



Sustainable Forests & Livelihoods (SUFAL) Project

Report on Development and Validation of Non-Detriment Finding (NDF) Assessments for CITES Appendix II listed Silky Shark, Smooth Hammerhead Shark, Mobula Rays, and Rhino Rays for Bangladesh

July 2022



Bangladesh Forest Department
Ministry of Environment, Forest and Climate Change

Report on Development and Validation of Non-Detriment Finding (NDF) Assessments for CITES Appendix II listed Silky Shark, Smooth Hammerhead Shark, Mobula Rays, and Rhino Rays for Bangladesh

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EXECUTIVE SUMMARY

In September 2021, the Government of Bangladesh showed commendable commitment to improve the protection of threatened sharks and rays in Bangladesh by amending the list of species protected under the Wildlife (Conservation & Security) Act, 2012. The killing, landing, and trading of globally threatened species, including those regulated for international trade under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), are strictly protected (Schedule I) or strictly regulated (Schedule II) in Bangladesh.

Domestic and international trade of shark and ray products in Bangladesh is substantial and mostly undocumented. Official catch and export statistics do not differentiate between shark or ray species or products and group shark and ray fins and fish swim bladders together, thereby limiting traceability.

Under the *Shark and Ray and Associated Species Conservation Strategy Development and Non-Detrimental Findings* consultancy assignment of the Sustainable Forests and Livelihoods (SUFAL) Project, with technical support from the Wildlife Conservation Society (WCS), the Bangladesh Forest Department (BFD) developed CITES Non-Detriment Finding (NDF) assessments for ensuring the sustainability and traceability of internationally traded CITES Appendix-II listed sharks and rays. These were the first NDFs developed by Bangladesh for submission to CITES.

Thirty representatives from government agencies and research institutes completed four NDF assessments during two intensive three-day workshops organized by WCS in February 2022, facilitated by international CITES shark and ray expert Daniel Fernando, and informed by input provided by national fisheries and wildlife experts from the BFD, Department of Fisheries, Bangladesh Fisheries Research Institute, national universities, and WCS.

In accordance with Articles III and IV of CITES, the Scientific Authority of Bangladesh reviewed and approved NDFs for the Silky shark *Carcharhinus falciformis*, Smooth hammerhead shark *Sphyrna zygaena*, Mobulid rays (Mobulidae), and Rhino rays (Giant guitarfishes Glaucostegiidae and the Wedgefishes Rhinidae). The NDFs were developed through a scientific review of information on their population status and trend, distribution, other biological and ecological factors, exploitation and trade.

Due to evidence that exploitation and trade is negatively affecting the survival of wild populations, NDF assessments for Smooth hammerhead sharks, Mobulid rays, and Rhino rays resulted in a negative declaration for international export, with key recommendations made for improving their conservation status in Bangladesh. The results of the NDF process for these species are consistent with, and provide the scientific justification for, the recently amended *Wildlife (Conservation and Security) Act, 2012*, where they are included in Schedule I, which protects them from exploitation and trade. Due to evidence that trade in the species is not affecting the survival of its wild population, the NDF assessment for Silky sharks resulted in a positive declaration, with the condition that traded specimens are at least 200 cm long after they have become sexually mature.

The NDF development process outlined in this report provides guidance for future NDF assessments of other CITES Appendix II listed species or species groups, and it highlights Bangladesh's commitment to improve the sustainability and traceability of international trade in threatened sharks and rays as a legal obligation of CITES member countries.



National fisheries and wildlife experts from the Bangladesh Forest Department, Department of Fisheries, Bangladesh Fisheries Research Institute, national universities, and the WCS participated in the NDF development workshop at Chattogram (top) and Dhaka (bottom).

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Acronyms and Abbreviations

BFD	Bangladesh Forest Department
BFDC	Bangladesh Fisheries Development Corporation
BFRI	Bangladesh Fisheries Research Institute
CCF	Chief Conservator of Forest
CF	Conservator of Forest
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CR	Critically Endangered
CU	Chittagong/Chattogram University
EN	Endangered
DG	Director General
DFO	Divisional Forest Officer
DoF	Department of Fisheries
DU	Dhaka University
EADS	Environment, Agriculture and Development Services
EEZ	Exclusive Economic Zone
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization
IFS	Introduction from the Sea
IUCN	International Union for Conservation of Nature
IUU	Illegal, unreported and unregulated
MFSMU	Marine Fisheries Survey Management Unit

MoEFCC	Ministry of Environment, Forest and Climate Change
MPA	Marine Protected Area
NDF	Non-Detriment Finding
RFMO	Regional Fisheries Management Organizations
SAU	Sher-E-Bangla Agricultural University
SOP	Standard Operating Procedure
SUFAL	Sustainable Forests and Livelihoods Project
TAC	Total Allowable Catch
WCCU	Wildlife Crime Control Unit
WCS	Wildlife Conservation Society

BACKGROUND



Convention on International Trade in Endangered Species of Wild Fauna and Flora

CITES is a legally binding international treaty signed by 183 parties, including Bangladesh, to ensure that trade in species does not threaten their survival in the wild.

CITES-listed species may only be imported, exported, or re-exported if authorized by the National CITES Management Authority and the appropriate permit is presented for clearance at the port of entry or exit.

Species covered by CITES are listed according to the protection they need. Appendix I includes species threatened with extinction. Trade in these species is permitted only in exceptional circumstances. Appendix II includes species in which trade must be controlled to avoid utilization incompatible with their survival in the wild. Appendix III includes species at the request of a Party that already regulates trade in the species and needs cooperation from other countries to prevent unsustainable or illegal exploitation.

Member countries commit to support CITES trade regulations by adapting and/or introducing domestic legislation. Non-compliance with CITES reporting requirements can result in trade suspensions.

The National CITES Management Authority for Bangladesh is the Chief Conservator of Forests (CCF) of the Bangladesh Forest Department (BFD). The Wildlife Advisory Board supports the CCF as CITES Management Authority and Enforcement Focal Point, functioning as the National CITES Scientific Authority. It is constituted of representatives from the Ministry of Environment, Forests and Climate Change (MoEFCC), Forest Department Wildlife Circle, National Zoo, IUCN-Bangladesh, and the zoology departments of Dhaka and Jahangirnagar universities.

The National CITES Management Authority can only issue export permits for CITES Appendix II listed species if trade is permitted under the Bangladesh Wildlife Act 2012 and if the National Scientific Authority can verify that international trade will not negatively impact the survival of these species in the wild.

For international trade in CITES II listed species, the National CITES Scientific Authority must develop science-based species or genera specific assessments called *Non-Detriment Findings* or NDFs. The NDF process evaluates the intrinsic biological vulnerability and conservation concern, trade and fishing pressures, and existing management measures for CITES Appendix II listed shark and ray species.

A positive NDF means that the trade in the species does not pose a risk to its wild population and is permitted for the duration of the validity of the NDF. A positive NDF with conditions means that the National CITES Management Authority may allow exports to continue for a limited period (generally 1-2 years) with conditions that may include improvements in monitoring or management. At the end of an NDF period, the authority reassesses whether to maintain a positive (or positive with conditions) NDF or issue a negative NDF.

If the exploitation or trade of a species is found to negatively affect the survival of its wild population, then the assessment will result in a negative NDF. In this case, proposed measures such as improved monitoring or management need to be implemented before a new NDF assessment is conducted to assess whether a negative or positive determination is appropriate.

NDFs can also set mandatory conditions for trade and provide related advice for adequate management measures to mitigate conservation concerns and pressures, including restrictions on catch or export quantities (e.g., an annual total allowable catch or quotas) or improved monitoring and control to ensure compliance and traceability from catch to consumer (See Figure 1 on *Why NDFs are necessary*). A brief summary on CITES NDFs is provided in Appendix 1.

Domestic and international trade of shark and ray products in Bangladesh is substantial and mostly undocumented. Major discrepancies between exports reported by Bangladesh and imports from Bangladesh recorded during the same period by importing countries indicate that a major portion of the shark and ray fin trade is unmonitored, resulting in significant losses of Government revenue.

Official catch and export statistics do not differentiate between shark or ray species or products and group shark and ray fins and fish swim bladders together, thereby limiting traceability (see *Shark and Ray Assessment Report* for more details). Export permits of fish and fish products processed by the Department of Fisheries (DoF) do not currently consider the Bangladesh Wildlife Act 2012 or CITES trade regulations.

Bangladesh has successfully co-sponsored several proposals for CITES appendix listings of threatened species, including sharks and rays. The BFD (mandated to manage protected areas and wildlife) leads interagency efforts with the DoF (managing fisheries and permissible export of fish and fish products), Customs (controlling imports and exports), Bangladesh Police (ensuring citizen safety and compliance), Border Guards Bangladesh (controlling transboundary activities), Coast Guard and Navy (protecting of territorial waters) to enforce CITES-compliant species protection and trade regulations through technical capacity building, joint monitoring and standardized reporting.

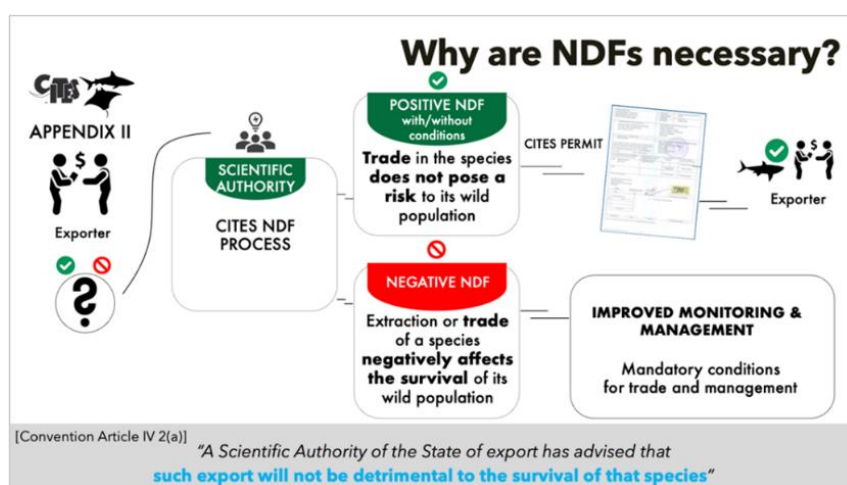


Figure 1. NDFs are a legal requirement for export trade permits of CITES Appendix II listed species, which can only be issued if trade does not pose a risk to their wild populations. Traders can apply to the National CITES Authority for permits to export species listed in CITES Appendix II with a positive NDF.

