability:	**MEDIUM LEVEL OF CONCERN**

2.2) What is the severity and geographic extent of the conservation concern?

Conservation or stock assessment status:

Has a Fisheries stock assessment been conducted?	No
Comments/Source(s) of information	Stock assessments for other fisheries species have been conducted in Bangladesh but are yet to be undertaken for any shark or ray species. No regional stock assessments are available for these species.
Has a National Redlist Assessment been conducted?	No
Comments/Source(s) of information	
What is the Regional IUCN Redlist Assessment?	The species, population, or stock has not been assessed (NE or equivalent)
Comments/Source(s) of information	
What is the Global IUCN Redlist Assessment?	The species, population, or stock has been assessed and is seriously threatened (CR, EN)
Comments/Source(s) of information	Current global IUCN Status: *G. granulatus*: Critically Endangered (2018) *G. obtusus*: Critically Endangered (2018) *G. typus*: Critically Endangered (2018) *G. thouin*: Critically Endangered (2018) *R. ancylostoma*: Critically Endangered (2018) *R. australiae*: Critically Endangered (2018) *R. laevis*: Critically Endangered (2018) **Sources:** https://www.iucnredlist.org/
What are the population trends?	The population trend is stable or increasing, but stock is below 20% of historic baseline
Comments/Source(s) of information	There are no current or historical estimates of the global abundance of the rhino rays, but it is inferred that the rhino rays has undergone a >80% population reduction over the last three generations (45 years) and it is assessed as Critically Endangered.
What is the geographic extent/scope of conservation concern?	Identified threats affect the entire global population of the species
Comments/Source(s) of information	The species are affected by fisheries throughout most of their global range. In the Indian Ocean, the few exceptions or refuges are in the Maldives and Chagos MPA, while nationally in Bangladesh it would be in the SONG MPA.
Overall geographic conservation concern:	**HIGH LEVEL OF CONCERN**

Step 3: Pressure on the Species

3.1) What is the severity of trade pressure on the stock of the species concerned?

a (i) Magnitude of legal trade	High
ii) What is the level of confidence in the answer?	High
Comments/Source(s) of information	Available landings data for rhino rays in Bangladesh indicate these species are targetted by Bangladesh vessels and their fins (even of extremely small specimens), is considered very valuable. This species was recently included (in September 2021) under Schedule I of the Wildlife Act and is therefore prohibited from being captured, landed, or traded. Additional time is needed to determine level of compliance. Wedgefishes form a part of the global fin trade, making Rhinidae among the 20 most frequently traded elasmobranch families. This profitable and largely unregulated trade has driven population declines up to 86% in some areas over a period of only 5 years. The fins of guitarfish and wedgefish are among the most valued in the global fin trade. Sources: http://www.iucnredlist.org
b (i) Magnitude of illegal trade	High
ii) What is the level of confidence in the answer?	High
Comments/Source(s) of information	Trade of all shark and ray products is considerably higher than the volume of documented trade based on the import statistics provided by other countries (e.g., Hong Kong). In Bangladesh, the trade of Rhino ray species is prohibited. However, no species-specific information is available on trade from Bangladesh and products such as fins and fish maw are combined in trade reporting. There is a lack of traceability for sharks and rays in Bangladesh. There is a lot of information available on potential illegal trade of shark fins, meat, and skins that are exported to Myanmar for re-export to Singapore, Hong Kong, China, and USA (Roy et al. 2007). Roy et al. (2015) estimated that only 10-20% of this trade follows proper legal procedures. According to information from an international media survey and interviews with shark traders in Bangladesh shark fins are transported by boat from Chattogram and Cox's Bazar to Myanmar and then on to Yangon and China (WCS 2018). The majority of the dried ray meat is exported to Myanmar along with other elasmobranch products. Some products (fresh and dried) are also transported by truck or bus from Chattogram or Cox's Bazar to Khagrachari, Dhaka, Rangpur and Rajshahi (Haque et al. 2020).

	According to the traders, the rhino ray fins are one of the most desirable of all elasmobranch products, depending on the size of the fins. The weight (kg) of rhino rays bought by traders depended on the traders' financial capacity. It ranged from 13,691 to 21,788 kg in Cox's Bazar (n = 13), 4,707–33,089 kg in Chattogram (n = 9), 13,060–32,760 kg in St. Martin's (n = 5, mostly operating from Teknaf) and 13,060–32,760 kg in Teknaf (n = 3, 9,013–27,200 kg) per trader. On average, more than 23,000 kg of rhino rays were bought annually from the landing sites per trader between 2015 and 2018. The amount was almost similar in the last twenty years except in 2005–2010 (Haque et al, 2021).
Overall trade pressure:	**HIGH**
Overall level of confidence:	**HIGH**

3.2) What is the severity of fishing pressure on the stock of the species concerned?

a (i) Fishing mortality (retained catch)	**High**
ii) What is the level of confidence in the answer?	**High**
Comments/Source(s) of information	Discards of rhino rays in Bangladesh waters is unlikely. Any sharks and rays captured are retained and fully utilised. About 68,000 vessels (~12,000 are longliners) are operating in the Bangladesh EEZ, however they do not all engage in shark and ray fishing. The prohibition on capturing rhino rays in Bangladesh was introduced in September 2021 and therefore it is too early to tell whether it is being implemented and complied with. However, rhino rays are a targeted species in Bangladesh. The situation is similar for most other fisheries in the region where there is virtually no discard of rhino rays and therefore, fisheries mortality is likely ~100% for most of this stock. There are no current or historical estimates of the global abundance of the rhino rays, but it is inferred that the rhino rays has undergone a >80% population reduction over the last three generations (45 years) and it is assessed as Critically Endangered (https://www.iucnredlist.org/). In Pakistan, data on guitarfishes show sharp reductions in just one generation – from over 2,018 metric tons landed in the year 2000 to 403 metric tons in the year 2011 (https://citessharks.org/wedgefishes). While the population in Pakistan may differ to the one in the Bay of Bengal, it is an indicator of the type and level of fisheries occuring in the Northern Indian Ocean.
b (i) Discard mortality	**Low**
ii) What is the level of confidence in the answer?	**High**
Comments/Source(s) of information	Discards of rhino rays in Bangladesh waters is unlikely (complete utilisation). This is similar for many other Indian Ocean fishing nations. There is no specific information available on the post-release survival from gillnet, longline, or other forms of artisanal fisheries. However, many of these species are documented alive at landing sites indicating their resilience to handling in fisheries and therefore indicating that their survival post-release may be quite positive. Additionally, in Bangladesh, many fishers have a specific tool (spear/harpoon) to immobilise rhino rays, which is an indicator of their mobility despite being captured and hauled onboard a vessel.

