



Sustainable Forests & Livelihoods (SUFAL) Project

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

Inception Report

February 2021



Bangladesh Forest Department
Ministry of Environment, Forest and Climate Change

Inception Report:

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

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Cover Photo

Giant guitarfish are among the world's most threatened marine fishes. © WCS Bangladesh



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Acronyms and Abbreviations

BFD – Bangladesh Forest Department
BFDC – Bangladesh Fisheries Development Corporation
BFRI – Bangladesh Fisheries Research Institute
CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora
CF – Conservator of Forests
CR – Critically Endangered
DFO – Divisional Forest Officer
DoF – Department of Fisheries
EEZ – Exclusive Economic Zone
EN – Endangered
FRSS – Fisheries Resources Survey System
GoB – Government of Bangladesh
IOTC – Indian Ocean Tuna Commission
IUCN - International Union for Conservation of Nature
MFSMU – Marine Fisheries Survey Management Unit
MoEFCC – Ministry of Environment, Forests and Climate Change
MoFL – Ministry of Fisheries and Livestock
MPA – Marine Protected Area
NDF – Non-Detriment Finding
NPoA – National Plan of Action
PD – Project Director
SMART – Spatial Monitoring and Reporting Tool
SoNG – Swatch-of-No-Ground
SOPs – Standard Operating Procedures
SUFAL – Sustainable Forests & Livelihoods Project
ToR – Terms of Reference
VU – Vulnerable
WCS – Wildlife Conservation Society

Background

Bangladesh is a global “hotspot” for some of the world’s most threatened marine wildlife including sharks and rays. Thirty-nine shark and 56 ray species have been identified in Bangladesh with an additional 13 shark and six ray species suspected to occur in the country’s Exclusive Economic Zone (EEZ). Of the species documented or suspected to occur in Bangladesh, 32 shark and 41 ray species are considered threatened (Critically Endangered (CR), Endangered (EN) or Vulnerable (VU)) in the Global IUCN Red List. Of these same species, three rays are included in CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) Appendix I and 12 sharks and 13 rays are included in CITES Appendix II. Information collected by the Wildlife Conservation Society (WCS) from fish landing sites has revealed that large numbers of threatened sharks and rays are being traded in Bangladesh for both national and international markets (WCS 2018).

Objectives

The consultancy assignment *Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings* contributes to the *Sustainable Forests and Livelihoods (SUFAL) Project* implemented by the Bangladesh Forest Department (BFD) under the Ministry of Environment, Forest, and Climate Change (MoEFCC). The objectives of this assignment are to make major contributions towards (1) Protecting sharks and rays threatened by overexploitation from targeted and non-targeted catches; (2) Ensuring that the exploitation of non-threatened sharks and rays is sustainable and does not result in them becoming threatened; (3) Sustaining fishing livelihoods through the conservation of threatened sharks and rays and sustainable exploitation of non-threatened species; (4) Developing an informed public about the critical role of sharks and rays in maintaining a healthy ecosystem through mass awareness programs for species conservation; (5) Establishing a strong capacity among government and community stakeholders for the conservation management of sharks and rays; and (6) Strengthening coordination with the Department of Fisheries regarding shark and ray conservation and thereby achieving compliance with CITES regulations on international trade in globally threatened sharks and rays.

Detailed description of activities

1. *Conduct an assessment for the scientific investigations on the status of sharks and rays and identify threats to their survival*

An assessment for the scientific investigations on the status of sharks and rays and identifying threats to their survival will be made using information from (1) systematic investigations and standardized interviews carried out by WCS during at-sea surveys, (2) WCS citizen science networks at fish landing sites and among fishermen catching sharks and rays as both target and non-target catches, (3) two consultative workshops convened for at least 40 people, including government officials, members of shark and ray fishing communities, shark and ray traders and academics, (4) information from the Department of Fisheries (DoF) Marine Fisheries Survey Management Unit (MFSMU), Bangladesh Fisheries Research Institute (BFRI), Fisheries Resources Survey

System (FRSS) and the Bangladesh Fisheries Development Corporation (BFDC), and (5) published reports.

Between 2017 and 2020, WCS conducted systematic catch investigations and standardized interviews with small-scale fishers during at-sea surveys. For conducting a status assessment and identifying threats we will compile and complete analyses of existing data on sharks and rays from these investigations. In December 2021/January 2022 WCS will conduct additional investigations with a particular focus on the most threatened species and establishing conservation management for sharks and rays in the Swatch-of-No-Ground and Nijhum Dwip MPAs. Plans include assessing the impacts of the set-bag net fishery on threatened sharks and rays in and around the Swatch-of-No-Ground MPA and targeted ray catches in unbaited bottom long-lines in the new Nijhum Dwip MPA.

WCS Bangladesh established a *Citizen Scientist Shark and Ray Landing Site Data Collectors Network* that, between December 2016 and January 2019, made almost 3,000 visits to eight coastal fish landing sites recording 2,687 landings of 19 shark species and 3,103 landings of 41 ray species (Figure 1).

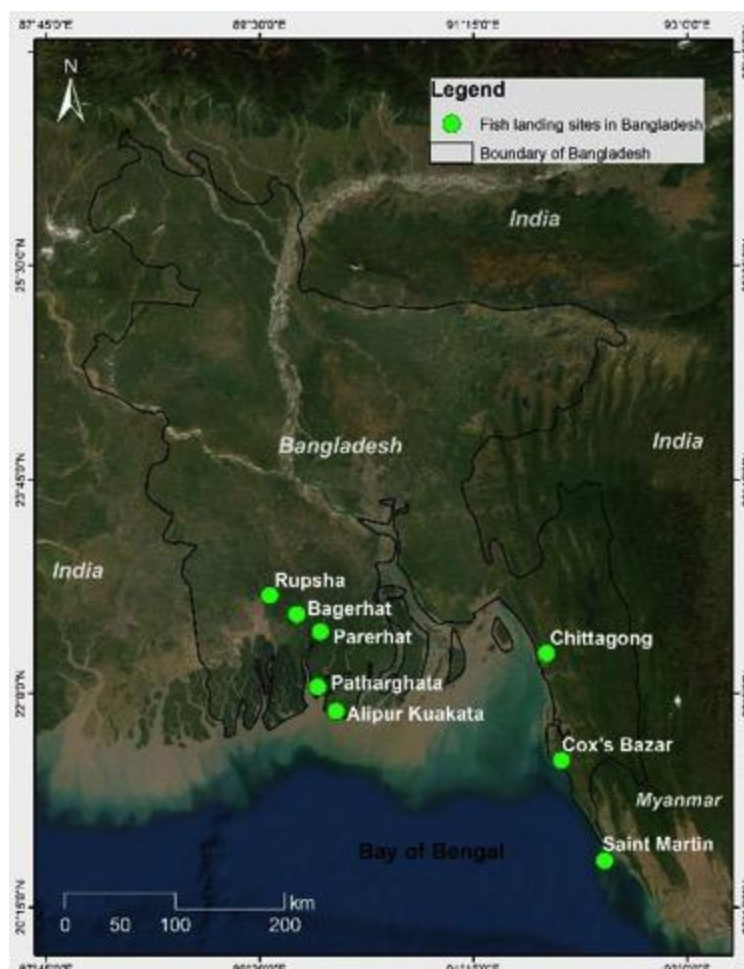


Figure 1. Locations of the eight fish landing sites in Bangladesh where sharks and ray landings were documented between December 2016 and January 2019.