PRIORITY SPECIES FOR CONDUCTING CITES NDFs

The Wildlife Conservation Society (WCS) was contracted by the BFD under the *Sustainable Forests & Livelihoods (SUFAL) Project* to develop NDFs for two CITES Appendix II listed species, one shark and one ray.

Based on the selection criteria detailed in the inception report, from the 12 CITES Appendix II listed shark species confirmed or suspected to occur in Bangladesh, six of which were never recorded in catches or landings monitored by WCS, Vulnerable (VU) Silky shark *Carcharhinus falciformis* and Smooth hammerhead shark *Sphyrna zygaena*, which had sufficient information on catches and landings, were identified as suitable candidates for preparing NDFs.

All 13 ray species listed in CITES Appendix II and confirmed as occurring in Bangladesh belong to two groups: Endangered (EN) Manta and Devil rays, also known as Mobulid rays (*Mobula* spp.), and Critically Endangered (CR) Giant guitarfishes (*Glaucostegidae*) and Wedgefishes (*Rhinidae*), also known as Rhino rays. We therefore conducted NDFs, one each for Mobulid and Rhino rays.

As mentioned above, NDF assessments not only ensure that international trade will not negatively impact their survival in the wild, but they also provide evidence-based guidance for improving conservation management. While NDFs are technically only required for CITES listed species, the NDF process can also be used as a national species risk assessment tool for non-CITES- listed species, particularly for regulating domestic trade or exports.

DEVELOPING NATIONAL CAPACITY FOR CONDUCTING CITES NDFs

Four NDFs were prepared during two workshops in February 2022 by fisheries and wildlife experts nominated by the BFD, as the designated CITES Management Authority, the DoF, the Bangladesh Fisheries Research Institute (BFRI), and national public universities.

The intensive three-day long NDF workshops convened by the BFD with technical support from WCS were conducted from 8-10 February 2022 at the Marine Fisheries Survey Management Unit in Agrabad, Chattogram, and from 13-15 February 2022 at the After-Hours Residence in Banani, Dhaka. The workshop agenda is provided as Appendix 2, and information for participants in Appendix 3 and 4.

A total of 22 nominated representatives from the BFD, DoF, BFRI, Chattogram University (CU), Dhaka University (DU), and Sher-e-Bangla Agricultural University (SAU) attended the NDF workshops. Before the workshops, all participants were provided with briefing documents on CITES NDFs (Appendix 1) and the link to the [CITES Non-detriment Findings Guidance for Shark Species](#). Participants were also requested to share any relevant information, ideally species-specific, available to them or their institutions ahead of the workshops and in a brief presentation during the workshop. Requested information includes fishing gears that interact with focal species (targeted catch, bycatch, and discards), biological data for the species (critical habitats, value and use of catches including domestic and

international trade), and proxy data (trends in biologically similar species, or other species captured in the same fishing gears). WCS data from citizen science networks and dedicated fisheries investigations, together with published references and reports, and accessible databases, were used to prepare draft templates for the NDFs ahead of the workshops.

The entire NDF development process, from preparing the draft templates to validating the NDFs for submission to the CITES Secretariat, was facilitated by the international CITES shark and ray NDF expert Daniel Fernando. By preparing the NDFs using a facilitated workshop approach and providing participants with practical experience for developing NDFs, additional benefits of strengthening technical capacity among government officials and local experts were achieved.

The engagement of 22 nominated representatives from government agencies and research institutes resulted in the country's first four CITES NDFs and the institutional capacity to apply a structured process for additional NDF assessments of sharks and rays in the future.



Figure 2. The 22 participants including WCS staff representing four government agencies, three academic institutions, and from WCS in Chattogram (top) and Dhaka (bottom) were empowered to conduct systematic NDF assessments for sharks and rays of Bangladesh through two intensive three-day workshops facilitated by an international expert.

CITES NDF DEVELOPMENT PROCESS – AN OVERVIEW

CITES encourages parties to conduct NDFs as written records of the science-based rationale for permitting, prohibiting, or regulating trade. NDFs are a legal requirement for export and import of CITES listed species across an international border. NDF assessments may also be requested if a species is selected by CITES for a Review of Significant Trade. Another reason for preparing NDFs is that they help support the implementation or development of shark-and-ray-specific management and can bring about changes that prevent declines and enable the recovery of species.

Ideally, NDFs should be prepared before any CITES-listed species destined to be exported has been fished or landed. This is particularly important as an NDF may come with conditions, such as a total allowable catch (TAC) or other requirement for monitoring or control. CITES Resolution Conf. 16.7 on NDFs recommends that the findings and advice be based on (but not limited to) species biology, life history, range, population structure and trends, conservation status, threats from trade and fisheries, and management measures currently in place and proposed including levels of compliance. An NDF is essentially a species risk assessment, along with a record of exploitation, discard mortality, and current management and compliance with CITES. For sharks and rays, it is particularly important that this assessment considers the entire stock of a species at a regional scale.

The NDF development process follows the framework described in a document prepared by TRAFFIC and the German Federal Agency for Nature Conservation for sharks and rays.¹ This framework covers targeted and bycaught species, stocks exploited by multiple countries, and data poor scenarios, all relevant for shark and ray assessments. We applied a new and user-friendly e-NDF software that uses an electronic spreadsheet (Microsoft Excel) created to assist authorities in developing NDFs for CITES-listed sharks and rays (Figure 3).

Since some of the topics discussed were sensitive or challenging, such as illegal fisheries or gaps in current management, the Chatham House Rule, which states that *“Participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed,”* was used to create an environment of trust and encourage participants to more freely express their views.

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 für Naturschutz, BfN) (https://CITES.org/eng/prog/shark/Information_resources_from_Parties_and_other_stakeholders).

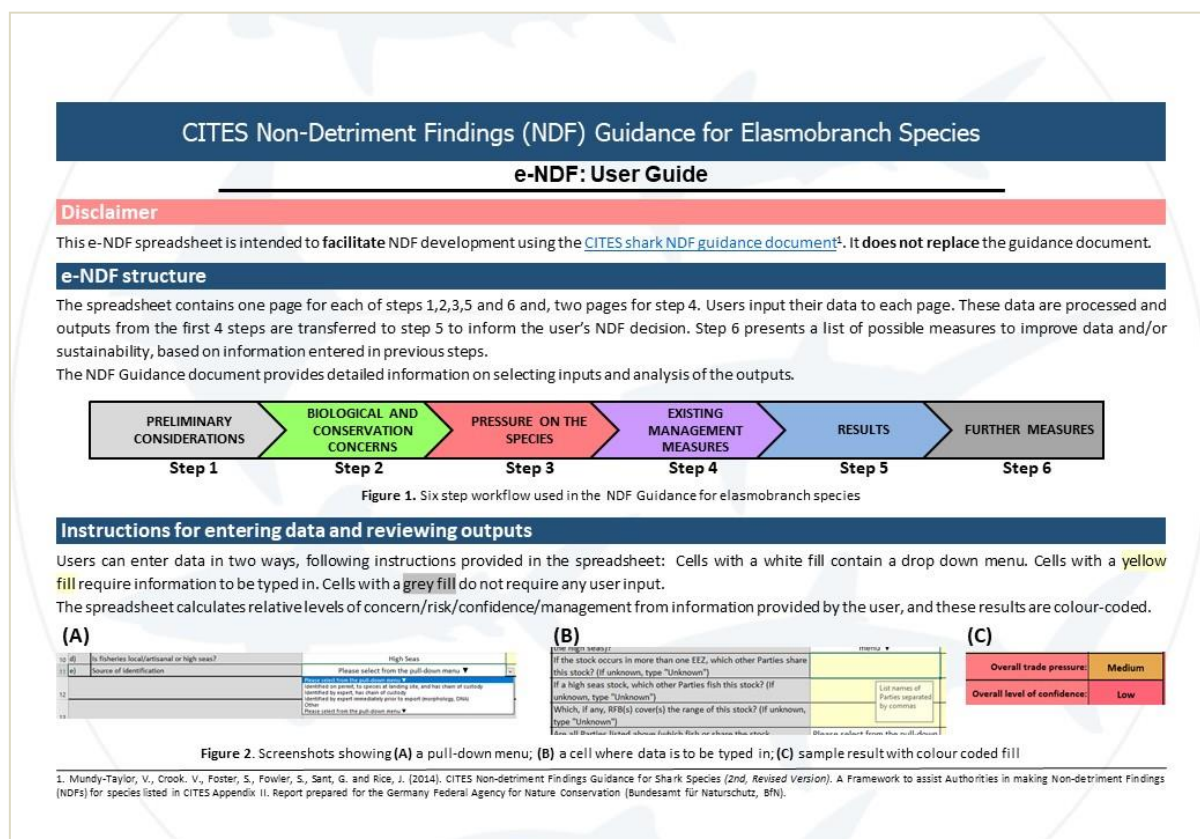


Figure 3. A quick reference card from www.blueresources.org/resources illustrates how the e-NDF spreadsheet facilitates NDF development for sharks and rays in a color-coded six-step workflow automated with drop-down menus and automated cells showing calculations based on information provided by the user.