c (i) Size/age/sex selectivity	**Medium**
ii) What is the level of confidence in the answer?	**High**
Comments/Source(s) of information	There is limited data available from Bangladesh. Data from WCS of 3,289 rhino ray specimens, recorded size ranges were 65.5 - 264.2 cm TL for G. granulatus, 63.5 - 99.7 cm TL for G. obtusus, 48 - 260 cm TL for G. typus, 66 - 165.1 cm TL for R. ancylostoma. Total survey effort was just under 3,000 surveys from 8 landing sites from 2016 to 2019. Even the smallest specimens are retained and dried for medicinal purposes. There is a targeted (or selective fishing) for this species in Bangladesh and across most other Indian Ocean countries they are largely captured incidentally across multiple fishing gears. The shallow, inshore soft-bottom habitat preferred by the rhino rays is threatened by habitat loss and environmental degradation (. while in Southeast Asia has seen an estimated 30% reduction in mangrove area since 1980. The species' preference for coastal waters places it within the range of inshore fisheries, which are known to be intensive in many parts of its range, including Pakistan, India, Bangladesh, and elsewhere. Sources: Stobutzki et al. 2006, White and Sommerville 2010, Moore et al. 2012, Jabado et al. 2017, Moore 2017) (FAO 2007, Polidoro et al. 2010) https://www.iucnredlist.org/).
d (i) Magnitude of illegal, unreported and unregulated (IUU) fishing	**High**
ii) What is the level of confidence in the answer?	**Medium**
Comments/Source(s) of information	Information about this factor is limited. In Bangladesh there are some reports of IUU fishing, for example the use of illegal nets, most artisanal vessels are lacking fishing permits, mechanised boats are lacking licenses and are using unauthorised vessels, and (trawlers and marine setbag netters) are violating the depth ranges of their permits. There is also a poor documentation of catches, particularly at a species level. Additionally, the trade chain is not transparent. Since September 2021, all rhino rays are a prohibited species in the Bangladesh EEZ, however it is too

	early to determine compliance with this measure. Across the Indian Ocean there are other reports of IUU fisheries, such as infringing on fishing grounds of neighbouring countries or potentially by international fleets operating illegally in other EEZs. However, data of shark and ray captures from such IUU fisheries are not available.
Overall severity of fishing mortality:	MEDIUM
Overall level of confidence:	HIGH

Step 4: Existing Management Measures

4.1) Are existing management measures apprpriately designed and implemented to mitigate pressures affecting the stock?

Pressure - Magnitude of Legal Trade	
Existing management measure	**CITES**
Is it a Sub-national/National, or Regional/International measure?	Regional/National/International
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance (MSC) measure(s)	Regulates international trade and mandates adoption of national legislation to improve the management of threatened wildlife, including sharks and rays. The BFD issues CITES exports permits. Customs coordinates with the BFD to verify the certification and product prior to export of CITES-listed species.
Overall assessment of compliance regime	Poor (limited relevant compliance measures in place)
Are relevant data collected and analysed to inform management decisions?	Limited relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective at addressing the pressure?	Partially

Pressure - Magnitude of Legal Trade	
Existing management measure	**Fish Inspection and Quality Control Act of 2020.**
Is it a Sub-national/National, or Regional/International measure?	Sub-national/National
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance (MSC) measure(s)	This Act deals with the exports and quality of export products. Deputy Director of Fish Inspection and Quality Control of the DoF provides clearance and certificate for export, following inspections by Fisheries inspectors, for all fish species (there is no particular control on CITES-listed species). It is fully compliant with respect to its current requirements, however there are no measures to regulate CITES or Wildlife Act products.
Overall assessment of compliance regime	Good (comprehensive relevant compliance measures in place)
Are relevant data collected and analysed to inform management decisions?	Comprehensive data collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective at addressing the pressure?	Partially

Pressure - Magnitude of Illegal Trade	
Existing management measure	**Bangladesh Wildlife (Conservation and Security) Act, 2012**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Both
Relevant monitoring, control, and surveillance(MSC) measure(s)	Eight genera and 23 species of sharks and rays under Schedule I and one genus and 29 species under Schedule II. Species listed in Schedule I and Schedule II of the Wildlife (Conservation and Security) Act, 2012 are protected animals, and require license and/or permit from BFD for commercial farming, capturing, collection, possession, production, rearing, import-export or hunting. Compliance is unknown as the list of sharks and rays was amended in September 2021; however, some prosecutions have taken place over the last few months. Wildlife Crime Control unit provides monitoring, predominantly at the point of landing but also at international ports. However, their capacity (manpower and resources) is limited. The Coastal Forest Divisions and the Wildlife Management and Nature Conservation Divisions also provide monitoring at the landing sites.
Overall assessment of compliance regime	Moderate (some relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Limited relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Expert advice partially implemented
Is the management measure effective ataddressing the pressure?	Insufficient information

Pressure - Fishing mortality (retained catch)	
Existing management measure	**Bangladesh Wildlife (Conservation and Security) Act, 2012**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Both
Relevant monitoring, control, and surveillance(MSC) measure(s)	Species listed in Schedule I and Schedule II of the Wildlife (Conservation and Security) Act, 2012 are protected animals, and require license and/or permit from BFD for commercial farming, capturing, collection, possession, production, rearing, import-export or hunting. At present, most MSC is conducted only at the point of landing. Some limited control and surveillance are conducted by BFD with support from the Navy and Coast Guard (some onboard inspections but mostly over radio). At present compliance is low for sharks and rays; however, the measure is very new (since September 2021).
Overall assessment of compliance regime	Moderate (some relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Limited relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective ataddressing the pressure?	Insufficient information