WCS also established a *Citizen Science Fishermen Safety Network* among gillnet fishermen that, between October 2015 to February 2019, collected photo-verified, geo-referenced information on fishing practices and catches during 463 fishing trips and 3,559 net sets using medium-mesh size nets (documenting 545 catches of nine shark species and 57 catches of seven ray species) (Figure 2), and 85 fishing trips and 688 net sets using large-mesh nets (documenting 190 catches of nine shark species and 24 catches of 4 ray species) (Figure 3).

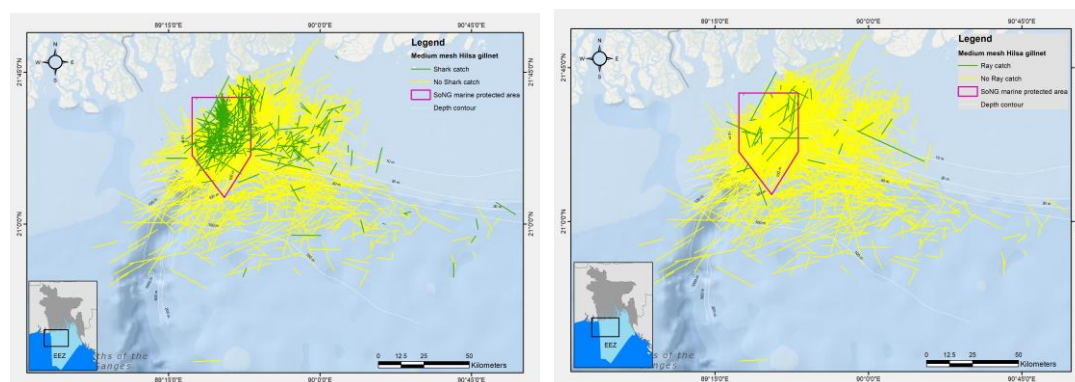


Figure 2. Locations of medium-mesh size net sets with those catching sharks (left) and rays (right) indicated in green and those with no shark or ray catches indicated in yellow.

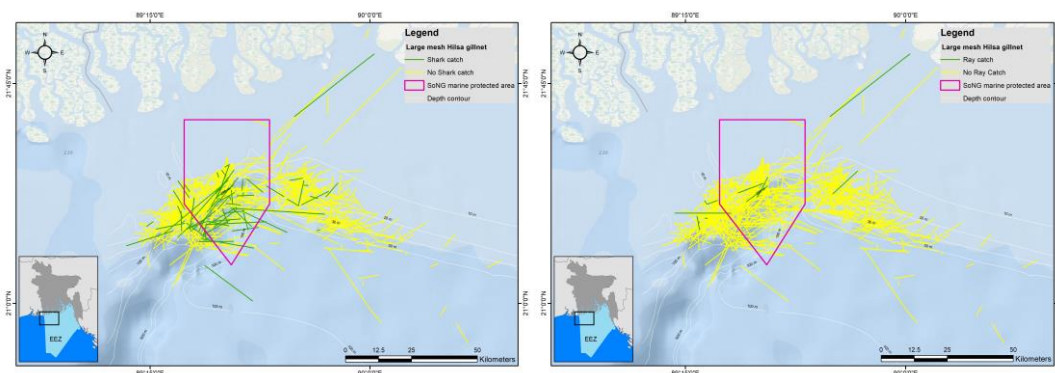


Figure 3. Locations of large-mesh size net sets with those catching sharks (left) and rays (right) indicated in green and those with no shark or ray catches indicated in yellow.

Under the SUFAL assignment, WCS will update the analyses of data for the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network* and for the WCS *Citizen Science Fishermen Safety Network*. In addition, WCS will strengthen its *Citizen Science Fishermen Safety Network* by recruiting, training, and equipping ten new small-scale fishing vessel captains and crew.

The capacity of both WCS citizen science networks will be further enhanced through two intensive two-day training workshops on improving shark and ray data collection to be held in Chattogram and Khulna in April and May 2021. After the trainings WCS will make mentoring visits and telephone calls to ensure that the citizen scientists are applying their improved skills for reporting shark and ray catches and landings and safely releasing threatened marine wildlife.

As part of the shark and ray status assessment, WCS will convene two one-day long consultation workshops with fishers, fishing vessel owners and traders engaged in shark and ray fisheries, processing, and trade, and Government representatives from

the BFD, DoF, MFSMU, BFRI, FRSS, BFDC, Customs, as well as academics, researchers and relevant NGOs. Through facilitated discussions and working group sessions, practical approaches to reduce mortalities and trade of threatened species and ensure the sustainable exploitation of species not in immediate danger of extinction will be identified. These will include management interventions and incentives for sustainable fisheries and livelihood alternatives.

Current plans are to convene the first day-long consultation for Government representatives, academics, researchers and relevant NGOs in Chattogram in May 2021, and another one with fishers, fishing vessel owners and traders engaged in shark and ray fisheries, processing, and trade in Kuakata in November 2021. Recommendations from these workshops will be integrated into the *National Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh* (see below).

Pelagic trawl fisheries that likely catch large numbers of pelagic sharks are poorly represented at the landing sites for small-scale coastal fisheries where the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network* operates. To fill this knowledge gap, WCS will engage with the DoF – particularly the MFSMU/FRSS – from the onset of the project for the baseline status and threat assessment, the development of CITES non-detriment findings (NDFs) and the *National Plan of Action (NPOA) for the Conservation Management of Sharks and Rays in Bangladesh*, and to improve monitoring of shark and ray catches in small-scale and commercial fisheries in compliance with CITES and Indian Ocean Tuna Commission (IOTC) reporting requirements.

2. *Submit a baseline status report and threat assessment of sharks and rays*

To support the development of a science-based, community-informed *NPOA for the Conservation Management of Sharks and Rays* in Bangladesh, and NDFs for CITES Appendix II listed shark and ray species, a comprehensive background document on the status and threats to sharks and rays in Bangladesh will be prepared and submitted in July 2021. This report will be based on results from the scientific investigations and the first consultative workshop detailed above.

3. *Identify priority species for conservation management and conducting CITES non-detriment findings (NDFs)*

The NDF process evaluates the intrinsic biological vulnerability, conservation concern, trade, fishing pressure, and existing management measures for CITES Appendix II listed shark and ray species. The criteria we used for selecting potential candidate species for NDFs were 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.

Altogether nine shark species listed in CITES Appendix II are either confirmed (6) or suspected (3) to occur in Bangladesh. Six of these species, including three that are confirmed (Oceanic whitetip *Carcharhinus longimanus*, Shortfin mako *Isurus oxyrinchus* and Longfin mako *Isurus paucus*) and three that are suspected (White *Carcharodon carcharias*, Bigeye thresher *Alopias superciliosus* and Common thresher

Alopias vulpinus) to occur in Bangladesh, were never recorded by the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network*. Due to both a lack of information and potential for profitable and sustainable export, these species were not considered to be suitable candidates for conducting NDFs.

All six CITES Appendix II shark species mentioned above occur mainly in pelagic habitat. As mentioned above, a research priority under the SUFAL assignment is to expand WCS research to investigate pelagic shark species caught in commercial trawl fisheries that were not documented at the eight landing sites sampled by the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network*. This means that, as information becomes available from catches in offshore trawl fisheries, these species could become suitable candidates for future NDFs.