The NDF process follows six steps (Figure 4) but it is the National CITES Scientific Authority that needs to weigh the risks and evidence to make the final NDF decision. For reaching a final decision, it is important to ensure that the species or species group can maintain its role within the ecosystem, and that any trade permitted will be proportionate to the species vulnerability.

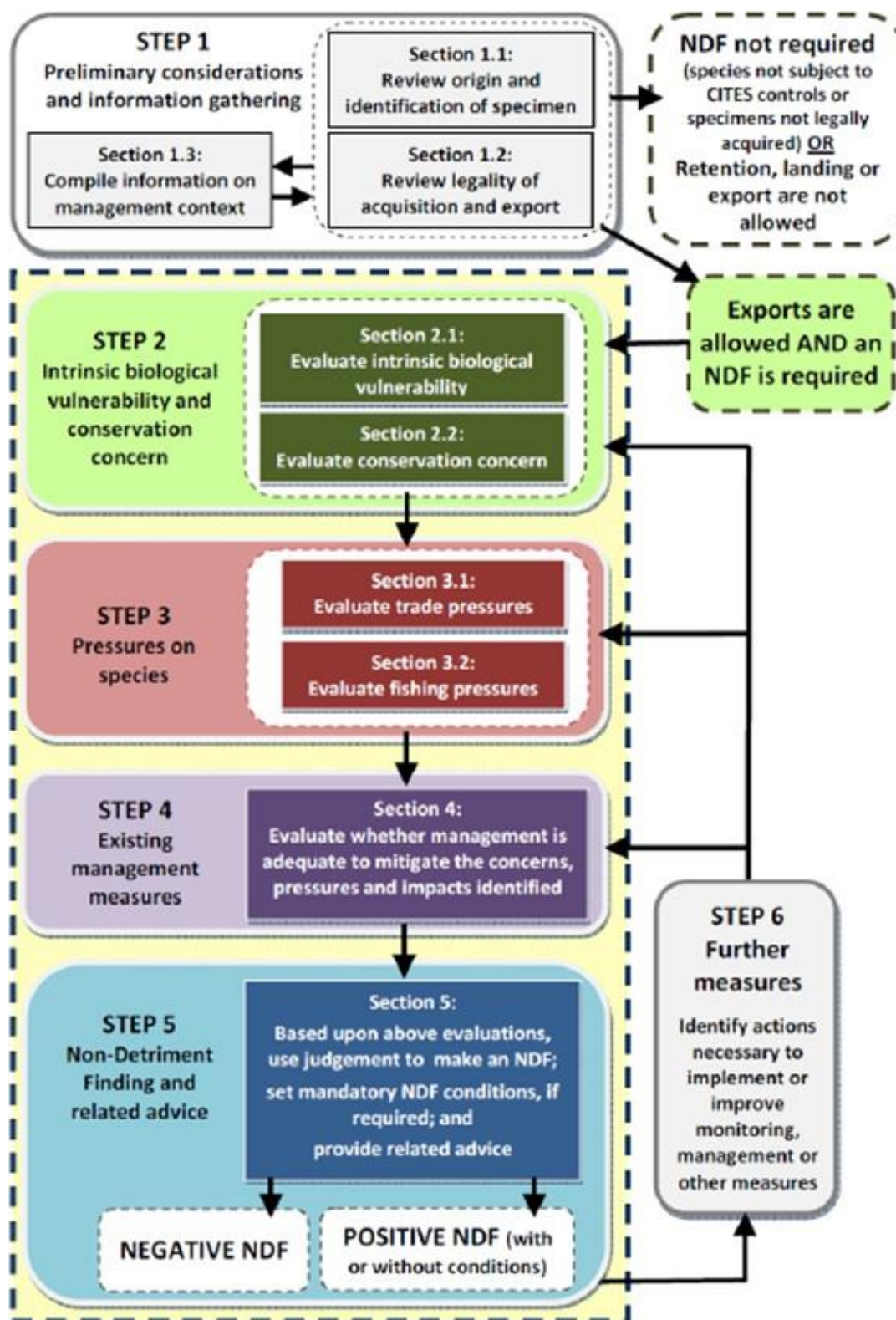


Figure 4. Overview of the six steps of the NDF assessment process.

Step 1 - Preliminary consideration: Is an NDF needed?

Step 1 of the NDF process is a *Legal Acquisition Finding* to determine what species it is, where it was caught, and if it was acquired legally or not. This step takes into consideration other legislation, for example national laws, regional fisheries management organizations (RFMOs) such as the Indian Ocean Tuna Commission (IOTC) in the case of Bangladesh, as well as the Convention on Migratory Species (CMS). If a species fails the *Legal Acquisition Finding*, the NDF process is still valuable to identify what management is required to improve their chances for survival, population recovery, fulfilling their role in the ecosystem, and eventual de-listing as threatened by trade. Completing this section was aided by the drop-down menu of the e-NDF.

Step 2- Biological vulnerability and conservation concern

Step 2 of the NDF development process is a *Species Risk Assessment*. NDFs take a precautionary approach that considers whether limiting trade is necessary to maintain that species throughout its range at a level consistent with its role in the ecosystems where it occurs and above the level at which that species might become eligible for inclusion in CITES Appendix I (CITES Article IV.3). Participants compiled available data on median size and age at maturity of the shark or ray species assessed, their geographic distribution, current stock size, behavioral factors, and then analyzed the severity or risks, geographic context, and conservation concern of the species or species group. Recent [IUCN Red List](#) species assessments provide a robust basis for this section.

Step 3 - Pressure on species from trade and fishing

The drop-down menu for Step 3 in the e-NDF tool requires information on legal and illegal trade and impacts of fishing (e.g., catches and bycatches, size/age/sex selectivity, illegal, unreported and unregulated (IUU) fishing). Since fisheries data are limited, to determine the pressure on the species or species group from exploitation (directed catch and bycatch), trade data was a useful proxy. We also used data reported to regional or international bodies, such as IOTC, FAO, or CMS. As in Step 2, considerations were made for the entire geographic range of the species assessed.

Step 4 - Existing management measures

Step 4 looks at existing management measures, including national regulations, regional agreements, and international conventions, to evaluate if they are appropriately designed and implemented and effective in mitigating the pressures affecting the species or species group concerned. This step required significantly more time, as participants were asked to discuss existing management measures and if relevant data were collected and analyzed to inform management decisions.

Step 5 - Non-Detrimental Findings and related advice

In Step 5 assessors evaluated the automated results provided by the eNDF tool based on a scoring system from the answers in previous sections, which are considered as guidance for deciding the NDF outcome. Participants engaged in discussions to assess the outcome for

each species or species groups and came to a collective agreement about the NDF being positive or negative given the available data, management, and conservation status of the species or species group, and if there should be conditions or recommendations for to improve available data and ensure that the species or species group can maintain its ecological role and that any permitted trade will be proportional to its vulnerability.

Step 6 - Management tools

In the final step, the management tools and approaches identified in Step 5 were evaluated according to their local feasibility for providing practical advice on conditions and recommendations. Management tools considered included improved data collection, fishing bans, gear restrictions, marine protected areas (MPAs) in critical shark and ray habitat, time/area closures, size limits, releases of juveniles, bycatch mitigation, size restrictions, landing/export/import restrictions, and educational outreach. Interagency engagement was vital to identify gaps and locally feasible solutions to improve data collection, monitoring, and management of the species or species group.

SUMMARY OF NON-DETRIMENT FINDING OF SILKY SHARK IN BANGLADESH

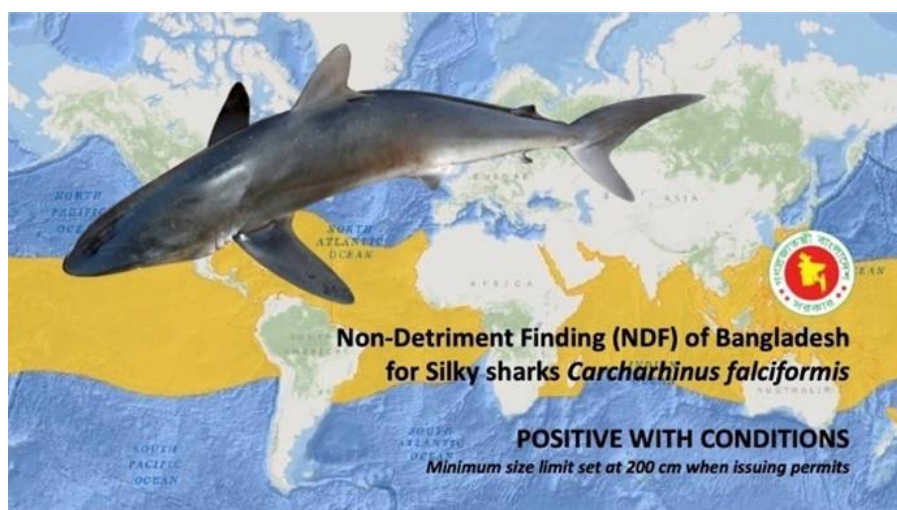
The Silky shark *Carcharhinus falciformis* is listed under Schedule II of the Bangladesh Wildlife (Conservation and Security) Act 2012: Killing, landing, and trading requires a permit from the Forest Department. Silky sharks are listed under CITES Appendix II and CMS Appendix II. IOTC does not prohibit the retention of silky sharks in the Indian Ocean, although retention is prohibited in other regions. The species is assessed as Vulnerable in the Global IUCN Red List.

Silky sharks are highly migratory pelagic species distributed from continental slopes to open ocean across multiple EEZs, and the high seas. Neonates and young juveniles live in coastal waters, before moving further offshore as sub-adults. They mature at the age of about 10 years and have a length of around 200 cm. Females give birth to 1-16 pups every one or two years. The few landing records from Bangladesh are all immature specimens (TL 58-152cm).

