



Sustainable Forests & Livelihoods (SUFAL) Project

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

First Progress Report

January - June 2021

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Bangladesh Forest Department
Ministry of Environment, Forest and Climate Change

First Progress Report:

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

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Cover Photo

Giant freshwater whiprays are globally Endangered. © WCS Bangladesh



Executive Summary

Between January and June 2021, the Wildlife Conservation Society Bangladesh (WCS) made strong progress towards the objectives of the *Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings* assignment, which 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; (6) Achieving compliance with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulating international trade in globally threatened sharks and rays; and (7) Strengthening coordination with the Department of Fisheries regarding shark and ray conservation.

Activities commenced after the contractual agreement between the Bangladesh Forest Department and WCS was signed on January 13th 2021. The inception report, including the identification of priority species for conservation management and conducting CITES non-detriment findings (NDFs), was submitted on February 4th 2021 and approved after a meeting held on February 22nd 2021.

WCS completed all contractually required activities in the first phase following the *Detailed Workplan for Activities under SUFAL Shark Assignment* presented in the inception report, except for the technical training workshops on shark and ray data collection and monitoring that had to be postponed in compliance with Government directives on Covid-19 safety measures.

Analysis and findings from scientific investigations, educational outreach and policy initiatives conducted by WCS and our citizen science networks, enriched with results from published reports, are presented in a comprehensive background document entitled *Shark and Ray Assessment Report*. Therein we provide baseline status information, a threat assessment and a review of governance frameworks to inform the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh*.

In a first consultative workshop held virtually from May 4th-5th 2021, 59 representatives from four Government agencies, four universities, and six NGOs shared knowledge on the status of and threats to sharks and rays in Bangladesh and discussed recommended actions that address gaps identified for scientific investigations, improved governance frameworks and management interventions, and incentives for sustainable fisheries and livelihood alternatives to reduce mortalities and trade of threatened sharks and rays for a national conservation strategy and action plan. A report on the first national consultation is provided as a separate document.

The proposed strategy and recommended actions for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction resulting from the *Shark and Ray Assessment* and the first national consultation are presented in a first draft of the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh*.

During this phase, WCS briefed 13 senior officers from the Department of Fisheries, the Bangladesh Fisheries Research Institute, and the Bangladesh Fisheries Development Corporation on the SUFAL shark and ray assignment objectives and activities to strengthen coordination between the Forest Department and the Department of Fisheries regarding shark and ray conservation. The initiative by the Bangladesh Forest Department was highly appreciated as reflected in the commitment of the agencies and institutions to participate in consultative and technical training workshops.

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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
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
CR	Critically Endangered
DG	Director General
DoF	Department of Fisheries
EEZ	Exclusive Economic Zone
EN	Endangered
FP	Focal Point
FRSS	Fisheries Resources Survey System
GoB	Government of Bangladesh
IOTC	Indian Ocean Tuna Commission
IUCN	International Union for Conservation of Nature
M & E	Monitoring & Evaluation
MFSMU	Marine Fisheries Survey Management Unit
MoEFCC	Ministry of Environment, Forest, and Climate Change
MoFL	Ministry of Fisheries and Livestock
MPA	Marine Protected Area
NDFs	Non-Detriment Findings
NGOs	Non-Governmental Organizations
NPoA	National Plan of Action
PD	Project Director
PMS	Project Management Specialist
PMU	Project Management Unit
PSO	Principal Scientific Officer
SUFAL	Sustainable Forests and Livelihoods Project
US	United States
VU	Vulnerable
WCS	Wildlife Conservation Society

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

WCS completed the baseline status and threat assessment for sharks and rays in Bangladesh 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) a consultative workshop convened for over 50 government officials, academics, and conservation professionals, (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.

As per June 2021, a total of 39 shark and 61 ray species have been confirmed as occurring in Bangladesh, with the potential availability of additional 13 shark and three ray species. Of the species documented or suspected to occur in Bangladesh, 30 shark and 46 ray species confirmed or suspected for Bangladesh are globally threatened (Critically Endangered (CR), Endangered (EN) or Vulnerable (VU)) according to the 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.