Based on the criteria summarized above, of the remaining six shark species listed in CITES Appendix II for which we have sufficient information on catches and landings from our citizen science networks (Table 1), we identified VU Smooth hammerhead sharks *Carcharhinus falciformis*, with information of 283 individuals from 12 landings, and VU Silky sharks *Sphyrna cf. zygaena*, with information of 32 individuals from 16 landings, as suitable candidates for preparing NDFs.

Altogether 13 ray species are listed in CITES Appendix II that have been confirmed as occurring in Bangladesh. Although their occurrence was confirmed by other sources, four of these species, including the Bottlenose wedgefish *Rhynchobatus australiae*, Clubnose guitarfish *Glaucostegus thouin*, Longhorned Pygmy devil ray *Mobula eregoodootenkee* and Smoothnose wedgefish *Rhynchobatus laevis*, were never recorded by the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network*. The habitat of these four ray species is generally in coastal waters, which were well represented in the catches sampled at the eight fish landing sites. This means their occurrence in Bangladesh is probably rare and that these species are not suitable for export or conducting NDFs.

Based on our NDF selection criteria, of the remaining nine ray species (Table 2), EN Spinetail/Giant devil rays *Mobula mobular*, with information on 103 landings of 418 individuals, and EN Shortfin pygmy devil rays *Mobula kuhlii*, with information on 30 landings of 195 individuals, were selected as candidate species for conducting NDFs (Figure 4).

Although the SUFAL assignment requires NDFs to be prepared for only two species, one shark and one ray, we will attempt to complete NDFs for four species, two sharks and two rays. Based on the larger number of individuals recorded by our WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network*, thus providing a potential basis for sustainable export, we will first complete NDFs for Smooth hammerhead sharks and Shortfin pygmy devil rays, and then, if sufficient resources are available, conduct NDFs for Silky sharks and Spinetail devil rays.

Table 1. CITES Appendix II listed shark species recorded by the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network* with information on the proportion they represent of 2,220 landings and 2,102,363 individuals identified to species, and their Global IUCN Red List status and current Wildlife (Conservation and Security) Act, 2012, listing.

Common name	Scientific name	% Landings	% Numbers	IUCN Red List Status	Wildlife Act Schedule
Great hammerhead	<i>Sphyrna mokarran</i>	0.45	0.02	CR	NL
Scalloped hammerhead	<i>Sphyrna lewini</i>	25.05	3.38	CR	I
Pelagic thresher	<i>Alopias pelagic</i>	0.05	<0.01	EN	NL
Whale shark	<i>Rhincodon typus</i>	0.18	<0.01	EN	I
Silky shark	<i>Carcharhinus falciformis</i>	0.72	<0.01	VU	I
Smooth hammerhead	<i>Sphyrna cf. zygaena</i>	0.54	0.01	VU	I

Table 2. CITES Appendix II listed ray species recorded by the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network* with information on the proportion they represent of 1,142 landings and 74,808 individuals identified to species, and their Global IUCN Red List status and current Wildlife (Conservation and Security) Act, 2012, listing.

Common name	Scientific name	% Landings	% Numbers	IUCN Red List Status	Wildlife Act Schedule
Bowmouth guitarfish	<i>Rhina ancylostoma</i>	0.44	0.01	CR	NL
Giant guitarfish	<i>Glaucostegus typus</i>	2.89	0.21	CR	NL
Sharpnose guitarfish	<i>Glaucostegus granulatus</i>	3.85	0.58	CR	I
Widenose guitarfish	<i>Glaucostegus obtusus</i>	1.93	0.2	CR	NL
Bentfin devil ray	<i>Mobula thurstoni</i>	0.61	0.03	EN	NL
Sicklefin devil ray	<i>Mobula tarapacana</i>	0.18	0.01	EN	NL
Spinetail/Giant devil ray	<i>Mobula mobular</i>	9.02	0.56	EN	NL
Shortfin Pygmy devil ray	<i>Mobula kuhlii</i>	2.63	0.26	EN	NL
Giant Manta ray	<i>Mobula birostris</i>	0.09	<0.01	VU	NL

4. *Develop a report on actions needed for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction*

The baseline status and threat assessment report will serve as the primary source of information for an additional report on actions needed for the conservation of threatened sharks and rays (i.e., those included in Schedule I of the proposed revised list of shark and ray species in the Wildlife (Conservation and Security) Act, 2012, and in CITES Appendix I) and the sustainable exploitation of species not in immediate danger of extinction (i.e., those included in Schedule II of the proposed revised list of shark and ray species in the Wildlife (Conservation and Security) Act, 2012, or not listed in the act, and in CITES Appendix II or not listed in any of the CITES appendices.

This report on locally practical actions will be submitted in July 2021 along with the baseline status report and threat assessment of sharks and rays in a comprehensive background document to support the formulation of the NPoA for the Conservation Management of Sharks and Rays in Bangladesh.



Figure 4. Vulnerable Smooth hammerhead (top left) and Silky sharks (top right) and Endangered Spinetail devil rays (bottom left) and Shortfin devil rays (bottom right) were identified as priority species for conducting Non-Detriment-Findings (NDFs).

5. *Conduct NDFs for priority shark and ray species considering their economic importance, conservation status and available data*

The National CITES Management Authority can only issue export permits for CITES Appendix II listed species if the National Scientific Authority verifies through the NDF process that international trade will not negatively impact the survival of these species in the wild. NDFs can also set mandatory conditions for trade and provide related advice on management measures needed to mitigate conservation concerns and pressures, including restrictions on catch or export, and improve monitoring and control systems to ensure compliance with such limits.

A positive NDF means that the trade in the species does not pose a risk to its wild population. 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 and management need to be implemented before export permits can be issued.

WCS data from citizen science networks and dedicated fisheries investigations, together with information from the DoF MFSM, FRSS, BFRI, and BFDC, will be used for generating at least two NDFs, one each for a shark and ray species. As a first step, a detailed briefing document has been prepared to support initial communication with key officers from these agencies (Appendix 1).

Two three-day long NDF development workshops will be convened in November and December 2021 with a total of 24 officials from the BFD and DoF and national experts (Appendix 2). During these NDF development workshops, candidate species will be evaluated through a structured analysis.¹ The NDFs developed in the two workshops will be refined and finalized at a validation workshop in January 2022, which will include at least 30 representatives from the DoF and the BFD, for submission to the CITES Secretariat by February 2022. 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.

Assistance with preparing the NDFs, facilitating the above-mentioned workshops and training DoF and BFD officers on developing NDFs will be provided by the international shark and ray expert Daniel Fernando, who has extensive experience in leading NDF development workshops in Sri Lanka, India, Pakistan, Peru, Ecuador, Taiwan, and Indonesia (Appendix 3). Financial support for this expert assistance, including salary and international travel, will be paid for by WCS through a separate grant from the Shark Conservation Fund (<https://www.sharkconservationfund.org/>).

6. *Formulate a National Conservation Strategy for the conservation management of sharks and rays in partnership with government and community stakeholders*

The *National Plan of Action (NPoA) for the Conservation Management of Sharks and Rays in Bangladesh* will serve as the blueprint for government agencies, local communities, NGOs, research institutions, and private enterprises to engage in protecting the most endangered sharks and rays from extinction and ensuring sustainable, productive fishery livelihoods in coastal communities.