The Silky shark is the second most caught shark species in the world and ranks among the three most important sharks in the global fin trade. It is highly susceptible to longline and purse seine gear. The status of the stock is highly uncertain in the Indian Ocean, but the threat level to sharks is disproportionately high in the tropics and subtropics, including the northern Indian Ocean, where more than three-quarters of all shark and ray species are threatened with extinction from overfishing.

Available landing data for Silky sharks in Bangladesh indicates that low numbers are being captured by Bangladeshi fishing vessels. However, considering catches across the Indian Ocean, pressure from both targeted and non-targeted fisheries is likely to be high. In Bangladesh, sharks are landed whole, with fins attached, and fully used. The volume of Silky sharks in trade from Bangladesh cannot be quantified due to a lack of species-specific information in official landing and trade statistics.

Considering the extremely low volume of Silky shark landings in Bangladesh, a positive NDF with conditions is recommended. To improve the sustainability of the Silky shark fishery, a minimum size limit of 200 cm should be set for export of the species.



SUMMARY OF NON-DETRIMENT FINDING OF SMOOTH HAMMERHEAD SHARK IN BANGLADESH

The Smooth hammerhead shark *Sphyrna zygaena*, locally known as *Jowal haturi hangor* is listed under Schedule I of the Bangladesh Wildlife (Conservation and Security) Act 2012. Retaining, killing, landing, and trading of smooth hammerhead sharks or any of their parts is strictly prohibited in Bangladesh. They are listed under CITES Appendix II and assessed as Vulnerable on the Global IUCN Red List. IOTC does not prohibit their retention.

Smooth hammerhead sharks are largely coastal and semi-oceanic pelagic sharks found in temperate and tropical seas. These migratory species face a high level of threat in the high seas from tuna purse seiners, many of which use Fish Aggregation Devices or FADs, and from industrial longline fisheries targeting tunas and billfishes. Other countries bordering the Indian Ocean take smooth hammerhead sharks as bycatch in gillnet and longline fisheries.

Considering the potential range of the stock/population, smooth hammerhead sharks are likely heavily impacted by fishing pressure in multiple Indian Ocean countries and from international fleets fishing in the high seas. Information on exact trade figures is not available from the region. However, this species is sold, marketed, and traded if landed and has multiple uses in both domestic and international markets. Demand for its fins is high. It is likely that smooth hammerhead fins are traded together with the fins of other hammerhead species, thereby affecting species-specific trade data. Meat is utilized as fresh, frozen, or dried and salted for consumption.

Smooth hammerhead sharks can live up to 18-21 years and mature at an age of about 15 years. These large sharks can grow up to 362 cm long. Females give birth to a maximum of 30-40 pups per year. Available landing data for smooth hammerhead sharks in Bangladesh indicates that low numbers are being captured by Bangladeshi fishing vessels. However, all captured individuals are extremely small, immature juveniles.

A negative NDF was recommended for Smooth hammerhead sharks since specimens there is strong evidence of overexploitation in the Indian Ocean, and the small size of landed specimens in Bangladesh may indicate a lack of reproducing adults. This provides strong justification for the inclusion of this species in Schedule I of the Bangladesh Wildlife Act, which makes the capture and/or trade of this species is illegal.



SUMMARY OF NON-DETRIMENT FINDING OF RHINO RAYS IN BANGLADESH

All Rhino rays are listed under Schedule I of the Bangladesh Wildlife (Conservation and Security) Act 2012. Giant Guitarfishes *Glaucostegiidae* and the Wedgefishes, including Sharpnose guitarfish *Glaucostegus granulatus*, Widenose guitarfish *Glaucostegus obtusus*, Giant guitarfish *Glaucostegus typus/younholeei*, Clubnose guitarfish *Glaucostegus thouin*, Bowmouth guitarfish *Rhina ancylostoma*, Bottlenose wedgefish *Rhynchobatus australiae*, and Smoothnose wedgefish *Rhynchobatus laevis* are listed under CITES Appendix.

Additionally, all other nationally identified non-CITES listed rhino ray species, including the newly described Bangladeshi guitarfish *Glaucostegus younholeei*, were considered in this NDF due to the difficulties of distinguishing among look-alike species, the similar threats they face, and that the entire species groups would benefit from the same management recommendations.

The shallow, inshore soft-bottom habitat preferred by the Rhino rays is threatened by habitat loss and environmental degradation. There has been an estimated 30% reduction in mangrove area since 1980 throughout Southeast Asia and there are additional threats in Bangladesh associated with changes in freshwater flows that may impact reproduction.

Wedgefish and guitarfish species are slow growing, late to reach reproductive maturity, and they produce very few young. This makes them extremely susceptible to population decline from overexploitation. Also, residing in nearshore coastal habitats makes them vulnerable to being caught in multiple-gear nearshore fisheries.

Rhino rays are highly valued in Bangladesh and for international trade. Rhino rays are targeted by small-scale fishers with unbaited bottom-set long-lines and retained as bycatch in other fisheries in Bangladesh. Their fins (even extremely small specimens) are very highly valued in the export market. This profitable and largely unregulated trade has driven population declines of up to 86% in other areas over 5 years.

Due to evidence of overexploitation, both as targeted catch and bycatch, in Bangladesh and in neighboring waters of the Indian Ocean, and the degradation and loss of shallow mudflat and mangrove habitat critical for their reproduction and juvenile growth, a negative NDF was recommended for Rhino rays, thereby validating the justification for including all rhino rays in Schedule I of the Wildlife (Conservation and Security) Act 2012.



SUMMARY OF NON-DETRIMENT FINDING OF MOBULID RAYS IN BANGLADESH

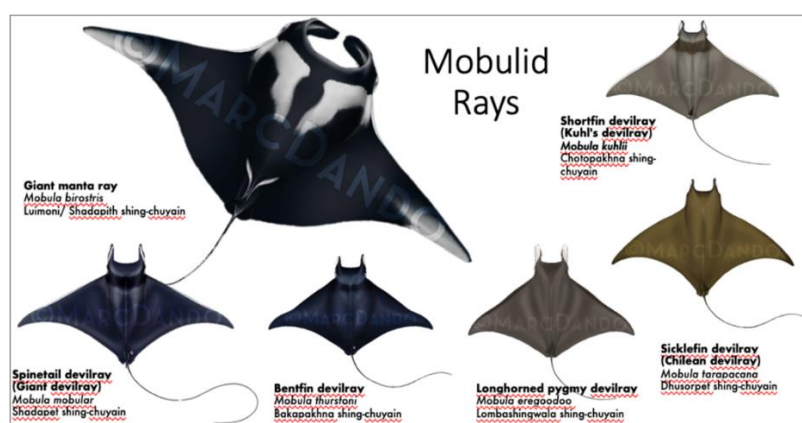
Mobulid rays (Mobulidae - *Mobula mobular*, *M. kuhlii*, *M. tarapacana*, *M. thurstoni*, *M. eregoodoo*, and *M. birostris*) are listed under Schedule I of the Bangladesh Wildlife (Conservation and Security) Act 2012. Mobulid rays are listed under CITES Appendix II and CMS Appendix I. IOTC Resolution 19/03 prohibits capture and take of mobulid rays in the Indian Ocean. All included species are assessed as Endangered on the Global IUCN Red List.

Most Mobulid rays occur in temperate and tropical waters throughout all oceans, with some restricted to the Indo-Pacific. Neonates and young juveniles live in coastal waters before moving further offshore as sub-adults. They mature at about 5-10 years and grow to a length of over 200 cm. Females give birth to single pups every few years. Landing records from Bangladesh are mostly of immature specimens.

Mobulid rays are caught in targeted fisheries as well as bycaught throughout their range in a variety of gear types, including harpooning, netting, trawling, purse seine, gillnets, and longlines. In Bangladesh, Mobulid rays are taken as bycatch in small-scale gillnet, set-bag net, longline, and industrial trawl net fisheries. The status of the stock is highly uncertain in the Indian Ocean, but the threat level to all rays is disproportionately high in the tropics and subtropics, including the northern Indian Ocean, where more than three-quarters of all shark and ray species are threatened with extinction from overfishing.

Available landing data for Mobulid rays in Bangladesh indicates that relatively low numbers are being captured by Bangladeshi fishing vessels. However, considering the stock across the Indian Ocean, fishing pressure is likely to be high. In Bangladesh, rays are landed whole and fully used. They are highly valued in international trade for their gill plates. The volume of Mobulid rays in trade from Bangladesh cannot be quantified due to a lack of species-specific information in official landing and trade statistics.

Due to evidence of overexploitation throughout much of the Indian Ocean, the strong international demand for mobulid ray gill plates, and the intensive fisheries in Bangladesh using gears that entangle and kill them, a negative NDF was recommended for Mobulid rays, thereby validating the justification for including them in Schedule I of the Wildlife (Conservation and Security) Act 2012.



WORKSHOP PROCEEDINGS

The SUFAL Shark and Ray Assignment Team Leader, WCS Marine Conservation Program Manager, and Regional Vice-Chair for the Indian Ocean of the IUCN Shark Specialist Group, Elisabeth Fahrni Mansur, welcomed guests and participants to both NDF workshops in Chattogram and Dhaka. She thanked them for their commitment to improve conservation management for sharks and rays in Bangladesh, provided a brief outline of the NDF workshop objectives, and introduced the international CITES shark and ray NDF expert Daniel Fernando. For introductions, Elisabeth requested everyone to share their most memorable encounter with sharks or rays. Incidences recounted by workshop participants included sightings in aquaria, in the wild, and at landing and processing sites.