Their ecological vulnerability due to slow growth, late maturity and low reproduction makes sharks and rays particularly susceptible to overfishing, by far the largest threat to their survival. International and domestic demand for their products incentivize the retention of target and non-target shark and ray catches.

Detailed analysis and results of scientific investigations conducted by WCS and our networks of citizen scientists enriched with relevant secondary information from published reports are presented as a comprehensive background document, the *Shark and Ray Assessment Report*. An overview and key findings from these studies are provided below.

(a) Shark and ray diversity and landings of small-scale coastal fisheries

WCS Bangladesh analyzed data collected through the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network* on 2,687 landings of 2,110,136 individual sharks from 19 species weighing a total of 1,324 metric tonnes, and 3,103 landings of 199,879 individual rays from 41 species with a total weight of 443 tonnes recorded during almost 3,000 visits to eight coastal fish landing sites. Analyses of shark and ray landings revealed a complex fishery with distinct differences in landing frequency, and the numbers and weight of individuals landed according to site, season, and fishing gear responsible for the catch.

Taxonomy and Species occurrence: Landings of sharks and rays were dominated by a few relatively common species. Of the most commonly landed shark and ray species, the large number of scalloped hammerhead sharks, Bleeker's whiprays and Bengal and honeycomb whiprays being landed are of particular concern due to their Critically Endangered, Endangered, and Vulnerable status in the Global IUCN Red List, respectively. Nine CITES Appendix II listed rays were documented including spintail, shortfin pygmy, bentfin, and

sicklefin devilrays, giant manta rays, and sharpnose, giant, widenose and bowmouth guitarfish, which together accounted for 21.6% of all ray landings.

Landing sites and seasonal variations: By a significant margin Cox's Bazar accounted for a large majority of shark and ray landings (67.2% for sharks and 73.4% for rays), number of individuals landed (96.7% for sharks and 92.8% for rays) and weight of landings (96.2% for sharks and 88.7% for rays). The results of this study indicate great variability in the number of shark and ray landings and the number of individuals landed according to month, which may be connected to life history patterns including potential migrations and seasonal reproduction patterns.

Fishing gear types: A major finding of this study was that medium mesh gillnets and set-bag nets are responsible for a large majority of shark landings. Together these gears accounted for about three quarters of all shark landings and more 96% of all shark individuals landed. While medium mesh gillnets and set-bag nets accounted for about 65% of the total ray landings, longlines with many hooks (both baited and unbaited) accounted for about 85% of the total number of rays landed. Longlines specifically target rays, thus implying that enforcement of laws regulating trade and consumption on rays would be more effective at reducing fishery related mortality compared to sharks. The large proportion of non-target catches of both sharks and rays in medium mesh gillnets and set-bag nets clearly indicate that direct measures to reduce fishery related mortality, such as gear restrictions and area closures in MPAs, are needed along with enforcement of laws on trade and consumption.

Conservation status of common, rare and newly confirmed species: The study found that Bangladesh is a stronghold for several species of Critically Endangered and Endangered sharks and rays in need of urgent protection, including great and scalloped hammerhead sharks, giant and sharpnose guitarfish, ocellate eagle rays, giant devilrays and giant freshwater whiprays, and confirmed the identification of three new shark species (spinner, Burmese bamboo and snaggletooth sharks) and 11 new ray species (smallspot numbfish, smoothback guitarfish, giant freshwater whipray, ocellate eagle ray, roughnose cowtail ray, bentfin devilray, shorttail whipray, giant manta ray, round whipray, shortlip numbfish, and tubemouth whipray) in Bangladesh. This indicates the strong value of this study in terms of better understanding the full range of elasmobranchs occurring in the country's waters.