Pressure - Fishing mortality (retained catch)	
Existing management measure	**CMS**
Is it a Sub-national/National, orRegional/International measure?	Regional/International
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance(MSC) measure(s)	Listing of Rhynchobatus australiae on Appendix II of CMS in 2020. Others are not listed in the list. CMS Appendix I and II species have been included in the national Wildlife Act under Schedule 1. However, as these measures were introduced in September 2021, it is too early to determine level of compliance.
Overall assessment of compliance regime	Moderate (some relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Limited relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective ataddressing the pressure?	Insufficient Information

Pressure - Fishing mortality (retained catch)	
Existing management measure	**Bangladesh Biodiversity Act 2017**
Is it a Sub-national/National, orRegional/International measure?	Sub-National/National
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance(MSC) measure(s)	At present, the agency for the monitoring and control of this Act is not designated.
Overall assessment of compliance regime	Poor (limited relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	No data OR data are of poor quality OR data are not analysed (adequately) to inform management
Is management consistent with expert advice?	Expert advice partially implemented
Is the management measure effective ataddressing the pressure?	Insufficient information

Pressure - Fishing mortality (retained catch)	
Existing management measure	**ECA: ecological critical areas, 2010.**
Is it a Sub-national/National, orRegional/International measure?	Regional/International
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance(MSC) measure(s)	At present there are 13 areas designated in Bangladesh. Out of the 13 areas, 4 encompass marine areas. Monitoring and control is conducted by the Department of Environment and the BFD. This is a tool that could be used to positively impact threatened marine species.
Overall assessment of compliance regime	Poor (limited relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	No data OR data are of poor quality OR data are not analysed (adequately) to inform management
Is management consistent with expert advice?	Expert advice partially implemented
Is the management measure effective ataddressing the pressure?	Insufficient Information

Pressure - Discard mortality	
Existing management measure	**Bangladesh Wildlife (Conservation and Security) Act, 2012**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Both
Relevant monitoring, control, and surveillance(MSC) measure(s)	No information available with regard to rhino rays. Until now, fishers have been encouraged to retain all catch (total utilisation of catch), however new awareness is being implemented by DoF and BFD emphasising that protected species must be released.
Overall assessment of compliance regime	Poor (limited relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Limited relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective ataddressing the pressure?	Insufficient information

Pressure - Magnitude of IUU fishing	
Existing management measure	**Wildlife (Conservation and Security) Act, 2012**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Both
Relevant monitoring, control, and surveillance(MSC) measure(s)	Species listed in Schedule I and Schedule II of the Wildlife (Conservation and Security) Act, 2012 are protected animals, and require license and/or permit from BFD for commercial farming, capturing, collection, possession, production, rearing, import-export or hunting. At present, most MSC is conducted only at the point of landing. Some limited control and surveillance are conducted by BFD with support from the Navy and Coast Guard (some onboard inspections but mostly over radio).
Overall assessment of compliance regime	Moderate (some relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Limited relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective ataddressing the pressure?	Insufficient information

Pressure - Magnitude of IUU fishing	
Existing management measure	**Marine Fisheries Rules, 1983**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance(MSC) measure(s)	Gear restriction (minimum mesh size, use of poison, and use of setbag net). DoF works with Navy and Coastguard for MSC at sea. DoF have also introduced VMS (since 2014), however it is not presently operational. With support from World Bank, a fisheries monitoring center is being developed (using AIS, GSM (for artisanal), and VMS). A joint monitoring center with Navy, Coastguard, and Customs other relevant agencies is being established. Monitoring (at sea and land) will also be improved through this project. A National Plan of Action for IUU has been prepared and approved (in 2021) by the Ministry of Fisheries and Livestock. A Marine Fisheries Management Plan has also been developed, which includes measures for IUU fishing. The PSMA has also been signed in 2020. There is also a licensing and permitting system in place to cover both industrial and artisanal fleets. It is mandatory to land all their catch at their declared landing site.
Overall assessment of compliance regime	Good (comprehensive relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Some relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective ataddressing the pressure?	Yes

Pressure - Magnitude of IUU fishing	
Existing management measure	**Protection and Conservation of Fish Act 1950 and Rules 1985**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance(MSC) measure(s)	Prohibits use of monofilament gillnet, regulates mesh size of all nets, and deployment depth restriction (up to 10 meters). Department monitoring and also joint enforcement with Coastguard, River Police, in collaboration with local administration. Combing operations are conducted in relation to illegal nets. A national, divisional, district,and sub-district committee was established (Task Force Committee) to control prohibited nets and illegal fishing in rivers and inland areas.
Overall assessment of compliance regime	Good (comprehensive relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Some relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective ataddressing the pressure?	Yes

Pressure - Magnitude of IUU fishing	
Existing management measure	**Territorial Waters and Maritime Zones Act 1974**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance(MSC) measure(s)	To prevent indiscriminate exploitation, depletion and destruction of marine resources. Mandate for implementation is under the Navy and the focus is primarily on incursions by foreign fishing vessels. Navy and Coastguard carry out patrolling.
Overall assessment of compliance regime	Moderate (some relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Limited relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Expert advice partially implemented
Is the management measure effective ataddressing the pressure?	Yes

Pressure - Magnitude of IUU fishing	
Existing management measure	**The Marine Fisheries Act 2020**
Is it a Sub-national/National, orRegional/International measure?	Sub National/National
Is the measure generic, species-specific or both?	Generic
Relevant monitoring, control, and surveillance(MSC) measure(s)	Gear restriction and monitoring marine protected area. Coastguard and Navy monitors illegal vessels within the MPA, and inform DoF about activitie
Overall assessment of compliance regime	Good (comprehensive relevant compliance measures in place)
Are relevant data collected and analysed toinform management decisions?	Some relevant data are collected AND analysed to inform management
Is management consistent with expert advice?	Consistent
Is the management measure effective ataddressing the pressure?	Yes

Step 5: Non-Detriment Finding and related advice

5.0	**Non-Detriment Finding and related advice**	
5.1	**Based on the outcomes of the previous sections, is it possible to make a positive NDF (with or without associated conditions)?**	
	STEP 1: Can/should an NDF be made?	
	Section 1.1(a): Is the specimen subject to CITES controls?	Yes
	Section 1.1(b): Can origin and stock be confidently identified?	Yes
	Section 1.2: Were specimens legally obtained?	No
	STEP 2: Intrinsic biological vulnerability and conservation concern	
	Section 2.1: Intrinsic biological vulnerability:	Medium level of vulnerability
	Section 2.2: Conservation concern:	High level of concern