The workshop in Chattogram was inaugurated by Chief Guest Bipul Krishna Das, Conservator of Forests, Chattogram circle, and Dr. Sharif Uddin, Director Marine, DoF. The Dhaka workshop was inaugurated by Abu Naser Mohsin, Divisional Forest Officer, Sundarban West Forest Division, BFD, and Showkot Kabir Chowdhury, Assistant Director (Marine), DoF. They expressed their gratitude to the BFD SUFAL project and WCS, and congratulated participants for being part of this advancement in elasmobranch conservation management for Bangladesh.

Senior officers closed the NDF development training workshops, thanking all participants for their active engagement and acknowledging the Government departments and institutions for their support. A certificate of recognition was provided to all participants at the end of both workshops (Figure 5).



Figure 5. The workshops were inaugurated with encouraging words by DoF Director (Marine) Dr. Sharif Uddin (left) and CF Bipul Krishna Das (middle). Certificates were provided to all participants at the end of the intensive two-day NDF development training workshops (right).

VALIDATION OF NDFs FOR CITES APPENDIX II LISTED SHARKS AND RAYS

The resulting four NDFs for CITES Appendix II listed shark species and ray species groups, including measures to mitigate conservation concerns and pressures, were presented to 30 senior Government representatives and international, regional, and national experts for validation and submission to the CITES Secretariat.

A validation workshop was held on 17 February 2022 in the Hoimonti Auditorium at the BFD headquarters in Agargaon, Dhaka. Participants represented the MoEFCC, DoF, BFD, and the Wildlife Advisory Board. The agenda and list of participants are provided in Appendix 5 and 6. The workshop was chaired by the Chief Conservator of Forests with the Director General of the DoF as Guest of Honor (Figure 6).



Figure 6. The NDF validation workshop marked the first official visit of a Director General of the Department of Fisheries to the Chief Conservator of Forests office in the Forest Department Headquarters in Agargaon, Dhaka.

In his welcome address, the SUFAL Project Director Mr. Gobinda Roy commended the DoF and BFD for their collaboration on strengthening shark and ray conservation management in Bangladesh (Figure 7). He thanked WCS for their technical contributions and for enabling Bangladesh's first NDF assessments.

Daniel Fernando, the international CITES shark and ray NDF expert who facilitated the NDF development process, spoke about the role of NDF assessments in regulating sustainable harvest and trade for sharks and rays and provided an overview of the process in his keynote speech.



Figure 7. Project Director SUFAL Mr. Gobinda Roy (left) and Mr. Dipak Kumar (right).

Deputy Secretary MoEFCC, Dipak Kumar, highlighted Bangladesh's progress in combating illegal wildlife trade through collaboration, education, and political will (Figure 6). Deputy Chief Conservator of Forests (BFD) Md Jahidul Kabir spoke about the overlapping agency mandates for biodiversity conservation and the importance of interagency cooperation for protecting threatened wildlife and their habitats as exemplified by the DoF and BFD regarding shark and ray conservation management.

The Guest of Honour, Director General DoF Kh. Mahbubul Haque shared current knowledge of shark and ray exports from Bangladesh, for which he said improving traceability was key and could be achieved through improved interdepartmental collaboration, cooperation.

Workshop Chair and Chief Conservator of Forests (BFD) Md. Amir Hosain Chowdhury spoke about the Government of Bangladesh's commitment, achievements, and challenges with CITES compliance. He said that the co-sponsoring of shark and ray listings under CITES had triggered an increased interest in shark and ray research in Bangladesh, which resulted in the recent amendment to the list of species protected under the Wildlife Act. He emphasized that it was important to find solutions to sustain fisher livelihoods and regulate the harvest of sharks and rays in line with CITES obligations. He congratulated the DoF on its success in Hilsha management and suggested alternate livelihood plans. He concluded by stating the importance of a national commitment across departments and institutions for the implementation of NDF recommendations.

After a short tea break, during which participants viewed educational outreach exhibits on display, the NDF assessments developed by national fisheries and wildlife experts were presented by Dipannita Bhattacharjee (Wildlife & Biodiversity Conservation Officer, Wildlife Management and Nature Conservation Division, Chattogram), Dr. Ehsanul Karim (Senior Scientific Officer, BFRI), Shoukot Kabir Choudhury (Assistant Director, (Marine), DoF), and Dr. Md. Niamul Naser (Professor and Chairman, Department of Zoology, University of Dhaka).

This was followed by a presentation of recommended mitigation measures and conditions resulting from NDFs summarized by Dr. Syed Arif Azad, Senior Advisor, WCS. To prevent further decline and promote recovery of these species/species groups, management and conservation actions were discussed among experts and are proposed in the NDFs. These measures would also help stem declines and promote the recovery of other threatened shark and ray species in Bangladesh waters. A summary of recommended mitigation measures resulting from the NDF assessments for CITES Appendix II listed sharks and rays of Bangladesh

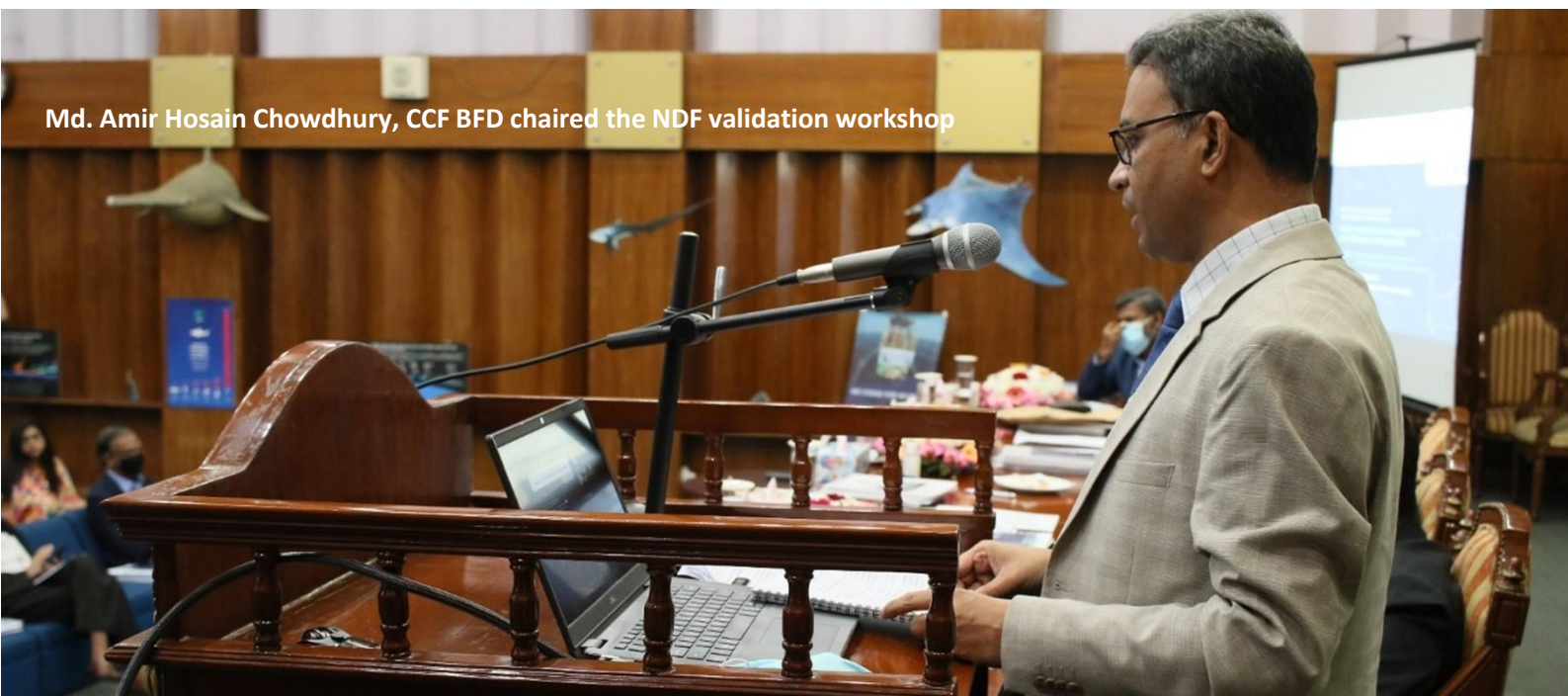
are provided in Appendix 7.

In the question-and-answer session that followed, experts and government representatives shared their opinions and comments on the outcomes and recommendations of the NDF assessments. After the experts present responded to questions primarily about the selection of priority species (CITES Appendix II listed sharks and rays with sufficient landings and international trade demand to inform an NDF assessment) and explained differences between traditional fish stock assessment and NDF assessments, the NDFs were approved for consideration by the Wildlife Advisory Board, who advises the National CITES Management Authority with scientific authority on import/export permits for wild animals and plants.

In the concluding session, Dr. Sharif Uddin, Director, Marine Fisheries Office (DoF) spoke about next steps for implementing proposed fisheries management measures through collaborative action. He emphasized the need for species-specific information on landings and trade for informing shark and ray management. He pointed out the importance of communicating the new Wildlife Act listing through awareness and training programs as initiated by the BFD and WCS. He voiced his approval of using designated ports for shark and ray exports and imports for traceability in their trade. He ended by reiterating the importance of cooperation, coordination, and knowledge sharing among all stakeholders and endorsing the NDFs for submission to the CITES Secretariat and implementation.

Dr. Mollah Rezaul Karim, Conservator of Forests, Wildlife & Conservation Circle (BFD) requested interagency support for the enforcement of the Bangladesh Wildlife Act to more effectively combat illegal wildlife trade in, from, and through Bangladesh. He said that negative NDFs did not mean the end but rather signified the beginning of conservation interventions. He thanked WCS for enabling the Government to conduct CITES NDFs, a valuable skill for assessing permissible trade also in other CITES listed species.