WCS will develop the NPoA using information from the baseline status report and threat assessment, and a report on actions needed for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction. Information from extensive consultations with government stakeholders, academics, and shark and ray fishermen and traders (see above) will also be incorporated, along with suggestions for governance frameworks to strengthen the protection of threatened species and sustainable exploitation of species that may not be currently threatened but could become threatened soon without management interventions (see below). The NPoA will include cost estimates and propose sustainable financing mechanisms for its implementation under different scenarios, including budget allocations and contributions from private sectors.

In July 2021, WCS will submit a comprehensive background document for informing the NPoA. In November 2021, WCS will conduct a second consultation workshop with fishers, fishing vessel owners and traders engaged in shark and ray fisheries, processing, and trade, to discuss management interventions, incentives for sustainable fisheries and livelihood alternatives (see above). The NPoA will then be finalized after a national consultation with 30 participants representing relevant

¹ <https://cites.org/sites/default/files/eng/prog/shark/docs/Shark%20NDF%20guidance%20incl%20Annexes.pdf>

Government agencies, institutions and ministries planned for May 2022, with submission of the NPoA for inter-ministerial endorsement in June 2022.

7. Suggest governance frameworks to strengthen the conservation of threatened sharks and rays and the sustainable exploitation of non-threatened species

A key part of the NPoA will include suggestions for governance frameworks to strengthen the conservation of threatened sharks and rays, and the sustainable exploitation of non-threatened species. Suggestions for governance frameworks will scale-up effective models for regulatory and policy changes, including law enforcement and community engagement, and novel incentives to assist in poverty reduction in shark and ray dependent coastal communities. These incentives will focus on sustainable fisheries regulated under the NDF process and on developing supplementary livelihood alternatives with an emphasis on women working in shark and ray fishery processing. Regional and global shark and ray conservation strategies will be adapted with input from local stakeholders to ensure the feasibility of governance recommendations.

8. Develop technical capacity and awareness, and foster increased commitment, political will and financial investment for the conservation management of sharks and rays across multiple sectors

Technical capacity and awareness for shark and ray conservation will be strengthened under this assignment through interactive training workshops, sustained mentoring, and the development of user-friendly educational outreach and training materials tailored to community and government stakeholders. The participatory, collaborative training and mentoring activities will ensure that the technical capacity is in place to sustain project objectives after the SUFAL assignment is completed.

Four two-day training workshops will be convened in April and May 2021 for a total of 40 mid-level BFD and DoF officers, and 40 field-level BFD, DoF and BFDC officers, and citizen scientist fishermen and landing site data collectors in Chattogram and Khulna. The trainings for the mid-level Government officers will focus on the identification of CITES-listed sharks and rays and their products, the detection and confiscation of illegal shark and ray products, and the arrest and prosecution of illegal shark and ray traders. The two-day training workshops for field-level officers and citizen scientists recruited from coastal fishing communities will also include the identification of CITES-listed sharks and rays and their products, with additional topics covered on collecting data on catch/landing numbers, sizes, weights, lengths, economic value, and gear type responsible for the catch. Fishermen engaged in our *Citizen Science Fishermen Safety Network* will also be trained on the safe release of legally protected sharks and rays, the use of a GPS for collecting information on the locations of fishing gear deployment and retrieval, and safe navigation during hazardous weather conditions.

In support of the above-mentioned trainings, WCS will produce a user-friendly manual in simple Bengali language with Standard Operating Procedures (SOPs) for shark and ray data collection with an illustrated guide for identifying CITES-listed shark and ray species in the field (see below). WCS will follow up with trainees from these workshops through mentoring calls to reinforce lessons learned, answer questions on shark and

ray related issues, and solicit feedback to improve future training and mentoring activities.

9. *Develop mass communication instruments for shark and ray conservation*

To support training and mentoring activities, and to further amplify the reach of our capacity building and awareness raising efforts, WCS will update and reprint richly illustrated posters and pamphlets used for identifying sharks and rays and educating the public on the ecological and economic importance of protecting endangered sharks and rays, sustaining productive fisheries and trade in non-threatened sharks and rays; and for spreading awareness about laws and rules regulating shark and ray exploitation and trade.

WCS will also produce a pocket-size identification guide on sharks and rays in Bengali language to empower law enforcement officers, fishers, shark and ray traders and citizen scientists to identify CITES-listed species and those species protected under the proposed revised Schedule I and II listing in the Wildlife (Conservation and Security) Act, 2012, from carcasses and commonly traded body parts.

The mobile exhibition *Ocean Guardians: Protecting Threatened Sharks and Rays in Bangladesh* developed by WCS aims to create mass awareness and support science-based, community-informed conservation management of sharks and rays by educating visitors about their critical role in maintaining a healthy ocean ecosystem and on the laws and rules governing their exploitation and trade. This exhibition will be shown in four coastal communities where sharks and rays are regularly landed, processed, and traded for two days each between February and May 2022. An additional two-day exhibition will be convened in Dhaka for government officials, local scientists and conservationists, and civil society.

Although the exhibitions will be interactive, due to COVID-19 restrictions, visitors will be required to wear a mask and will be guided through the exhibition in small groups by trained interpreters practicing social distancing. We expect to reach at least 1,000 participants during these five educational outreach events.

In collaboration with six coastal community radio stations, WCS will develop at least two additional episodes of our popular *Ocean Guardians Radio Program*. This mass communication tool proved successful in raising awareness on sharks and rays after WCS collaborated with local radio stations in 2019 to produce the four previous episodes in local dialects, reaching a potential audience of two million people living in coastal fishing communities with about 3,000 comments received, almost all positive. New episodes produced as part of the SUFAL shark and ray assignment will further highlight shark and ray conservation efforts under this project, including the updated list of sharks and rays protected under the Wildlife (Conservation and Security) Act (2012), and generate local support for their implementation.

Furthermore, an entertaining short film will be produced by WCS under this assignment to highlight efforts by the Government of Bangladesh to protect threatened sharks and rays through science-based, community informed conservation management. The 8 to 12-minute documentary movie in Bengali language will be

completed by October 2021 and shown during training, consultation and outreach events.

10. Formulate recommendations to amend the Wildlife (Conservation and Security) Act, 2012 to protect sharks and rays

On request from the BFD, WCS prepared a *List of sharks and rays proposed to be included in Schedule I and II of the Bangladesh Wildlife (Conservation and Security) Act, 2012* (Appendix 4). These recommendations were reviewed by local and international experts from the IUCN Species Survival Commission's Shark Specialist Group, Pew Charitable Trusts Global Shark Conservation Project, and Blue Resources Trust, approved by the CITES Scientific Advisory Committee, and forwarded to the MoEFCC by the BFD for their approval. In December 2020, the MoEFCC sent the proposed amendment for comments to the MoFL and the Ministry of Commerce.

During this assignment, WCS will follow up on the revised list of sharks and rays protected under the Wildlife (Conservation and Security) Act, 2012, and work with the BFD as per request to formulate amendments to other parts of the Act that need strengthening to better protect sharks and rays, including clarifying the definitions of Schedule I and II species as well as the penalties for their exploitation, trade, possession, and consumption.