Meanwhile, the study also documented frequent landings of large numbers of individuals of other relatively common and non-threatened species, including spadenose, bull, blacktip, spottail and tiger sharks, and bluespotted maskrays, that provide opportunities for developing a sustainable shark and ray fishery based on rigorous science and in compliance with national wildlife laws and international obligations under CITES and the Convention on Migratory Species (CMS).

(b) Predictive mapping and a spatial assessment of bycatch risk for sharks and rays from data collected by a citizen science network of gillnet fishermen in Bangladesh

Most shark and ray studies are based on documenting catches at fish landing sites, which does not provide empirical data on where the catches were made. These data are needed to understand species habitat and evaluate the spatial distribution of bycatch risk. Since 2015 the WCS Citizen Science Fishermen Safety Network has engaged 37 coastal gillnet fishers, and since 2017 seven bottom-set unbaited longline fishers, for collecting geo-referenced and photo-verified records of their target and non-target catches in return for training and

equipment that improves their at-sea safety. WCS analyzed the verified data collected by these citizen scientists during 463 fishing trips and 3,559 net sets using medium mesh size nets targeting Hilsa, and during 85 fishing trips and 688 sets using large mesh size nets targeting large finfish, to understand the spatial ecology and catch characteristics of sharks and rays in gillnet fisheries in the northern Bay of Bengal and identify the highest priority areas for focusing shark and ray protection efforts.

Medium mesh gillnetters recorded six species of sharks caught in 15.3% of the medium mesh size net sets, most (71%) being caught in the Swatch-of-No-Ground (SoNG) Marine Protected Area (MPA). Rays were caught in 1.6% of medium mesh size net sets, most (69%) set inside the SoNG MPA, with seven species, five genera and one family recorded. Nine shark species were caught in 27.6% (190) of the large mesh gillnet sets, most (74%) caught around the southern and deeper part of the SoNG MPA. Four ray species and two genera and one family were caught in 3.5% of 688 large mesh gillnet sets, with most of the large mesh gillnet sets which caught rays (45%) located around the SoNG MPA as well as in nearshore waters.

We analyzed the spatial ecology of sharks and rays in the northern Bay of Bengal and generated predictive habitat suitability maps of six shark species. The habitat suitability model for all shark catch records combined indicates that the most suitable shark habitat is the shallow nearshore area offshore of the Sundarbans (<100 m) and at the head of the SoNG submarine canyon (>500 m). This confirms the importance of the SoNG MPA and a potential extension thereof for protecting priority shark habitat.

Maps of the predictive habitat suitability were generated for nine ray species based on catch data from gillnets and unbaited bottom longlines (N = 381). While there is considerable variability in the depth preferences among these ray species, the model for all ray catch records combined predicted the most suitable ray habitat in the estuaries and nearshore shallow water extending from the western to central coast including inside the fringe areas of the Sundarbans. This underscores the importance of the recently declared Nijhum Dwip MPA as priority ray habitat.

Spatial bycatch risk models for sharks and rays developed based on their presence in catches, predictive habitat suitability and gillnet fishing effort, show the high-risk areas concentrated around the SoNG for both sharks and rays. This confirms the importance of the SoNG MPA for protecting threatened sharks and rays and demonstrates the potential for protecting multiple species with marine spatial planning and fisheries management that concentrates bycatch reduction measure in high-risk areas. Rays were also at high risk of being caught in shallow nearshore and inshore estuarine waters. This suggests rays could be vulnerable to bottom-set fishing gears in shallow water such as set-bag nets, bottom-set longlines, and small mesh gillnets.