Md. Amir Hosain Chowdhury, CCF BFD chaired the NDF validation workshop



In his vote of thanks, SUFAL PD Gobinda Roy thanked the distinguished guests and participants for their approval of Bangladesh's first NDFs for sharks and rays with commitments for collaborative implementation. Elisabeth Fahrni Mansur (SUFAL shark and ray consultancy team leader, WCS) ended the workshop by congratulating all contributors on the success of developing Bangladesh's first NDF assessments and praised the inter- departmental collaboration between the BFD and DoF as exemplary for bringing about positive changes for effective wildlife conservation management. A group photo for the validation workshop is presented in Figure 8 below.



Figure 8. Group photo of participants in the validation workshop from relevant government institutions with WCS staff and international shark and ray expert and NDF facilitator Daniel Fernando.

APPROVAL FOR SUBMISSION OF NDFs TO CITES SECRETARIAT

On 28 February 2022, at a meeting in BFD Headquarters of the Wildlife Advisory Board which advises the Chief Conservator of Forests on CITES related issues, the NDFs were presented and discussed. The board members recommended that they be approved for official submission to the CITES Secretariat and implementation.

The NDF process and resulting management recommendations were also presented at an interagency consultation workshop on a *National Conservation Strategy and Plan of Action for Sharks and Rays* in June 2021. The attending Honorable Minister, Secretary, and Joint Secretary of the MoEFCC as well as senior representatives from the Ministry of Fisheries and Livestock, DoF, Customs, and law enforcement agencies, expressed their support for the submission of the NDFs to the CITES Secretariat.

As a final step, the CITES Management Authority in Bangladesh is encouraged to formally inform the CITES Secretariat by submitting the NDFs and request notification of all CITES Parties of the zero-export quota for Smooth hammerhead sharks, Mobulid rays, and Rhino rays from Bangladesh.

Appendix 1.



Briefing document prepared by the Wildlife Conservation Society for the Sustainable Forests and Livelihoods (SUFAL) Project consultancy assignment for *Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings*



Convention on International Trade in
Endangered Species of Wild Fauna
and Flora

CITES NON-DETRIMENT FINDINGS (NDFs) FOR PRIORITY SHARK AND RAY SPECIES

What is CITES and how does it work?

International wildlife trade, estimated to be worth billions of dollars annually, is capable of heavily depleting wild populations and bringing some species close to extinction. The trade in wild animals crosses borders between countries, so the effort to regulate it requires international cooperation to safeguard certain species from over-exploitation. The *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) is a legally binding international treaty signed by 183 parties, including Bangladesh, to ensure that trade in species does not threaten their survival in the wild.

CITES works by controlling international trade in specimens of selected species. CITES-listed species may only be imported, exported, or re-exported if authorized by the National CITES Management Authority and the appropriate permit is presented for clearance at the port of entry or exit. Species covered by CITES are listed according to the protection they need: Appendix I includes species threatened with extinction. Trade in these species is permitted only in exceptional circumstances. Appendix II includes species in which trade must be controlled to avoid utilization incompatible with their survival in the wild. And Appendix III includes species at the request of a Party that already regulates trade in the species and needs cooperation from other countries to prevent unsustainable or illegal exploitation.

Member countries commit to support CITES trade regulations by adapting and/or introducing domestic legislation. The National CITES Management Authority is responsible for implementing and enforcing CITES trade regulations. It issues CITES trade permits and reports annually to the CITES Secretariat on trade in CITES-listed species and biennially on legislative, regulatory, and administrative measures taken to enforce the provisions of the Convention. CITES trade data reported by member countries are published on the CITES website. Non-compliance with reporting requirements can result in trade suspensions. The National CITES Scientific Authorities (independent authorities, as designated by the respective Management Authority) provide scientific findings and advice to the Management Authority for the issuance of CITES permits or certificates of Introduction From the Sea (IFS).

What are Non-Detriment Findings (NDFs) and why are they necessary?

The National CITES Management Authority can only issue export permits for CITES Appendix II listed species that are permitted for trade under the Bangladesh Wildlife (Conservation and Security) Act 2012 if the National Scientific Authority can verify that international trade will not negatively impact the survival of these species in the wild. The National CITES Scientific Authority must therefore develop science-based species or genera-specific assessments called *Non-Detriment Findings* or NDFs.

The NDF process evaluates the intrinsic biological vulnerability and conservation concern, trade and fishing pressures, and existing management measures for CITES Appendix II listed shark and ray species. Robust NDFs can be developed for shark and ray species even if stock assessments are not yet available and in data-poor scenarios. NDFs can also set mandatory conditions for trade and provide related advice for adequate management measures to mitigate conservation concerns and pressures, including restrictions on catch or export quantities (e.g., an annual Total Allowable Catch or quotas) or improved monitoring and control systems to ensure compliance with such limits or traceability from catch to consumer. Shark and ray NDFs are generally valid for one year and are recommended to be submitted to the CITES Secretariat.

A *positive* NDF means that the trade in the species does not pose a risk to its wild population and is permitted for the duration of the validity of the NDF. A *positive with conditions* NDF means that the National CITES Scientific Authority may allow exports to continue for a limited period with *conditions* that may include, for example, improvements in monitoring or management that should be carried out, or quotas that should be implemented, during this period. At the end of this period, the authority reassesses whether to maintain a positive (or positive with conditions) NDF or issue a negative NDF.

If the extraction or trade of a species is found to negatively affect the survival of its wild population, then the assessment will result in a *negative* NDF. In this case, proposed measures such as improved monitoring or management need to be implemented before export permits can be issued. The negative NDF is reviewed once these measures have been implemented, and the authority assesses whether a negative or positive NDF is appropriate.

Who is responsible for implementing CITES commitments in Bangladesh?

The National CITES Management Authority for Bangladesh is the Chief Conservator of Forests (CCF) of the Forest Department. The Wildlife Advisory Board functions as the National CITES Scientific Authority. It is constituted by representatives from the Ministry of Environment, Forests and Climate Change, Forest Department Wildlife Circle, National Zoo, IUCN- Bangladesh, and the zoology departments of Dhaka and Jahangirnagar universities, and supports the CCF as CITES Management Authority and Enforcement Focal Point.

Bangladesh has successfully co-sponsored several proposals for listing threatened species, including sharks and rays, under CITES. The Forest Department (mandated for forestry and wildlife species protection and protected area management) leads interagency efforts with the Department of Fisheries (managing fisheries and permissible export of fish products), Customs (controlling import and export), Bangladesh Police (ensuring citizen safety and compliance), Border Guards Bangladesh (controlling transboundary activities), Coast Guard and Navy (protecting of territorial waters) to enforce national CITES-compliant species

protection and trade regulations to combat illegal wildlife trade, including in sharks and rays, through technical capacity building, joint monitoring and standardized reporting.

The [Wildlife Conservation Society](#) (WCS) provides technical support on *Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings* under the Sustainable Forests and Livelihoods (SUFAL) Project implemented by the Forest Department under the Ministry of Environment, Forest and Climate Change (MoEFCC).

How will WCS facilitate the NDF development?

Potential candidate species for NDFs were selected based on the criteria that they were not considered Critically Endangered in the IUCN Global Red List and that sufficient catch or landing data were available to evaluate the species and for international trade to be both profitable and sustainable. Based on these criteria, Smooth hammerhead sharks *Sphyrna zygaena*, Silky sharks *Carcharhinus falciformis*, Spinetail devil rays *Mobula mobular*, and Shortfin devil rays *Mobula kuhlii* were selected as priority species for conducting NDFs.

WCS data from citizen science networks and dedicated fisheries investigations, together with information from the Department of Fisheries (DoF) Marine Fisheries Survey Management Unit (MFSMU) and Fisheries Resources Survey System (FRSS), Bangladesh Fisheries Research Institute (BFRI), the Bangladesh Fisheries Development Corporation (BFDC), and Customs, and published reports from other national institutions or researchers, will be used for generating at least two NDFs. Two three-day long NDF development workshops will be convened from 8.-10. February 2022 in Chattogram and from 13.-15. February 2022 in Dhaka with a total of 24 officials from the BFD and DoF and national experts. During these NDF development workshops, priority species will be evaluated through a structured analysis.² Preparation of NDFs using a facilitated workshop approach will achieve additional benefits of strengthening technical capacity among government officials and local experts and give them practical experience for developing NDFs on their own. The NDFs developed in the two workshops will be refined and finalized at a validation workshop on 17. February 2022, which will include at least 30 representatives from the MoEFCC, MoFL, DoF, BFD, and the National CITES Scientific Committee for submission to the CITES Secretariat.

Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings

Consultancy assignment implemented by the Wildlife Conservation Society Sustainable Forests and Livelihoods (SUFAL) Project Contract No SD-39, Credit No 6325-BD



² <https://CITES.org/sites/default/files/eng/prog/shark/docs/Shark%20NDF%20guidance%20incl%20Annexes.pdf>

Appendix 2.