11. Detailed activity plan for achieving the objectives of the assignment and submitting updates and progress reports to the PMU/PMS

A detailed workplan (Table 3) and schedule (Table 4) for activities planned to achieve the objectives of the assignment have been prepared.

Following the submission of this inception report, three progress reports will be submitted by WCS to the SUFAL PD and PMU at the end of every six months with a final report due within 30 days after the ending date of the assignment.

The deliverables under the first progress report, due on July 12th, 2021, will include baseline information and preliminary results from shark and ray research, a report on the four training workshops conducted on shark and ray data collection and monitoring, the first consultation workshop for sharing knowledge on the status of sharks and rays, and a draft of the NPoA.

A second progress report will be submitted on January 12th, 2022. Deliverables reported in the second progress report include the second consultation workshop for sharing knowledge on the status of sharks and rays, two NDF development workshops and the resulting draft NDFs.

WCS will provide a third progress report by July 12th, 2022 including updates on all activities and progress on achieving objectives and expenditures to date. Deliverables under the third progress report include a validation workshop to finalize NDFs for submission by the BFD to the CITES Secretariat, responses formulated as needed to the CITES Secretariat on the NDFs, five educational outreach programs for raising awareness among fishing communities, fish traders and government agencies, and the NPoA finalized in consultation with senior government representatives.

By November 11th 2022, within one month from the ending date of the assignment, WCS will submit a comprehensive final report to the SUFAL PD and PMU including results from all activities and achievements related to project objectives with copies of all deliverables, including the finalized NDFs and the *NPoA for the Conservation Management of Sharks and Rays in Bangladesh*. A draft of this final report will be provided to the SUFAL PMU by August 12th as per contractual agreement.

Project Management

WCS will arrange all training workshops and educational outreach events as well as engage stakeholders in consultations. The SUFAL PD will issue the invitations for participants as required for achieving the project objectives.

The team leader and key experts (Figure 5.) will communicate regularly with the SUFAL PD and the PMU regarding project plans and activities. Project reports will be submitted to the Conservator of Forests (CF) Wildlife and Nature Conservation Circle for endorsement and submission to the SUFAL PD. Project activities will be closely coordinated with the Divisional Forest Officer (DFO) of Khulna, the Chattogram Wildlife Management and Nature Conservation Division, and the Director of the Sheikh Kamal Wildlife Center in Gazipur.

WCS will arrange all training workshops and educational outreach events as well as engage stakeholders in consultations. The SUFAL PD will issue the invitations for participants as required for achieving the project objectives on request by WCS.

Table 3. Detailed Workplan for Activities under SUFAL Shark Assignment

(Project start date 13 January 2021; Project end date 12 October 2022)

Activity	Objectives	Number of Participants	Agency/ Organization	Duration	Location	Tentative date
1. Conduct an assessment for the scientific investigations on the status of sharks and rays and identify threats to their survival	• Compile and analyze data from systematic investigations and standardized interviews carried out by WCS during at-sea surveys. • Compile and analyze data from WCS citizen science networks at fish landing sites and among fishermen catching sharks and rays as both target and non-target catch. • Evaluate information collected and shared by the DoF MFSMU/FRSS, BFRI, BFDC. • Compile information from published reports.	N/A	WCS	6 months	Dhaka, Khulna, Chattogram	12 July 2021
2. Submit a baseline status report and threat assessment of sharks and rays	• Share available information on conservation status of and threats to sharks and rays in Bangladesh. • Discuss strategies to improve protection for most endangered sharks and rays and ensuring sustainable, productive fishery livelihoods. • Discuss opportunities for enhancing species-specific reporting of shark and ray landings and trade through standardizing data collection and reporting protocols, product declarations and institutional collaborations.	20	WCS, Government representatives from BFD, WCCU, DoF, MFSMU, BFRI, FRSS, BFDC, Customs, Academics, Researchers, NGOs	6 months	Dhaka, Chattogram, coastal ports and fish landing sites	12 July 2021

3. Identify priority species for conservation management and conducting CITES NDFs for sharks and rays	• Provide justification for selection criteria. • List priority CITES Appendix II shark and ray species for preparing NDFs.	NA	WCS	30 days	NA	February 2021
4. Develop a report on actions needed for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction	• Develop recommendations on policy, education, enforcement and conservation management with strong stakeholder input. • Summarize obligations to international conventions (CITES, CMS, IOTC) and national laws and rules related to shark and ray fisheries and trade. • Provide a framework for educational outreach activities. • Explain procedures for implementing interagency SMART enforcement and monitoring patrols. • Explain procedures for the detection, arrest and prosecution of illegal shark and ray trade. • Assess impacts of the set-bag net fishery on threatened sharks and rays around Dubla island/Sundarbans/SoNG MPA. • Investigate ray catches in unbaited bottom long-lines in the Nijhum Dwip MPA.	NA	WCS	7 months	Dhaka, coastal waters Bangladesh	July 2021, Dec 2021/ Jan 2022

5. Conduct NDFs for priority shark and ray species considering their economic importance, conservation status and available data	• Evaluate priority species (at least one shark and one ray) through a structured NDF process assessing their local and global status, economic value, importance to local livelihoods, and management capacity to ensure sustainability. • Strengthen technical capacity of Government agencies and CITES authorities to develop NDFs. • Present NDF results, discuss management recommendations and obtain inter-ministerial validation of NDFs and commitment to their implementation at a validation workshop.	2 x 12 = 24 for NDF development workshops;	BFD, DoF, BFRI, BFDC, Coast Guard, Navy, Customs, national and international experts, CITES Scientific Advisory Committee	2 x 3 days = 6 days for NDF development workshops; 1 day for NDF validation workshop	Chattogram, Dhaka	November 2021 to February 2022
6. Formulate a National Conservation Strategy for the conservation management of sharks and rays in partnership with government and community stakeholders	• Develop a draft NPoA for sharks and rays using information from consultations with government stakeholders, academics, and shark and ray fishermen and traders, including cost estimates and proposed sustainable financing mechanisms. • Share information on shark and ray fishing, processing and trade practices, discuss proposed management interventions and incentives for livelihood alternatives at consultation workshop. • Present and discuss NPoA at finalization and endorsement workshop.	20 people at information sharing workshop; 30 people at finalization and endorsement workshop.	Shark and ray fishers and traders at information sharing workshop; BFD-led, WCS facilitated with Government ministries, agencies, and institutions at NPoA finalization and endorsement workshop	18 months	Kuakata for information sharing workshop and Dhaka for finalization and endorsement workshop	First Draft/ Background document July 2021; Revised Draft May 2022; Final Document June 2022

7. Suggest governance frameworks to strengthen the conservation of threatened sharks and rays and the sustainable exploitation of non-threatened species.	- Propose regulatory and policy changes, including law enforcement, community engagement, novel incentives to assist in poverty reduction in shark and ray dependent coastal communities, sustainable fisheries under NDF regulations, and supplementary income generation particularly for women in shark and ray fishery processing. - Incorporate governance framework into NPoA.	NA	WCS	17 months		May 2022
8. Develop technical capacity and awareness and foster increased commitment, political will and financial investment for the conservation management of sharks and rays across multiple sectors	- Training and mentoring for mid-level government officers on the identification of CITES-listed sharks and rays and their products, standardized data collection protocols, procedures for detection and confiscation of CITES-listed sharks and rays and their products, and the arrest and prosecution of illegal shark and ray traders. - Training and mentoring for field-level government officers and citizen scientists on identification of CITES-listed sharks and rays and their products, data collection using standardized data collection protocols and procedures, safe release of legally protected marine wildlife and use of GPS for collecting information on the locations of fishing gear deployment and retrieval, and safe navigation.	2 x 20 = 40 mid-level government officers; 2 x 20 = 40 field-level government officers and citizen scientists	Mid- and field-level officers from the BFD, DoF, BFDC; citizen science fishermen and landing site data collectors	4 x 2 = 8 days	Chattogram ,Khulna	April and May 2021