(c) At-sea investigation of elasmobranch catches of coastal small-scale fisheries in Bangladesh

At-sea fisheries investigations were conducted in the coastal waters of the northern Bay of Bengal between December and January of 2017-18 and 2018-19 covering almost 3,500 linear kilometers and examining catches of 57 fishing vessels using eight different gear types. These include 16 medium mesh (MDGN, mesh size = 8.1-13.0 cm), 13 small mesh (SDGN, mesh size = 2.5-7.6 cm), five large mesh (LDGN, mesh size = 16.0-19.1 cm) drifting

gillnets and one anchored gillnet (AGN); six un-baited bottom (BLLR) and three baited midwater longlines (MLLR); and eight offshore/marine (MSBN) and five estuarine/nearshore (ESBN) set-bag nets. Approximately half (52%) of the sampled fishing gears were deployed in coastal waters 3-10 meters deep.

Seventy-six sharks from four species and one shark specimen identified to genus were recorded in eight (~ 14%) sampled catches, and 18 rays from 10 species and 13 rays from three genera in 17 (~29.8%) of the sampled catches (N=57).

MLLRs targeting sharks and large finfish were responsible for half of all recorded shark catches and almost 60% of all individuals. All recorded shark species including Critically Endangered (CR) scalloped hammerhead sharks *Sphyrna lewini* as well as Near Threatened (NT) spadenose sharks *Scoliodon laticaudus* and tiger sharks *Galeocerdo cuvier* were recorded in MLLRs. BLLRs were responsible for the most ray catches (~ 29.4% of all ray catches and 32.0% of individual rays).

This study indicates that both types of longlines catch relatively large numbers of sharks and rays, including threatened species. According to the DoF Fisheries Statistics Yearbook (2017-18) about 2,500 mechanized fishing vessels operate more than 10,000 long-lines operate along the coast of Bangladesh. Furthermore, the Government of Bangladesh is planning to introduce industrial fishing vessels to target tuna (*Thunnus* sp.) offshore with baited longlines.¹ Managing fishing pressures from long-liners is important for effective conservation management of sharks and rays.

Set-bag nets were responsible for the second largest number of sharks and rays in sampled catches. MSBNs caught 23.5% of all ray catches and 42.0% of all ray individuals, including CR sharpnose guitarfish *Glaucostegus granulatus* and widenose guitarfish *Glaucostegus obtusus*. Out of all 13 set-bag nets investigated, only two met the legal requirement of mesh sizes above 45mm at the cod end as per Marine Fisheries Rules, 1983. More extensive WCS surveys found that set-bag nets account for 37.2% of all fishing gears operated along the coast. To protect threatened sharks and rays and sustain vital coastal fisheries, the mesh-size regulation must be strictly enforced and reducing permissible numbers of set-bag nets should be considered.

(d) Perceptions of small-scale fishers on sharks and rays in the coastal waters of Bangladesh

To understand the knowledge and practices of small-scale fishers in the coastal waters of Bangladesh and inform conservation management of threatened marine wildlife, including sharks and rays, we interviewed fishers encountered during the at-sea fisheries investigations in the coastal waters of the northern Bay of Bengal conducted by WCS for 52 days between December-January 2017-2018 and 2018-19.

Fishing grounds: Eighty-eight fishermen from 88 fishing vessels hailing from the districts of Cox's Bazar (N=33), Patuakhali (N=20), Bhola (N=11), Barguna (N=8), Noakhali (N=6), Bagerhat (N=4), Pirojpur (N=4) and Chattogram (N=2) were questioned. Most interviewees from Bagerhat, Barguna and Pirojpur were fishing offshore of the Sundarbans mangrove forest and in or near the SoNG MPA, while fishers from Patuakhali and Bhola operated between the Baleshwar River and the western part of the Nijhum Dwip MPA, and those

¹ <https://www.thedailystar.net/business/big-plan-tuna-fishing-1465681>

from Noakhali in the eastern part of the Nijhum Dwip MPA. Fishing vessels from Chattogram were found in the eastern side of the Bay of Bengal, while those from Cox's Bazar were widespread in coastal waters offshore of the southwestern coast of Bangladesh.