**Agenda for workshops on Developing Non-Detriment-Findings (NDFs) for
CITES Appendix-II listed Sharks and Rays of Bangladesh**

Chattogram: 8. February - 10. February 2022 (Sharks) Dhaka: 13. February - 15. February (Rays)

Day 1

08:30	Registration
09:00	Welcome, introduction of participants and brief overview of workshop objectives Elisabeth Fahrni Mansur, WCS Bangladesh Marine Conservation Program Manager
09:30	The role of CITES and NDF's in threatened species protection and sustainable trade Dr. Syed Arif Azad, former Director General of Department of Fisheries, Senior Advisor WCS
09:45	Legal and institutional mandates for the management of sharks and rays in Bangladesh Conservator of Forests, Wildlife Management & Nature Conservation Circle
10:15	Current requirements and practices for reporting shark and ray catches or landings in Bangladesh Dr. Md. Sharif Uddin, Director (Marine), Marine Fisheries Office, Department of Fisheries, Chattogram
10:30	Current knowledge on domestic and international shark and ray trade in Bangladesh TBD
10:45	Break, Refreshments
11:00	Introduction to Non-Detrimental-Finding guidance and e-NDF tool Daniel Fernando, International CITES Shark & Ray Expert
12:00	Group work for the Development of NDF: Steps 1-3 Intrinsic biological vulnerability and conservation concern, Pressure on species
13:30	Lunch
14:30	Cont. Group work for the Development of NDF: Steps 1-3 Intrinsic biological vulnerability and conservation concern, Pressure on species
16:15	Brief reporting of group work progress from Step 1-3
16:45	Review of the day, plan for the next day – Daniel Fernando
17:00	End of Day One

Day 2

09:00	Resume Group work for the Development of NDF: Steps 1-3 Intrinsic biological vulnerability and conservation concern, Pressure on species
09:30	Brief reporting of group work results from Step 1-3
10:30	Group work for the Development of NDF: Step 4 Existing management measures
11:30	Break, Refreshments
11:45	Continue Group work for the Development of NDF: Step 4 Existing management measures
12:30	Brief reporting of group work results from Step 4
13:00	Lunch
14:00	Group work for the Development of NDF: Step 5 Non-Detriment Finding and related advice
16:45	Review of the day, plan for the next day
17:00	End of Day Two

Day 3

09:00	Resume group work for the Development of NDF: Step 5 Non-Detriment Finding and related advice
11:00	Brief reporting of group work results from Step 5 – Recommendations for positive/negative NDF completed
11:30	Break, Refreshments
11:45	Group work for the Development of NDF: Step 6 Further measures: Identify actions necessary to implement or improve monitoring, management, or other measures
13:00	Lunch
14:00	Continue Group work for the Development of NDF: Step 6 Further measures: Identify actions necessary to implement or improve monitoring, management, or other measures
15:00	Brief reporting of group work resulting from Step 6 – Further measures
15:30	Review of NDF results, recommendations and NDF development process
16:45	Words of Thanks, Certificates, Group Photo – 17:00 End



Vulnerable Smooth hammerhead (top left) and Silky sharks (top right), and Endangered Spintail devil rays (bottom left) and Shortfin devil rays (bottom right) were identified as priority species for conducting Non-Detriment-Findings (NDFs).

Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings Consultancy assignment implemented by the Wildlife Conservation Society Sustainable Forests and Livelihoods (SUFAL) Project Contract No SD-39, Credit No 6325-BD



Appendix 3. List of Participants from NDF development workshop held from 8-10 February 2022 at the Marine Fisheries Survey Management unit in Chattogram.

Agency/ Organization	Designation	No.
Department of Fisheries (DoF)		
Marine Fisheries Survey Management Unit, Chattogram	Anne Karmaker, Scientific Officer	3
	Md. Gaziur Rahman, Scientific Officer	
	Md. Arshad Sheikh, Marine Production Officer	
Marine Fisheries Office, Chattogram	Md. Zoherul Haque, Statistical Officer	1
Bangladesh Fisheries Research Institute	Turabur Rahman, Scientific Officer, Cox's Bazar	1
Forest Department (FD)		
Forest Department	Enamul Haque, Assistant Conservator of Forests, Sundarbans East Division, Chandpai	4
	Khorshed Alam, Wildlife & Biodiversity Conservation Officer, Chattogram South Forest Division	
	Israt Fatema, Wildlife & Biodiversity Conservation Officer, Cox's Bazar South Forest Division	
	Dipannita Bhattacharjee, Wildlife & Biodiversity Conservation Officer, Wildlife Management and Nature Conservation Division, Chattogram	
Academia		
University of Dhaka	Dr. Md. Sagir Ahmed, Professor, Department of Zoology	1
Total		10

Appendix 4. List of Participants from the NDF development workshop during 13-15 February 2022 at *After Hours Banani*, in Dhaka.

Agency/ Organization	Designation	No.
Department of Fisheries (DoF)		
Matshya Bhaban, Dhaka	Dr. Muhammad Tanvir Hossain Chowdhury, Deputy Chief (Marine)	3
	Shabnam Mostary, Senior Assistant Director	
	Shoukat Kabir Chowdhury, Assistant Director	
Marine Fisheries Office, Chattogram	Ireen Asad, Assistant Director	1
Bangladesh Fisheries Research Institute	Dr. Ehsanul Karim, Senior Scientific Officer	1
Forest Department (FD)		
Forest Department	Abu Naser Mohsin, Divisional Forest Officer, Sundarban West Forest Division	4
	Md. Abdullah Al Mamun, Wildlife & Biodiversity Conservation Officer, Patuakhali Coast Afforestation Division.	
	Md. Aminul Islam, Wildlife & Biodiversity Conservation Officer, Coast Afforestation Division, Bhola	
	Md. Mofizur Rahman Chowdhury, Ichthyologist, Wildlife Management and Nature Conservation Division Khulna	
Academia		
University of Dhaka	Dr. Md. Niamul Naser, Professor and Chairman, Department of Zoology	1
Sher-e-Bangla Agricultural University (SAU)	Dr. Kazi Ahsan Habib, Professor and Chairman, Department of Fisheries and Biology and Genetics	1
Sheikh Kamal Wildlife Center	Shohel Rana, Herpetologist, Gazipur	1
Total		12

Appendix 5. Agenda for workshop to validate Non-Detriment Findings (NDF) for priority CITES Appendix II listed sharks and rays

17 February 2022, Hoimonti Auditorium (First floor)

Inaugural Session – Introductions and Current	
9:30	Welcome address with brief introduction of participants, workshop objectives and anticipated outcome by Mr. Gobinda Roy, Project Director of SUFAL
9:40	Combating illegal wildlife trade through collaborations, education, and political will by Mr. Dipak Kumar, Deputy Secretary, Ministry of Environment, Forests and Climate Change
9:50	Interagency cooperation for protecting threatened wildlife and their habitats by Mr. Md. Jahidul Kabir, Deputy Chief Conservator of Forests, Forest Department
9:55	Current knowledge of shark and ray exports from Bangladesh by Guest of Honour Mr. Kh. Mahbubul Haque, Director General, Department of Fisheries
10:05	Commitments, Achievements, and Challenges with CITES compliance in Bangladesh by Chair Mr. Md. Amir Hosain Chowdhury, Chief Conservator of Forests, Forest Department
10:15	The role of Non-detriment Findings (NDFs) in regulating sustainable harvest and trade for sharks and rays by Mr. Daniel Fernando, International CITES shark and ray NDF expert
10:30	Tea/Coffee Break
Technical Session – NDF results and management recommendations	
11:00	The NDF process – An Overview by Mr. Daniel Fernando, international shark and ray expert, CITES NDF specialist
11:30	Presentations of NDFs developed by national fisheries and wildlife experts for Silky Shark <i>Carcharhinus falciformis</i> , Smooth Hammerhead Shark <i>Sphyrna zygaena</i> , Mobulid Rays (Mobulidae - <i>Mobula mobular</i> , <i>M. kuhlii</i> , <i>M. tarapacana</i> , <i>M. thurstoni</i> , <i>M. eregoodoo</i> , <i>M. birostris</i>), and Rhino Rays (Giant Guitarfishes <i>Glaucostegiididae</i> and the Wedgefishes <i>Rhinidae</i>)
12:15	Presentation of recommended mitigation measures and conditions resulting from NDFs developed by national fisheries and wildlife experts followed by Q&A session facilitated by WCS
13:00	Lunch break
Concluding Session – Next Steps	
15:30	Implementing proposed fisheries management measures through collaborative action by Dr. Sharif Uddin, Director Marine Fisheries Office, Department of Fisheries
15:40	Enforcement of the Bangladesh Wildlife Act (2012) through interagency collaboration by Mr. Mollah Rezaul Karim, Conservator of Forests, Wildlife & Conservation Circle, FD
15:50	Next steps for approval of NDFs and implementing management recommendations by Chair
16:00	Vote of thanks for the approval of Bangladesh's first NDFs for sharks and rays with commitments for collaborative implementation by Project Director of SUFAL

Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings

Consultancy assignment implemented by the Wildlife Conservation Society Sustainable Forests and Livelihoods (SUFAL) Project Contract No SD-39, Credit No 6325-BD



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Appendix 6. List of participants from the NDF Validation workshop held at 17th of February 2022 at Ban Bhaban, Agargaon (not in order of seniority).

Agency/ Organization	Designation	No.
Department of Fisheries (DoF)		
Matshya Bhaban, Dhaka	Kh. Mahbubul Haque, Director General	3
	Dr. Muhammad Tanvir Hossain Chowdhury, Deputy Chief (Marine)	
	Shoukat Kabir Chowdhury, Assistant Director (Marine)	
Ministry of Environment, Forest and Climate change (MoEFCC)	Dipak Kumar, Deputy Secretary	1
Marine Fisheries Office, Chattogram	Dr. Md Sharif Uddin, Director (Marine)	2
	Md. Zoherul Haque, Statistical officer	
Bangladesh Fisheries Research Institute (BFRI)	Dr. Yahia Mahmood, Director General	2
	Dr. Ehsanul Karim, Senior Scientific Officer	
Bangladesh Fisheries Development Corporation	Md. Ayub Afnan, Economic Analyst	1
Bangladesh Forest Department (BFD)		
Forest Department	Md. Amir Hosain Chowdhury, Chief Conservator of Forests	12
	Dr. Mollah Rezaul Karim, Conservator of Forests	
	Jahidul Kabir, Deputy Chief Conservator of Forests	
	Md. Moyeenuddin Khan, Deputy Chief Conservator of Forests, Education and Research	
	A.S.M Jahir Uddin Akon, Director, Wildlife Crime Control Unit	
	Dr. Mariam Akhter, Assistant Chief Conservator of Forests	
	Md. Rahat Hossain, Wildlife and Biodiversity Conservation Officer	
	Fa-Tu-Zo Khaleque Mila, Wildlife & Biodiversity Conservation Officer	
	Dipannita Bhattacharjee, Biodiversity and Wildlife Conservation Officer, Chattogram	
	Nirmal Kumar Paul, Divisional Forest Officer, Wildlife Division, Khulna	
	Sayed Mahmudur Rahman, Mammologist, Development planning unit	
	Dr. Zahidur Rahman Miah, Director, National Botanical Garden	
SUFAL	Gobinda Roy, Project Director, SUFAL	6
	Ishtiaque Uddin Ahmed, Team leader, Consultant, SUFAL Project Management Unit	
	Sharmin Akter, Deputy Project Director SUFAL Project	
	Md. Rahat Hossain, Assistant Project Director- 2, SUFAL Project	
	Shafiul Alom Chowdhury, Consultant, SUFAL Project Management Unit	
	MD Abdullah Abraham Hossain, SUFAL Project Management Unit Member	