	STEP 3: Pressure on species			STEP 4: Existing management measures
	Pressure	**Level of severity (Questions 3.1 and 3.2)**	**Level of confidence (Questions 3.1 and 3.2)**	**Are the management measures effective at addressing the concerns/ pressures/impacts identified?**
	Trade pressures:			
a)	Magnitude of legal trade	High level of risk	Medium level of confidence	Partially
b)	Magnitude of illegal trade	High level of risk	Medium level of confidence	No
	Fishing pressures:			
a)	Fishing mortality (retained catch)	High level of risk	High level of confidence	No
b)	Discard mortality	Low level of risk	High level of confidence	No
c)	Size/age/ sex selectivity	Medium level of risk	High level of confidence	No measures in place
d)	Magnitude of illegal, unreported and unregulated (IUU) fishing	High level of risk	Medium level of confidence	Yes

	Automated Recommendation: **0 to 2** - Not recommended **2.1 to 5** - Not recommended unless mitigation measures applied **5.1 to 8** - Possible with conditions **8.1 to 10** - Recommended	Negative NDF required since specimen is not subject to CITES controls AND/OR origin cannot be confidently identified AND/OR **specimen is not legally obtained**	Not recommended
	Based on the above information, can a positive NDF be made?	**No**	Go to Section 6
	Enter any reasoning/comments:		
	A Negative NDF is recommended because specimens of rhino rays cannot be legally obtained due to the listing under Schedule I of the Bangladesh Wildlife (Conservation and Security) Act, 2012. This NDF will also be valid for non-CITES listed rhino ray species.		
	NDF expiry (recommended validity: 1 or 2 years):	This NDF will remain valid until new or different information is available and this NDF is revised or updated. This Negative NDF outcome will remain in place unless the species is removed or moved to a different Schedule under the Bangladesh Wildlife (Conservation and Security) Act, 2012.	

Step 6: Recommendations

Recommendation	Population monitoring (fisheries-independent data)
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	Provide support to existing regional initiatives (e.g., encouraging and supporting population stock assessments for smooth hammerhead sharks at the IOTC), including providing smooth hammerhead shark tissue samples for Indian Ocean population genetic studies.
Potential lead agencies	DoF, BFRI, universities (national and international), and NGOs
Timeframe	Ongoing
Recommendation	**Fisheries monitoring (fisheries-dependent data)**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	Prioritise rhino rays rays in national data collection initiatives. This includes: a) improve the skills of fishers, traders and relevant marine fishers associations, government officers, customs, and individuals in observer and landing survey programmes to identify rhino rays rays. A priority for this species group would be to motivate fishers (particularly of the targeted longline fisheries) through training to safely release these species alive and record and report data from bycaught specimens (including locaton, gear type, size, sex, and maturity of catches and documenting (any) discards (condition on release)). b) harmonise data (specifically bycatch information) from different sources (e.g., data reported to the IOTC, FAO, CMS, and CITES). This includes revising current data collection systems (see below, under additional recommendations). Research:

	Support investigations into key biological/ecological parameters, life-history and behavioural traits, discard survival, and the identification of potential mating, pupping, and nursery grounds. Conduct socio-economic studies on shark fisheries, trade, and alternative livelihoods, with a focus on rhino rays rays. A current priority is to determine spatial distribution of rhino rays rays in Bangladesh waters and identify presence during critical life stages of their life history.
Potential lead agencies	DoF/BFD/BFRI/ universities (national and international)/ and NGOs
Deadline	Within 18 months
Recommendation	**Monitoring of domestic and international trade volumes and characteristics**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures,and other notes/comments	BFD to request Bangladesh Customs to introduce and mandate HS codes for all shark and ray products (separate codes for fins, meat, cartilage, skin etc.) to improve reporting, surveillence, and data collection on imports and exports. Rhino ray skin is of particular importance in the trade and are easy to identify from other shark or ray species. BFD and DoF to identify opportunities (with Bangladesh Customs) to designate particular ports of export/import for shark and ray (and other marine) products. This would ensure better monitoring of exports/imports while reducing the need to enhance identification capacity at all exit/entry points across the country. Ensure that the enforcement authorities are mandated to enforce the Wildlife Act and that awareness is generated on species listed on Schedules I and II. Awareness would be improved through providing posters of species on schedules for each of the exit/entry points. Awareness (posters and training events) would be provided to key shipping, courier services, traders (fisheries stakeholders, domestic traders and international exporters and importers, and domestic consumers), and law enforcement agencies on species protection laws (including CITES). FIQC (DoF) to prepare a methodology for the random sampling of shark and ray products for export in conjunction with Bangladesh Customs and BFD. Request training support from NGOs and international bodies (e.g., Interpol, CITES, World Customs Organisation, SAWEN) to identify how and where shark and ray products are being exported (this includes

	improved training in combatting illegal wildlife trade and sharing intelligence). Require all exporters and importers of shark and ray products to be registered with the DoF and to declare their exports/imports at a species level. Additionally, develop a risk index for exporters/importers to support screening upon receival of export/import permit requests, including black-listing and fining of companies/individuals that have multiple violations. Work with traders to identify potential alternatives in the rhino ray skin trade, such as enhancing the value of skins from non-threatened/non-protected (sustainable) rays.
Potential lead agencies	DoF, BFD, BFRI, universities (national and international), and NGOs
Deadline	Ongoing
Recommendation	**Export quotas**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	A zero export quota will be fixed as trade of this specimen is not permitted under Schedule I of the Wildlife Act. The CITES Secretariat will be formally informed of this zero quota and requested to inform all CITES Parties through a notification of this 0 export quota for rhino rays rays.
Potential lead agencies	BFD, MOC
Deadline	Ongoing
Recommendation	**Documentation schemes**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and	Documentation schemes have been addressed above.