9. Develop mass communication instruments for shark and ray conservation	• Raise awareness about sharks and rays and their ecological importance and conservation status, encourage compliance with regulations for catch, trade and consumption regulations, and highlight government efforts to protect threatened sharks and rays through science-based, community informed conservation management in educational outreach exhibitions, a short (8-12 min) documentary film, and at least two new radio program episodes produced in collaboration with local community radio stations across the coastal region.	5 community events x 200 = 1,000 visitors	Fisherfolk, fish traders, vessel owners, local Government officers, elected leaders, grass-root NGOs	5 x 2 days	Chattogram Cox's Bazar, Khulna, Alipur – Mahipur, Patharghata	October 2021 - May 2022
10. Formulate recommendations to amend the Wildlife (Conservation and Security) Act 2012 to protect sharks and rays.	• Follow-up on proposed revision to list of shark and ray species under Wildlife Act. • Formulate proposal to clarify the definitions of Schedule I and II. • Draft suggestions for penalties for exploitation, trade, possession, and consumption of Schedule I/II listed species.	As per BFD request	WCS, BFD	~10 days	Dhaka	September 2022

Table 4. Schedule for Activities under the SUFAL Shark and Ray Assignment

Month/ Year	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021	Sep 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022	Aug 2022	Sep 2022
Reporting Period	Months 1-6						Months 7-12						Months 13-18						Final report preparation		
Project Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2																					
3																					
4												R	R								
5											T	T	V								
6					C						C						C				
7																					
8				T	T	M	M	M	M	M	M	M	M	M	M	M	M	M			
9														E	E	E	E				
10																					

C = Consultations, E = Educational outreach events, M = Mentoring, R = Research/Investigations, T = Trainings, V = Validation workshop

References

Wildlife Conservation Society. 2018. *Combating Wildlife Trade in Bangladesh: Current Understanding and Next Steps*. Published by the Wildlife Conservation Society Bangladesh Program, Dhaka, Bangladesh. 50 pages.



This SUFAL assignment will empower officers and field-staff of the department of Fisheries and Forests to identify body parts like these from CITES Appendix II listed Giant Guitarfish destined for international trade and prosecute perpetrators. ©WCS Bangladesh

Appendix 1

Briefing document on CITES Non-Detriment Findings (NDFs) for Sharks and Rays

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 in order 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 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).

Appendix 2

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

Day 1

08:30	Registration
09:00	Welcome, introduction of participants and brief overview of workshop objectives - Elisabeth Fahrni Mansur, SUFAL-Shark Project Team Leader, WCS Bangladesh Marine Conservation Program Manager
09:30	The role of CITES and NDF's in threatened species protection and sustainable trade - by Dr. Md. Zahangir Alom, WCS Bangladesh Country Representative and Combating Wildlife Trade Program Manager
09:45	Legal and institutional mandates for the management of sharks and rays in Bangladesh – Jahidul Kabir, Director Sheikh Russel Wildlife Center, Forest Department
10:15	Current requirements and practices for reporting shark and ray catches or landings in Bangladesh – Principal Scientific Officer, Marine Fisheries Survey Unit, Department of Fisheries, Chattogram
10:30	Local perceptions on domestic and international shark and ray trade in Bangladesh – Alifa B. Haque, Assistant Professor, Department of Zoology, Dhaka University, and DPhil Candidate, Department of Zoology, University of Oxford
10:45	Break, Refreshments
11:00	Introduction to Non-Detrimental-Finding guidance, e-NDF tool – Daniel Fernando, International CITES Shark & Ray Expert
12:00	Group work for the Development of NDF for Silky/Smooth hammerhead shark: Steps 1-3 Intrinsic biological vulnerability and conservation concern, Pressure on species
13:30	Lunch
14:30	Continue Group work for the Development of NDF for Silky/Smooth hammerhead shark: 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 – WCS Bangladesh
17:00	End of Day One

Day 2

09:00	Resume group work for the Development of NDF for Silky/Smooth hammerhead shark: 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 for Silky/Smooth hammerhead shark: Step 4 Existing management measures
11:30	Break, Refreshments
11:45	Continue Group work for the Development of NDF for Silky/Smooth hammerhead shark: 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 for Silky/Smooth hammerhead shark: Step 5 Non-Detriment Finding and related advice
16:45	Review of the day, plan for the next day –WCS Bangladesh
17:00	End of Day Two

Day 3

09:00	Resume group work for the Development of NDF for Silky/Smooth hammerhead shark: 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 for Silky/Smooth hammerhead shark: 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 for Silky/Smooth hammerhead shark: 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 – Daniel Fernando
16:45	Words of Thanks, Certificates, Group Photo – 17:00 End

Appendix 3. CV of international shark and ray expert for CITES NDF development

DANIEL FERNANDO

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Date of Birth: 7th March 1987

Dual Citizenship: Germany & Sri Lanka

Professional Experience

Oct 2017 – present	Party Appointed Councillor, and currently Vice Chair, to the Sessional Committee of the Convention on the Conservation of Migratory Species (CMS) Scientific Council Representing the Asian region.
Jan 2012 – present	Blue Resources Trust, Sri Lanka; Co-Founder and Director Marine research, conservation, and consultancy organisation. Oversee elasmobranch fisheries projects and coordinate policy work for the CITES and CMS Conventions.
Oct 2015 – Oct 2018	Government of Sri Lanka; Advisor to the Minister of Wildlife Provided technical expertise on marine related matters and participated on national delegations to the CITES and CMS Conventions.

Education

2012 – present	Ph.D. Student, Linnaeus University, Sweden <i>Thesis:</i> Biology and ecology of the manta and mobula rays in the Indian ocean.
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Grants

> US\$ 1,720,000	Multiple grants; 2011 to present: directly received over USD 1.52 million to conduct elasmobranch fisheries research across multiple countries and to support fisheries policy measures at CITES, CMS, RFMO's, and at a domestic level in the South Asian region. Supported and assisted partner projects and organisations to receive grants (over USD 195k) for their mobulid research.
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Select Workshops & Conventions

Feb 2020	Convention on the Conservation of Migratory Species of Wild Animals (CMS) , CoP13, Ahmedabad, India.
Dec 2019	Joint Tuna Regional Fisheries Management Organisation Bycatch Meeting , Porto, Portugal.
Nov 2019	ScC-SC4 – Fourth Meeting of the Sessional Committee of the Scientific Council of CMS , Bonn, Germany. <i>Party Appointed Councillor representing Asia.</i>
Aug 2019	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) , CoP18, Geneva, Switzerland. <i>Advisor on Sri Lanka Government delegation.</i>
Jun 2019	Indian Ocean Tuna Commission (IOTC) 23rd Session of the Commission , Hyderabad, India.
Dec 2018	Sharks MOS3 – Third Meeting of the Signatories to the Memorandum of Understanding on the Conservation of Migratory Sharks , Monte Carlo, Monaco.
Dec 2018	Indian Ocean Tuna Commission (IOTC) 21st Session of the Scientific Committee , Mahe, Seychelles.
Nov 2018	IUCN Red List Assessment Workshop for Pelagic Shark and Ray Species , Dallas, United States of America. <i>Conducted international assessments.</i>
Oct 2018	Illegal Wildlife Trade Conference , London, United Kingdom. <i>Invited delegate by the UK Government.</i>