Academia		
University of Dhaka	Dr. Md. Niamul Naser, Professor and Chairman, Department of Zoology	2
	Dr. Sagir Ahmed, Professor, Department of Zoology	
Sher-e-Bangla Agricultural University (SAU)	Dr. Kazi Ahsan Habib, Professor and Chairman, Department of Fisheries and Biology and Genetics	1
NGO/Research Institute		
FAO	Wali Uz Zaman, Program Support Assistant	2
	Dr. MD Abul Hasanat, National Project Coordinator	
Environment, Agriculture and Development Services (EADS)	Md. Zahidul Islam, Consultant	1
Total No. of Participants		33

MITIGATION MEASURES AND RECOMMENDATIONS



Research

- ⇒ Conduct research to avoid and reduce bycatch and post-release mortalities of sharks and rays (with a focus on CITES-listed species) in artisanal and industrial fisheries.
- ⇒ Support ongoing population genetic studies in the Indian Ocean (e.g., provide tissue samples for regional population stock assessments initiated by the IOTC or other regional research projects).
- ⇒ Determine spatial distribution in Bangladesh waters and identify habitats used during critical life history stages (e.g., mating, pupping, nursery grounds).
- ⇒ Conduct socio-economic studies on shark fisheries, trade, value, and alternative livelihoods.
- ⇒ Investigate key biological and ecological parameters, life-history, behavioural traits, and discard survival.
- ⇒ Determine whether different deployment depths of gillnets or longlines impact bycatch rates.
- ⇒ Test suitable alternatives to gaffing and/or spearing for improving post-release survival of sharks and rays.
- ⇒ Utilise existing national capacity (e.g., at universities) to improve the identification of products that cannot be visually identified (e.g., oil or meat of certain shark or ray species) through genetic tools.



Awareness and Training

- ⇒ Train fishers on best handling and release practices for protected species, particularly undersized and/or gravid specimens, to reduce bycatch mortalities and protect breeding females. This is of particular importance for rhino rays with high chance of survival following live release. In the case of mobulid rays, document (any) discards with condition on release in accordance with IOTC Res. 19/03.
- ⇒ Motivate fishers to record and report data from bycaught specimens, including location, gear type, size, sex, and maturity of catches.
- ⇒ Encourage the use of iron (or other corrosive) hooks, circle hooks (over j-hooks), and discourage the introduction of wire-leaders on long-lines, to cause less harm to sharks and rays.
- ⇒ Sensitise local administrative officers and the executive and judicial magistrates on wildlife crimes and the associated penalties to ensure that illegal wildlife trade is recognized and prosecuted as a serious crime.
- ⇒ Improve the skills of fishers, traders, other members of marine fishery stakeholder associations, government officers, and individuals through observer and landing survey programmes to identify legally protected sharks and rays and enhance compliance with wildlife protection and trade laws.
- ⇒ Raise awareness about species protection and trade laws (including CITES) among shipping and courier service providers, domestic traders and consumers, exporters and importers, and fishery stakeholders through the provision of posters or billboards featuring identifying characteristics of Schedule I and II listed species, interactive educational outreach events, and tailored communication materials, at major landing, processing, and market/trading sites, as well as exit/entry points.
- ⇒ Request training support from NGOs and international bodies (e.g., Interpol, CITES, World Customs Organisation) to identify how and where shark and ray products are being exported, effective means of exchanging intelligence and combating illegal wildlife trade.



Policy and Governance

National

- ⇒ Strengthen enforcement of existing fishery management regulations, including gear specifications, operating depth, and marine protected area rules, through systematic inter-agency patrols where patrol records are used to plan next patrols (i.e., SMART enforcement patrols). Joint patrolling will additionally improve IUU compliance.
- ⇒ Address shortcomings in the Wildlife (Conservation and Security) Act, 2012, including definitions of Schedule I and II and consequences of violations. Ensure that punishments deter illegal wildlife trade and target the appropriate violator.
- ⇒ Mandate enforcement authorities, including the Department of Fisheries, Coast Guard, Navy, and River Police, with implementing the Wildlife Act Schedule I and II regulations for marine wildlife by harmonising Fisheries Rules with the Wildlife Act for ensuring effective conservation of threatened marine species, including sharks and rays, and their habitats.
- ⇒ Introduce precautionary regulations to prohibit shark finning.
- ⇒ MoEFCC could request the committee of the Biodiversity Act (2017) to highlight and prioritise shark and ray conservation and management at a national level.
- ⇒ DoF to require all exporters and importers of shark and ray products to register and declare their exports/imports at a species level. For nationally protected and/or CITES listed species, appropriate permits issued by BFD must be provided by the trader and verified by DoF before export certificate/permission is issued.
- ⇒ BFD to request Bangladesh Customs to introduce and mandate species-specific HS codes for all shark and ray products, with separate codes for fins, skins, meat, and cartilage, to improve traceability and reporting of exports/imports
- ⇒ DoF, BFD, and Customs to develop a risk index for exporters/importers to support screening upon receipt of export/import permit requests, including black-listing and fining enterprises with multiple violations.
- ⇒ Look into establishing an informal communication group (e.g., on WhatsApp, imo) consisting of local and international shark identification experts to assist with identifying sharks and/or shark products from a camera photo at short notice.
- ⇒ Incorporate additional critical habitats for many shark and ray species by expanding the Swatch-of-No-Ground Marine Protected Area (MPA) and establish MPA monitoring patrols jointly with DoF, BFD, Coast Guard, and Navy.
- ⇒ Improve participatory management through active stakeholder involvement in the development, implementation, and evaluation of national policies, conservation management or action plans.
- ⇒ Encourage the adoption of EJP's 10 principals for global transparency in fisheries (<https://ejfoundation.org/news-media/ejfs-ten-principles-for-global-transparency-in-the-fishing-industry-launched>)

Regional & International

- ⇒ Strengthen engagement of Bangladesh at the IOTC to advocate for better regulation of shark and ray fisheries by all IOTC members. This includes prohibiting the use of FADs in the Indian Ocean, requesting all IOTC members to publish and share their CITES NDFs for pelagic sharks and rays falling under the IOTC Area of Competence, and encouraging the development of regional NDFs to better address conservation concerns of shared stocks.
- ⇒ Establish communications with the CMS Sharks MoU, a non-binding convention that provides recommendations on improving shark and ray management and could be a valuable source of knowledge and capacity building, to identify opportunities to become a Signatory and obtain clarifications on potential obligations.



Monitoring and Reporting

- ⇒ Improve species-specific monitoring and information gathering in national data collection initiatives, including through observers at landing sites and on industrial trawl vessels, and standardized data collection protocols, including information on catch location and gear type, size, sex, and maturity of catches, documenting discards and the condition at release, particularly from priority species (e.g., CITES, CMS, IOTC listed-species, other shark and ray species of national importance).
- ⇒ Consolidate and optimize existing data collection and reporting procedures, protocols, and forms (e.g., procedures and reporting formats used by Marine Fisheries Survey Management Unit, Fisheries Resources Survey System, and the Bangladesh Fisheries Development Corporation) to provide species-specific details, together with officers/stakeholders with practical, in-field experience. Standard operating procedures developed by the BFD/SUFAL with technical support from WCS could be adapted.
- ⇒ Evaluate opportunities for crew-based observer schemes in artisanal fishing fleets, including provision of a GPS as navigation aid in exchange for obtaining shark and ray catch location data, and onboard observers or electronic monitoring systems (EMS) for industrial fleets.
- ⇒ Harmonize data, in particular bycatch information, from different sources (e.g., data reported in national statistics or to the IOTC, FAO, and CITES). This includes revising current data collection procedures and protocols.
- ⇒ Utilize community science (e.g., trained citizen scientists from fisher communities) for monitoring the impacts/effectiveness of fisheries management regulations.
- ⇒ BFD and DoF to identify opportunities with Bangladesh Customs to designate a limited number of ports of exit/entry for shark, ray, and other wildlife products to enable better monitoring of exports/imports while reducing the need to enhance detection and identification capacity at all exit/entry points across the country.
- ⇒ DoF to identify and make necessary changes to the current quality inspection process for fishery export products to ensure compliance with national wildlife protection and international wildlife trade regulations.
- ⇒ DoF Fish Inspection and Quality Control (FIQC) unit should prepare a methodology for random sampling export shipments for shark and ray products in collaboration with Customs and BFD. Training support can be requested 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 and combat illegal wildlife trade.
- ⇒ Ensure that all wildlife crime cases are shared with the BFD Wildlife Crime Control Unit (WCCU) to facilitate reporting to regional bodies (e.g., CITES, SAWEN).
- ⇒ BFD to consider electronic CITES permission system with support from CITES Secretariat to facilitate sharing of CITES permit data with DoF and Customs.

These recommendations will be incorporated in the *National Conservation Strategy and Plan of Action for Sharks and Rays in Bangladesh* under preparation by the BFD and DoF in consultation with national experts and local stakeholders.