other notes/comments	
Potential lead agencies	
Deadline	Ongoing
Recommendation	**Limited entry**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	At present there is a limit in place for the number of operating trawlers (current limits: 262 registered and 234 active vessels) based on the realisation that most stocks are overfished. There is no limit in place for artisanal fleets. Strengthen Monitoring, Control and Surveillance (MCS) of existing regulations, including spatial regulations surrounding the minimum operating depths for trawl fisheries.
Potential lead agencies	DoF, with implementation/inspection support provided by Navy and Coastguard
Deadline	Ongoing
Recommendation	**Fishing time restrictions**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	There is a seasonal closure of all fishing grounds implemented in Bangladesh (65 days in marine/coastal and 22 days for all water bodies). Additionally, steel trawlers are required to return to port within 30 days of depature, while wooden trawlers are required to return within 13-14 days.
Potential lead agencies	DoF, with implementation/inspection support provided by Navy and Coast Guard.
Deadline	Ongoing
Recommendation	**Fishing gear restrictions**
Is this recommendation applicable	Yes

Aims, objectives, implementation, relevantcompliance measures, and other notes/comments	At present there are prohibitions in place for monofilament gillnets, mesh sizes for gillnets and setbag nets and trawl nets, and there are depth restrictions for trawl fisheries and setbag nets. There is also a prohibition on bottom trawls for steel trawlers. Enforcement of these measures must be strengthened through more systematic, inter-agency patrols (where patrols are recorded and the information is used to plan following patrols - i.e., SMART patrols). Provide training and awareness to fishers on best handling and release practices for ETP (endangered, threatened, and protected) species (particularly undersized and/or gravid specimens), with a specific focus on species such as rhino rays that are anticipated to have high survival post release.
Potential lead agencies	DoF, with implementation/inspection support provided by Navy, Coastguard, and BFD. Technical support can be provided by NGOs and universities. The bycatch/post-release research would also include NGOs and universities.
Deadline	SMART/training awareness/change in hooks: implement within 12 months and then ongoing. Research: initiate within 6 months and complete within 36 months
Recommendation	**Permanent area closures**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	698 sq. km are currently closed. Expanding the SONG MPA will cover critical habitats for many sharks and rays (including rhino rays rays) and facilitate joint monitoring in all MPAs between DoF and BFD.
Potential lead agencies	DoF, BFD, with implementation/inspection support provided by Navy and Coast Guard.
Deadline	Within 24 months
Recommendation	**No-take MPAs**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and	See above

other notes/comments	
Deadline	Ongoing
Recommendation	**Total allowable catch**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	A total allowable catch of 0 is in place for rhino rays in Bangladesh.
Potential lead agencies	
Deadline	Ongoing
Recommendation	**Individual quota**
Is this recommendation applicable	No
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	Not applicable to Bangladesh
Recommendation	**Fishing trip limits**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	Already in place (steel trawlers 30 days and wooden trawlers 13-14 days).
Potential lead agencies	DoF
Deadline	Ongoing

Recommendation	Prohibited retention
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	Rhino rays rays are fully prohibited (Schedule I species).
Potential lead agencies	DoF, BFD
Deadline	Within 6 months
Recommendation	**Fish size limits**
Is this recommendation applicable	No
Recommendation	**Product form restrictions**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	All products will be prohibited. To improve surveillence and compliance, opportunities to designate species/product specific HS codes and also designating specific ports of entry/exit will be investigated.
Potential lead agencies	DoF,BFD
Deadline	Within 6 months
Recommendation	**Move-on provisions**
Is this recommendation applicable	No
Aims, objectives, implementation, relevant compliance measures, and	Not applicable to Bangladesh

other notes/comments	
Recommendation	**Bycatch reduction devices (BRDs)**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	As mentioned above, research is recommended to identify suitable bycatch mitigation options for rhino rays.
Potential lead agencies	BFRI, NGOs and universities
Deadline	Within 36 months
Recommendation	**Protection of breeding females**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, and other notes/comments	Increase awareness and implement best handling and release practices. Rhino rays are extremely resilient to fisheries handling and are expected to have very high levels of survival post release.
Potential lead agencies	DoF, BFD. Technical support by NGOs and universities.
Deadline	Within 12 months

Recommendation	**Participatory management**
Is this recommendationapplicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Improve participatory management through stakeholder consultations at a national level. Utilize community science (trained citizen scientists from fisher communities) for monitoring the impacts/effectiveness of fisheries management regulations

Potential lead agencies	DoF, BFD, and NGOs
Deadline	Within 12 months
Recommendation	**Revise Wildlife Act**
Is this recommendationapplicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Amend the Wildlife Act to: a) develop clear definitions for the species listed under Schedule I and II of the Wildlife Act. b) provide clarification on the fines and prosecutions for violations (i.e., capturing Schedule I species or trading Schedule II parts without a permit). Ensure and review that the fines and prosecutions deter illegal wildlife trade (however, determine that the fine targets the appropriate violator). c) provide the mandate to other enforcement authorities (including the DoF) to implement the Wildlife Act. d) enabling prosecution.
Potential lead agencies	BFD
Deadline	Within 24 months
Recommendation	**CMS Sharks MoU**
Is this recommendationapplicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Bangladesh to establish communications with the CMS Sharks MoU to identify opportunities to become a Signatory and obtain clarifications on potential obligations. The CMS Sharks MoU is a non-binding convention that provides recommendations on improving shark and ray management and could be a valuable source of knowledge and capacity building.
Potential lead agencies	BFD
Deadline	Within 6 months
Recommendation	**Precautionary finning prohibtion**
Is this recommendation applicable	Yes
Aims, objectives,	Introduce precautionary regulations to prohibit shark finning. Ensure that a clear definition for "sharks" is

implementation, relevant compliance measures, andother notes/comments	provided in the regulation to ensure that both rays and chimaeras are also included.
Potential lead agencies	DoF
Deadline	Within 12 months
Recommendation	**Onboard observer schemes**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Evaluate opportunities for crew based observer schemes in artisanal fishing fleets including provision of navigation equipment (e.g., GPS) in exchange for obtaining catch location data, and electronic monitoring systems (EMS) for industrial fleets (reach out to the FAO).
Potential lead agencies	DoF, with support from IGOs and NGOs.
Deadline	Within 12 months
Recommendation	**Reduce bycatch and post-release mortality**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Encourage research: a) to determine whether the deployment depths of gillnets or longlines positively impact shark and ray bycatch b) identify suitable alternatives to gaffing/spearing rhino rays
Potential lead agencies	DoF, BFRI, universities (national and international), and NGOs
Deadline	Within 24 months