Fishing gear entangling sharks and rays: The vessels from which we interviewed fishers operated seven different fishing gear types, including SDGNs (N=25), MDGN (N=22), LDGNs (N=4), AGNs (N=2), MLLRs (N=6), BLLRs (N=9), and ESBNs (N=20) in waters between 2.0 - 42.7 m deep. The fishers experience with these different gear types ranged between one and 30 years. Almost three-quarters of the fishers interviewed reported having caught sharks and rays. According to these fishers, sharks and rays are most frequently caught in SDGN and MDGN (16 respondents), in ESBN (13 respondents), in BLLR (eight respondents), in LLR (six respondents), in LDGN (four respondents), and in AGN (two respondents).

Sawfish reports: Seventy-nine fishers had not experienced sawfish entanglements in their fishing gear between 2006-2019, and for some fishers it had been 20 years since they had last seen a sawfish. But ten fatal entanglements of sawfishes having occurred between 2006-2019 were reported by nine fishers, all in MDGNs. Five of these fishermen identified six of the entangled sawfish as Critically Endangered Largetooth sawfish *Pristis pristis*, estimating the average length of these species to have been 3.5 meters (range = 0.6 – 6.6 meters) and the average weight 191 kilograms (range = 4 - 400 kilograms).

Sustainable Fisheries: Of the 41 fishermen that were willing to respond to questions about sustainable fisheries and protecting marine megafauna, 39% felt that sustainable fisheries could be achieved and threatened sharks and rays protected by obeying current fisheries laws and rules, including catching only legal-size fishes, stopping the use of illegal monofilament gillnets and set-bag nets, or ensuring a mesh size of at least 45 mm at the cod end, and complying with area and time closures.

MPAs and protected marine wildlife: When these fishers (N=41) were asked about MPAs, 90% of them had never heard of MPAs before, while the remaining 10% knew that Bangladesh has an MPA, but they had no idea about the location or purpose thereof. After the concept of MPAs was explained to them, 95% of the interviewees agreed that MPAs could be beneficial for increasing fish stocks, protecting threatened marine wildlife, and improving socio-economic condition, 92% expressed a willingness to release protected marine wildlife entangled in their fishing gear, and 78% said they would even endorse a "no take zone" within the MPA.

Threats to fishing livelihoods: Risks to the lives and livelihoods of fishers were discussed along with their suggestions for mitigating solutions. Results from these discussions indicate that fishers are generally in favor of strict but equitable enforcement and monitoring of fisheries laws and rules, largely because the presence of law enforcement patrols reduces their at-sea risks.

(e) Domestic and international trade of shark and ray products in Bangladesh

WCS summarized and analyzed information from Government statistics, published reports and from interviews conducted by WCS with shark and ray fishers, traders, and consumers to (1) provide a baseline for catch and export volume of commonly traded parts, including information on their processing and use, trade channels and routes, (2) for assessing threats to sharks and rays from trade, and (3) to identify potential opportunities to protect globally

endangered species, support sustainable shark and ray fisheries and increase Government revenue and livelihood earnings from legally obtained shark and ray products.

According to official Government statistics, up to two thousand tonnes of dried shark fins are exported from Bangladesh each year, earning over a million US dollars in tax revenue. While domestic and international trade of shark and ray products in Bangladesh is substantial, most trade is undocumented and official catch and export statistics do not differentiate shark or ray species, or shark and ray products from fish swim bladders.

Potential opportunities for increasing Government revenue and livelihood earnings from legally obtained shark and ray products identified include (1) the mandated use of World Customs Organization codes specifying shark and ray parts and products to enable the tracking of international trade, (2) enforcement of existing licensing and business regulations, including for on-line traders, to increase Government revenue and incentivize traders to comply with national and international trade regulations and species protection laws, and (3) technical training on quality control and product diversification to increase financial benefits from legally obtained non-threatened species.