Oct 2018	70th Meeting of the Standing Committee of CITES , Sochi, Russia. <i>Participated as Adviser to Minister on Sri Lanka Government delegation.</i>
May 2018	ScC-SC3 – Third Meeting of the Sessional Committee of the Scientific Council of CMS , Bonn, Germany. <i>Party Appointed Councillor representing Asia.</i>
Nov 2017	69th Meeting of the Standing Committee of CITES , Geneva, Switzerland. <i>Participated as Adviser to Minister on Sri Lanka Government delegation.</i>
Oct 2017	Convention on the Conservation of Migratory Species of Wild Animals (CMS) , CoP12, Manila, Philippines. <i>Participated as Adviser to Minister on Sri Lanka Government delegation.</i>
Aug 2017	CMS Asia pre-CoP Workshop , Bonn, Germany. <i>Participated on Sri Lanka Government delegation.</i>
Jul 2017	66th Meeting of the Standing Committee of CITES , Geneva, Switzerland. <i>Participated as Adviser to Minister on Sri Lanka Government delegation.</i>
Sep 2016	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) , CoP17, Johannesburg, South Africa. <i>Participated as Adviser to Minister on Sri Lanka Government delegation.</i>
Sep 2016	IUCN World Conservation Congress , Hawaii, USA. <i>Participated as Adviser to Minister on Sri Lanka Ministry of Sustainable Development and Wildlife delegation.</i>
Mar 2016	Save Wildlife – Act Now or Game Over. International Conference on Wildlife Crime , The Hague, Netherlands. <i>Participated as Adviser to Minister on Sri Lanka Government delegation.</i>
Feb 2016	Sharks MOS2 - Second Meeting of the Signatories to the Memorandum of Understanding on the Conservation of Migratory Sharks , San Jose, Costa Rica. <i>Represented Sri Lanka.</i>
Jan 2016	66th Meeting of the Standing Committee of CITES , Geneva, Switzerland. <i>Participated as Adviser to Minister on Sri Lanka Government delegation.</i>

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Skills, Memberships & Awards

Languages	English (native), German (conversational), Sinhala (conversational), Tamil (very basic)
Scuba Diving	PADI Divemaster (inactive)
Memberships	IUCN SSC Shark Specialist Group (SSG) regional member, American Elasmobranch Society, Society for Conservation Biology, Wildlife and Nature Protection Society of Sri Lanka, Sri Lanka Natural History Society.
Awards	Marine Conservation and Action Fund (MCAF, 2017) Fellow. President's Award for Scientific Publication (Sri Lanka, 2018 and 2019).

References on Request

Appendix 4

List of sharks and rays proposed to be included in Schedule I and II of the Bangladesh Wildlife (Conservation and Security) Act, 2012

Schedule-I রক্ষিত বন্যপ্রাণী (Protected animal) মৎস্য (FISHES)

ক্রমিক নং	বাংলা নাম	ইংরেজি নাম	বৈজ্ঞানিক নাম
		বর্গ- কাচারিনিফর্মিজ (হাস্র) Carcharhiniformes (Sharks) পরিবার- স্ফিরনিডি (Sphyrnidae)	
০১	পাখমাথা হাতুড়ি হাস্র/ জুলিয়া মাগর/কাইন্যা/কাউন্যা	Winghead/ Hammerhead shark	<i>Eusphyra blochii</i>
০২	হাতুড়ি হাস্র/ জুলিয়া মাগর/ কাইন্যা/কাউন্যা	Hammerhead shark	<i>Sphyrna spp.</i>
		পরিবার- কাচারিনিডি (Carcharhinidae)	
০৩	ভোঁতা বলি হাস্র	Pigeye shark	<i>Carcharhinus amboinensis</i>
০৪	সাদাগাল হাস্র/ কামোট	Whitecheek shark	<i>Carcharhinus dussumieri</i>
০৫	পন্ডিচেরী হাস্র	Pondicherry shark	<i>Carcharhinus hemiodon</i>
০৬	ঘ-বলি হাস্র	Bull shark	<i>Carcharhinus leucas</i>
০৭	সাদাটুপি হাস্র	Oceanic whitetip shark	<i>Carcharhinus longimanus</i>
০৮	গাঙ্গেয় চেনারি হাস্র/সেনারি হাস্র	Ganges shark	<i>Glyphis gangeticus</i>
০৯	বড়পাখ চেনারি/সেনারি হাস্র	Broadfin shark	<i>Lamiopsis temminckii</i>
১০	তীক্ষ্ণদাঁতী লেমন হাস্র	Sharptooth lemon shark	<i>Negaprion acutidens</i>
		বর্গ- ওরেক্টোলোবিফর্মিজ (Orectolobiformes) পরিবার- স্টেগোস্টোমাটিডি (Stegostomatidae)	
১১	জেরা/বাঘা/চিতা হাস্র	Leopard shark/Zebra shark	<i>Stegostoma fasciatum</i>
		পরিবার- রিংকোন্টাইডি (Rhincodontidae)	
১২	তিমি হাস্র	Whale shark	<i>Rincodon typus</i>
		বর্গ-ল্যামনিফর্মিজ (Lamniformes) পরিবার – ওডোন্টাসপিডিডি (Odontaspidae)	
১৩	ধূসর বাঘা হাস্র	Sand tiger shark	<i>Carcharias taurus</i>
		পরিবার - অ্যালোপিডি (Alopiidae)	
১৪	কান্তে হাস্র	Thresher shark	<i>Alopias spp.</i>
		পরিবার - ল্যামনিডি (Lamnidae)	
১৫	মাকো হাস্র	Mako shark	<i>Isurus spp.</i>