Recommendation	10 Principals for Global Transparency
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Encourage the adoption of EJF's 10 principals for global transparency in fisheries.
Potential lead agencies	DoF
Deadline	Within 24 months
Recommendation	Improved implementation of the Wildlife Act
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	CCF to request the Coastguard/Navy, River Police, and local administration to improve implementation of the Wildlife Act. It is also important that the CCF request DG DoF to help support the implementation of the Wildlife Act.
Potential lead agencies	BFD
Deadline	Within 6 months
Recommendation	Protected Species ID within current fisheries inspection process
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance	Recommend changes to the current fisheries inspection process to harmonise processes with the Wildlife Act. Exporters should declare all their export products at a species level (including any national/CITES listed species), which is then validated by the fisheries inspectors. At this point it should be clearly highlighted whether a Wildlife

measures, andother notes/comments	Act or CITES-listed species is included and a note placed to ensure the appropriate permits are provided prior to issuing the export certificate/permission.
Potential lead agencies	DoF, BFD
Deadline	Within 12 months
Recommendation	**Implement the Biodiversity Act of 2017**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	The Hon. Secretary of the MOEFCC should request the committee of the Biodiversity Act of 2017 to highlight and prioritise shark and ray conservation and management under the Biodiversity Act.
Potential lead agencies	MOEFCC and DoE
Deadline	Within 6 months
Recommendation	**Improve data collection**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Revise current data collection and reporting methodologies to provide species-specific breakdowns (a priority list of species to be selected, encompassing CITES, CMS, IOTC listed-species and other shark and ray species of national priority). Conduct a workshop/meeting to revise and consolidate all existing (and additionally required) data collection sheets/forms (include participation of officers/stakeholders with practical, in-field experience). E.g., in DoF, revise the mechanisms currently in place under the Marine Fisheries Survey Management Unit, Fisheries Resources Survey System, and the Bangladesh Fisheries Development Corporation. In BFD, in the case of wildlife crime, ensure that all cases of wildlife crime are reported to the Wildlife Crime Control Unit, after which it should be compiled and submitted to other regional bodies (e.g., SAWEN). Additionally, ensure that all marine CITES permit data is shared with both DoF and Customs.
Potential lead agencies	BFD, DoF, Customs.

	Technical support/capacity to be provided by academia, IGOs, NGOs, and other relevant organisations.
Deadline	Within 18 months
Recommendation	**Harmonise Wildlife and Fisheries Act**
Is this recommendation applicable	Yes
Aims, objectives, implementation, relevant compliance measures, andother notes/comments	Harmonise implementation and enforcement across the Wildlife Act and the Fisheries Act. The priority is to ensure the conservation of threatened marine species (such as marine mammals, sharks and rays etc.) and their habitats. Additionally, this would serve to improve IUU compliance through joint patrolling.
Potential lead agencies	BFD, DoF
Deadline	Within 12 months

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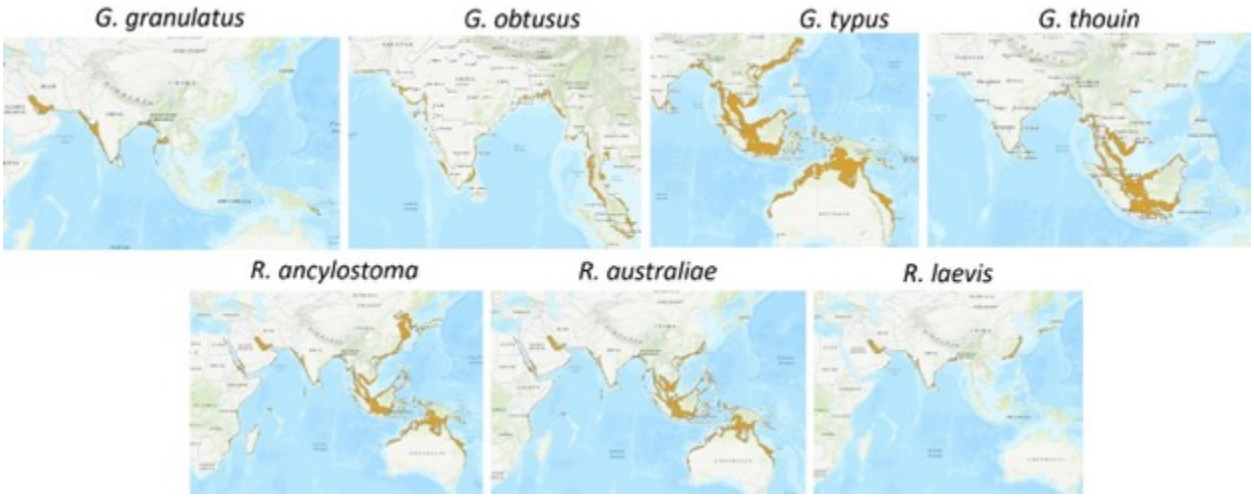
Appendix 1. Global distribution of the Rhino rays



https://www.iucnredlist.org/search/map?permalink=b457da40-f824-4d7e-8e29-dc9fb8f1d660

Appendix 2. List of shark and rays protected under Schedule I and Schedule II of the Bangladesh Wildlife (Conservation and Security) Act, 2012.

Schedule I

ক্রমিক নং	বাংলা নাম	ইংরেজি নাম	বৈজ্ঞানিক নাম
১	২	৩	৪
		বর্গ- কার্চারিনিফর্মিজ (হাঙ্গর) Carcharhiniformes (Sharks)	
		পরিবার-স্ফিরনিডি (Sphyrnidae)	
১.	পাখনাথা হাতুড়ি হাঙ্গর/জুলিয়া মাগর/কাইন্যা/কাউন্যা	Winghead/ Hammerhead shark	*Eusphyra blochii*
২ .	হাতুড়ি হাঙ্গর/ জুলিয়া মাগর/ কাইন্যা/কাউন্যা	Hammerhead sharks	*Sphyrna spp.*
		পরিবার- কার্চারিনিডি (Carcharhinidae)	
৩.	ভোঁতা বলি হাঙ্গর	Pigeye shark	*Carcharhinus amboinensis*
৪.	সাদাগাল হাঙ্গর/ কামোট	Whitecheek shark	*Carcharhinus dussumieri*
৫.	পন্ডিচেরী হাঙ্গর	Pondicherry shark	*Carcharhinus hemiodon*
৬.	ঘ-বলি হাঙ্গর	Bull shark	*Carcharhinus leucas*
৭.	সাদাটুপি হাঙ্গর	Oceanic whitetip shark	*Carcharhinus longimanus*
৮.	গাঙ্গেয় চিনারি হাঙ্গর	Ganges shark	*Glyphis gangeticus*
৯.	বড়পাখ চিনারি হাঙ্গর/সিনারি হাঙ্গর	Broadfin shark	*Lamiopsis temminckii*
১০.	তীক্ষ্ণদাঁত লেমন হাঙ্গর	Sharptooth lemon shark	*Negaprion acutidens*
		বর্গ- ওরেক্টোলোবিফর্মিজ (Orectolobiformes) **পরিবার- স্টেগোস্টোমাটিডি (Stegostomatidae)**	
১১.	বাঘা হাঙ্গর/জেব্রা হাঙ্গর	Leopard shark/Zebra shark	*Stegostoma fasciatum*
		পরিবার- রিংকোডনটিডি (Rhincodontidae)	
১২.	তিমি হাঙ্গর	Whale shark	*Rhincodon typus*
		বর্গ-ল্যামনিফর্মিজ (Lamniformes) **পরিবার – ওডোন্টাসপিডিডি (Odontaspididae)**	
১৩.	ধূসর বাঘা হাঙ্গর	Sand tiger shark	*Carcharias taurus*
		পরিবার - অ্যালোপিডি (Alopiidae)	
১৪.	কান্তে হাঙ্গর	Thresher sharks	*Alopias spp.*
		পরিবার - ল্যামনিডি (Lamnidae)	
১৫.	মাকো হাঙ্গর	Mako sharks	*Isurus spp.*

ক্রমিক নং	বাংলা নাম	ইংরেজি নাম	বৈজ্ঞানিক নাম
১	২	৩	৪
		বর্গ- রাইনোপ্রিস্টিফর্মিজ (রে মাছ) **Rhinopristiformes (Ray fishes)** **পরিবার - প্রিস্টিডি (Pristidae)**	
১৬.	করাত মাছ/খাপ্পা মাগর/খটক/করাতি হাঙ্গর/আইশা	Sawfishes	*Pristis spp.*
১৭.	ছুরি করাত মাছ/ খাপ্পা মাগর/ খটক/আইশা	Pointed sawfish	*Anoxypristis cuspidata*
		পরিবার- রিনিডি (Rhinidae)	
১৮.	ধনুকমুখী পিতাম্বরি/স্যাঙ হাঙ্গর	Bowmouth guitarfish	*Rhina ancylostoma*
১৯.	পিতাম্বরি/ নাঙলা	Guitarfishes/wedgefishes	*Rhynchobatus spp.*
		পরিবার- রাইনোব্যাটিডি (Rhinobatidae)	
২০.	পিতাম্বরি/ নাঙলা	Guitarfishes/wedgefishes	*Rhinobatos spp.*
		পরিবার- গ্লকোস্টেজিডি (Glaucostegidae)	
২১.	পিতাম্বরি/ নাঙলা	Guitarfishes/wedgefishes	*Glaucostegus spp.*
		বর্গ – মাইলোব্যাটিফর্মিজ (Myliobatiformes) **পরিবার – ইটোব্যাটিডি (Aetobatidae)**	
২২.	বড়মাথা ঠোট্টা/টুইটা ঘাপরি	Longhead eagle ray	*Aetobatus flagellum*
		পরিবার - মোবুলিডি (Mobulidae)	
২৩.	শিংচোয়াইন/দেউ মাছ/লুইমনি	Devil rays	*Mobula spp.*
		পরিবার- মাইলিয়োব্যাটিডি (Myliobatidae)	
২৪.	চিত্রা ঠোট্টা/টুইটা ঘাপরি	Mottled eagle ray	*Aetomylaeus maculatus*
২৫.	ফুল ঠোট্টা/টুইটা ঘাপরি	Ocellate eagle ray	*Aetomylaeus milvus*
		পরিবার- রাইনোপটেরিডি (Rhinopteridae)	
২৬.	ভোঁতা ঘাপরি	Javan cownose ray	*Rhinoptera javanica*
২৭.	ছোটলেজী ভোঁতা ঘাপরি	Shorttail cownose Ray	*Rhinopetra jayakari*
		পরিবার - ডাসিয়াটিডি (Dasyatidae)	
২৮.	ফুল শাপলাপাতা/জাতি শাপলাপাতা	White spotted whipray	*Maculabatis gerrardi*
২৯.	রাম্মি/চুনি শাপলাপাতা	Bleeker's whipray	*Pateobatis bleekeri*
৩০.	থ্যাবড়া নাক থাইন/ হাঙরাইল	Roughnose cowtail ray	*Pastinachus solocirostris*
৩১.	মিঠাপানির শাপলাপাতা/পাইন্যা/বাইল্যা	Giant freshwater whipray	*Urogymnus polylepis*

Schedule II

ক্রমিক নং	বাংলা নাম	ইংরেজি নাম	বৈজ্ঞানিক নাম
১	২	৩	৪
		বর্গ- কার্চারিনিফর্মিজ (হাঙ্গর) Carcharhiniformes (Sharks) পরিবার-কার্চারিনিডি (Carcharhinidae)	
২২.	মুইট্যা হাঙ্গর/সাদা লতা বলি/বলি হাঙ্গর	Graceful shark	*Carcharhinus amblyrhynchoides*
২৩.	ঘূর্ণি হাঙ্গর/কালা লতা বলি হাঙ্গর	Spinner shark	*Carcharhinus brevipinna*
২৪.	রেশমি/সিল্কি হাঙ্গর	Silky shark	*Carcharhinus falciformis*
২৫.	ইলিশা বলি/কালা লতা বলি হাঙ্গর	Blacktip shark	*Carcharhinus limbatus*
২৬.	কালাট্টপি রিফ হাঙ্গর/কালা লতা বলি হাঙ্গর	Blacktip reef shark	*Carcharhinus melanopterus*
২৭.	ফৌটালেজী/কালা লতা বলি হাঙ্গর	Spottail shark	*Carcharhinus sorrah*
২৮.	বাঘা হাঙ্গর	Tiger shark	*Galeocerdo cuvier*
২৯.	নীল হাঙ্গর	Blue shark	*Prionace glauca*
৩০.	সাদাট্টপি রিফ হাঙ্গর/সাদা পাখনা হাঙ্গর	Whitetip reef shark	*Triaenodon obesus*
		পরিবার- হ্যামিগ্যালিডি (Hamigaleidae)	
৩১.	বড়শিদাঁতী হাঙ্গর	Hooktooth shark	*Chaenogaleus macrostoma*
৩২.	শাঁবাদাঁতী/শিয়াল-বলি হাঙ্গর	Snaggletooth shark	*Hemipristis elongata*
		বর্গ-ল্যামনিফর্মিজ (Lamniformes) পরিবার - ল্যামনিডি (Lamnidae)	
		[illegible] (Orectolobiformes) পরিবার-জিংলিমসটোমাটিডি (Ginglymostomatidae)	
৩৪.	টনি নার্স হাঙ্গর	Tawny nurse shark	*Nebrius ferrugineus*