		বর্গ- রাইনোপ্রিস্টিফর্মিজ (রে ফিস) Rhinopristiformes (Ray) পরিবার - প্রিস্টিডি (Pristidae)	
১৬	করাত মাছ/খান্দা মাগর/খটক/করাতি হাসর/আইশা	Sawfish	<i>Pristis spp.</i>
১৭	ছুরি করাত মাছ/ খান্দা মাগর/ খটক/করাতি হাসর/আইশা	Pointed sawfish	<i>Anoxypristis cuspidata</i>
		পরিবার- রিনিডি (Rhinidae)	
১৮	ধনুকমুখী পিতাম্বর/ব্যাঙ হাসর	Bowmouth guitarfish	<i>Rhina ancylostoma</i>
১৯	পিতাম্বর/ নাঙলা	Guitarfish/wedgefishes	<i>Rhynchobatus spp.</i>
		পরিবার- রাইনোব্যাটিডি (Rhinobatidae)	
২০	পিতাম্বর/ নাঙলা	Guitarfish/wedgefishes	<i>Rhinobatos spp.</i>
		পরিবার- গ্লাকোস্টেজিডি (Glaucostegidae)	
২১	পিতাম্বর/ নাঙলা	Guitarfish/wedgefishes	<i>Glaucostegus spp.</i>
		বর্গ – মাইলোব্যাটিফর্মিজ (Myliobatiformes) পরিবার – ইটোব্যাটিডি (Aetobatidae)	
২২	বড়মাথা চোঁট্টা/টুইটা ঘাপরি	Longhead eagle ray	<i>Aetobatus flagellum</i>
		পরিবার - মবুলিডি (Mobulidae)	
২৩	শিংচোয়াইন/দেউ মাছ	Devil ray	<i>Mobula spp.</i>
		পরিবার- মাইলিওব্যাটিডি (Myliobatidae)	
২৪	চিত্রা চোঁট্টা/টুইটা ঘাপরি	Mottled eagle ray	<i>Aetomylaeus maculatus</i>
২৫	ফুল চোঁট্টা/টুইটা ঘাপরি	Ocellate eagle ray	<i>Aetomylaeus milvus</i>
		পরিবার- রাইনোপটেরিডি (Rhinopterae)	
২৬	জাভান ভোঁতা ঘাপরি	Javan cownose ray	<i>Rhinoptera javanica</i>
২৭	ছোটলেজী ভোঁতা ঘাপরি	Shorttail cownose Ray	<i>Rhinoptera jayakari</i>
		পরিবার - ডাসিয়াটিডি (Dasyatidae)	
২৮	ফুল শাপলাপাতা/জাতি শাপলাপাতা	White spotted whipray	<i>Maculabatis gerrardi</i>
২৯	রান্মি/চুনি শাপলাপাতা	Bleeker's whipray	<i>Pateobatis bleekeri</i>
৩০	খ্যাব্রানাক থাইন/ হাঙরাইল	Roughnose cowtail ray	<i>Pastinachus solocirostris</i>
৩১	মিঠাপানির শাপলাপাতা/পাইন্যা/বাইল্যা	Giant freshwater whipray	<i>Urogymnus polylepis</i>

Schedule-2
রক্ষিত বন্যপ্রাণী (Protected animal)
মৎস্য (FISHES)

ক্রমিক নং	বাংলা নাম	ইংরেজি নাম	বৈজ্ঞানিক নাম
		বর্গ- কার্চারিনিফর্মিজ (হাস্র) Carcharhiniformes (Sharks) পরিবার-কার্চারিনিডি Carcharhinidae	
০১	মুইট্রা হাস্র/সাদা লতা বলি/বলি হাস্র	Graceful shark	<i>Carcharhinus amblyrhynchoides</i>
০২	ঘূর্ণি হাস্র/কাল লতা বলি হাস্র	Spinner shark	<i>Carcharhinus brevipinna</i>
০৩	রেশমি/সিল্কি হাস্র	Silky shark	<i>Carcharhinus falciformis</i>
০৪	ইলিশা বলি/কাল লতা বলি হাস্র	Blacktip shark	<i>Carcharhinus limbatus</i>
০৫	কালোটুপি রিফ হাস্র/কাল লতা বলি হাস্র	Blacktip reef shark	<i>Carcharhinus melanopterus</i>
০৬	ফোটালেজী/কাল লতা বলি হাস্র	Spottail shark	<i>Carcharhinus sorrah</i>
০৭	বাঘা হাস্র	Tiger shark	<i>Galeocerdo cuvier</i>
০৮	নীল হাস্র	Blue shark	<i>Prionace glauca</i>
০৯	সাদাটুপি রিফ হাস্র	Whitetip reef shark	<i>Triaenodon obesus</i>
		পরিবার- হ্যামিগ্যালিডি (Hamigaleidae)	
১০	বড়শিঁদাতী হাস্র	Hooktooth shark	<i>Chaenogaleus macrostoma</i>
১১	শাঁখাদাতী/শিয়াল-বলি হাস্র	Snaggletooth shark	<i>Hemipristis elongate</i>
		বর্গ-ল্যামনিফর্মিজ (Lamniformes) পরিবার - ল্যামনিডি (Lamnidae)	
১২	সাদা হাস্র	White shark	<i>Carcharodon carcharias</i>
		বর্গ- ওরেক্টোলোবফর্মিজ (Orectolobiformes) পরিবার-জিংলিমসটোমাটিডি (Ginglymostomatidae)	
১৩	টনি নার্স হাস্র	Tawny nurse shark	<i>Nebrius ferrugineus</i>
		বর্গ-টর্পেডিনিফর্মিজ (Torpediniformes) পরিবার- নারসিনিডি (Narcinidae)	
১৪	ভোঁতা মুখ কারেন্ট মাছ	Short-lip numbfish	<i>Narcine brevilabiata</i>
১৫	চীনা কারেন্ট মাছ	Chinese numbfish	<i>Narcine lingual</i>
১৬	বাদামি কারেন্ট মাছ	Brown numbfish	<i>Narcine timlei</i>

		বর্গ-মাইলিওবেটিফর্মিজ (Myliobatiformes) পরিবার- জিম্নুরিডি (Gymnuridae)	
১৭	প্রজাপতি/বাদুড়/পদুনি/পদ্মামনি	Butterfly ray	<i>Gymnura spp.</i>
		পরিবার - ডাসিয়াটিডি (Dasyatidae)	
১৮	বাঘা/চিতা শাপলাপাতা	Leopard whipray	<i>Himantura leopard</i>
১৯	জালি/বাঘা/চিতা শাপলাপাতা	Coach (Reticulated) whipray	<i>Himantura uarnak</i>
২০	বাঘা/হরিণা শাপলাপাতা	Honeycomb whipray	<i>Himantura undulata</i>
২১	ক্ষুদেচোখা শাপলাপাতা	Smalleye stingray	<i>Megatrygon microps</i>
২২	সাদানাক শাপলাপাতা/ হাউশ	Whitenose whipray	<i>Pateobatis uranacoides</i>
২৩	জাকিনের ঘন্টি/ঘুড়ি শাপলাপাতা	Jenkins' whipray	<i>Pateobatis jenkinsii</i>
২৪	কালি/কালোফোটা শাপলাপাতা	Blotched stingray	<i>Taeniurops meyeri</i>
২৫	সজারু শাপলাপাতা	Porcupine ray	<i>Urogymmus asperrimus</i>
২৬	গোল শাপলাপাতা/ফাইস্যা/পাইসি	Round whipray	<i>Maculabatis pastinacoides</i>
২৭	বাদা শাপলাপাতা	Mangrove whipray	<i>Urogymmus granulatus</i>
২৮	চোঙামুখ শাপলাপাতা	Tubemouth whipray	<i>Urogymmus lobistoma</i>
		পরিবার – ইটোব্যটিডি (Ateobatidae)	
২৯	চিত্রা চোঁট্যা/ফুল টুইটা ঘাপরি	Spotted eagle ray	<i>Aetobatus ocellatus</i>
		পরিবার- মাইলিওব্যটিডি (Myliobatidae)	
৩০	ডোরাকাটা চোঁট্যা/টুইটা ঘাপরি/শজ্জচিল	Banded eagle ray	<i>Aetomylaeus nichofii</i>



A globally Endangered Giant freshwater whiplay being unloaded at Alipur Kuakata ©WCS Bangladesh 2018