		বর্গ-টর্পেডিনিফর্মিজ (রে মাছ) (Torpediniformes) (Ray fishes) পরিবার- নারসিনিডি (Narcinidae)	
৩৫.	ভোঁতামুখ কারেন্ট মাছ	Shortlip numbfish	*Narcine brevilabiata*
৩৬.	চীনা কারেন্ট মাছ	Chinese numbfish	*Narcine lingula*
৩৭.	বাদামি কারেন্ট মাছ	Brown numbfish	*Narcine timlei*
		বর্গ-মাইলিয়োবেটিফর্মিজ (Myliobatiformes) পরিবার- জিম্নুরিডি (Gymnuridae)	
৩৮.	প্রজাপতি/বাদুড়/পদুনি/পদ্মমামনি	Butterfly rays	*Gymnura spp.*
		পরিবার - ডাসিয়াটিডি (Dasyatidae)	
৩৯.	বাঘা/চিতা শাপলাপাতা	Leopard whipray	*Himantura leoparda*
৪০.	জালি/বাঘা/চিতা শাপলাপাতা	Coach (Reticulated) whipray	*Himantura uarnak*
৪১.	বাঘা/হরিণা/চিতা শাপলাপাতা	Honeycomb whipray	*Himantura undulata*
৪২.	ক্ষুদেচোখা শাপলাপাতা	Smalleye stingray	*Megatrygon microps*
৪৩.	সাদানাক শাপলাপাতা/ হাউশ	Whitenose whipray	*Pateobatis uarnacoides*
৪৪.	জাকিনের ঘণ্টি/ ঘুড়ি শাপলাপাতা	Jenkins´ whipray	*Pateobatis jenkinsii*
৪৫.	কালি/কালাফোটা শাপলাপাতা	Blotched stingray	*Taeniurops meyeni*
৪৬.	সজারু শাপলাপাতা	Porcupine ray	*Urogymnus asperrimus*
৪৭.	গোল শাপলাপাতা	Round whipray	*Maculabatis pastinacoides*
৪৮.	বাদা শাপলাপাতা	Mangrove whipray	*Urogymnus granulatus*
৪৯.	চোন্দামুখ/চুনি শাপলাপাতা	Tubemouth whipray	*Urogymnus lobistoma*
		পরিবার – ইটোব্যাটিডি (Ateobatidae)	
৫০.	চিত্রা ঠোট্যা/ফুল টুইটা ঘাপরি	Spotted eagle ray	*Aetobatus ocellatus*
		পরিবার- মাইলিয়োব্যাটিডি (Myliobatidae)	
৫১.	ডোরাকাটা ঠোট্যা/টুইটা ঘাপরি/শঙ্খচিল	Banded eagle ray	*Aetomylaeus nichofii*

Appendix 3. Rhino ray catches reported to the FAO over 10 years.

Global Reported Rhinobatidae Catch to the FAO

Country	[2008]	[2009]	[2010]	[2011]	[2012]	[2013]	[2014]	[2015]	[2016]	[2017]	[2018]	**Totals - Tonnes**
Albania	3	0	0	2	0	0	0	0	0	0	0	**5**
Benin	6	6	93	66	0	92	84	77	83	24	346	**877**
Brazil	0	0	0	0	0	0	0	0	0	0	0	**0**
Côte d'Ivoire	111	115	114	145	116	171	156	188	161	80	242	**1,599**
Eritrea	0	0	0	0	0	0	0	0	0	0	0	**0**
Greece	43	38	0	0	0	0	0	0	0	0	0	**81**
Indonesia	3,645	9,225	3,687	4,534	3,599	4,185	8,494	4,528	2,887	1,106.69	1,167	**47,057.69**
Iran (Islamic Rep. of)	60	104	98	135	187	215	174	241	295	332	303	**2,144**
Israel	0	90	69	44	44	0	0	0	0	0	0	**247**
Lebanon	0	0	0	0	0	0	1	3	0	0	0	**4**
Liberia	0	0	0	0	0	0	0	0	0	1	1	**2**
Libya	0	126	120	70	82	82	56	50	60	72	72	**790**
Mauritania	0	0	161	119	46	97	170	241	153	242	1,769.9	**2,998.9**
Pakistan	527	484	450	403	468	478	2,136	2,266	1,098	1,228	1,455	**10,993**
Palestine	6	1	3	8	4	6	6	5	6	5	5	**55**
Peru	114	79	47	85	780	147	296	2	162	93	101	**1,906**
Senegal	989	1,390	1,002	1,078	717	1,160	1,727	1,682	914	0	1,000	**11,659**
Spain	0	0	0	0	0	0	0	0	2	27	8	**37**
Uruguay	4	0	26	3	10	12	38	15	12	0	53	**173**
Totals - Tonnes	**5,508**	**11,658**	**5,870**	**6,692**	**6,053**	**6,645**	**13,338**	**9,298**	**5,833**	**3,210.69**	**6,522.9**	***80,628.59***

FAO. 2020. Fishery and Aquaculture Statistics. Global capture production 1950-2018 (FishstatJ). In: FAO Fisheries Division [online]. Rome. Updated 2020. www.fao.org/fishery/statistics/software/fishstatj/en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