(f) Institutional and legal frameworks for the conservation and management of sharks and rays in Bangladesh

The existing institutional and legal framework for shark and ray conservation and management is fragmented, with different laws, regional mandates, and international commitments covering different aspects. WCS therefore prepared a summary of the institutional and legal frameworks that govern shark and ray conservation and management in Bangladesh, including national agency mandates, laws and policies, strategies and action plans, along with regional and international agreements and conventions, and gaps identified in legislation and regulatory frameworks. An overview of the existing regulations pertaining to fishing gear in Bangladesh's marine waters is also provided as part of this chapter in the comprehensive background document.

(g) Educational outreach for shark and ray conservation management in Bangladesh

Bringing about positive changes to the conservation status of sharks and rays in Bangladesh requires long-term engagement and commitment, accountability and trust, and perhaps most importantly genuine care for the people involved, the focal wildlife and the impacts of conservation efforts. Effective communication strategies are informed by robust science and have concise long-term goals for bringing about measurable changes in knowledge, attitude, and behavior among defined target audiences.

Since 2016, WCS has been building constituencies for shark and ray conservation in Bangladesh. WCS has developed an effective educational outreach initiative for sharks and rays, including mobile exhibitions and community radio programs, documentary films, training manuals, species identification guides and compliance tools². In addition to communicating fascinating facts about the diverse sharks and rays occurring in Bangladesh and their vulnerability to overfishing driven by domestic and international demand for their

² <https://medium.com/wcs-marine-conservation-program/changing-fishery-practice-in-the-worlds-largest-mangrove-forest-7d5714c397f9>, <https://medium.com/wcs-marine-conservation-program/ocean-guardians-pave-the-way-to-save-threatened-sharks-and-rays-in-bangladesh-10fc79acfbad>

parts, WCS raises awareness on species protected by the Bangladesh Wildlife (Conservation and Security) Act 2012 and regulated by CITES.

The educational outreach exhibition called *Ocean Guardians: Protecting Threatened Sharks and Rays* developed by WCS combines life-size animal models, short documentary movies, high-quality photographs, informative panels, and illustrations in an attractive display. Much of the information is communicated through interactive games to maximize knowledge retention in a fun manner. WCS collaborated with seven local radio stations to produce four episodes in local dialects of the WCS *Ocean Guardian Radio Program*, potentially reaching about two million people living in coastal fishing communities, and developed a short film *Protecting Threatened Sharks and Rays in Bangladesh*, which highlight efforts by the Government of Bangladesh to improve the protection of threatened sharks and rays by regulating domestic and international trade, establishing science-based marine protected areas and strengthening sustainable fisheries management.

WCS also developed, produced and distributes water-resistant printed media materials, including stickers, a brochure, and posters that aim to improve knowledge about protected sharks, rays and their commonly traded parts in Bangladesh, and compliance with national wildlife and fisheries laws and international trade regulations.

These awareness and capacity building strategies, initiatives and mass communication instruments for shark and ray conservation developed by WCS can be adapted and scaled to amplify technical capacity and awareness initiatives, and foster increased commitment, political will and financial investment for the conservation management of sharks and rays across multiple sectors.

(h) First consultation workshop with Government representatives, academics, researchers and relevant NGOS

As part of the shark and ray status assessment, WCS convened a first consultation workshop on May 4-5 2021. The two-day virtual event was inaugurated by the Chief Conservator of Forests (CCF) Md. Amir Hosain Chowdhury as Chief Guest, chaired the Director of the Marine Fisheries Wing of the DoF Dr. Md. Sharif Uddin, moderated by the former Director General of the DoF and Senior Advisor to the WCS Bangladesh Marine Conservation Program Dr. Syed Arif Azad, and the SUFAL Project Director (PD) Gobinda Roy gave the closing remarks.

Eighteen invited speakers shared their knowledge from recent or ongoing research on shark and ray species diversity, identifying priority habitats and threats from fisheries and trade, along with valuable insights on current procedures and challenges for monitoring and reporting catches and landings from small-scale and industrial fisheries, international and regional frameworks for shark and ray conservation management in Bangladesh, and inclusive and equitable fisheries governance.

The speakers and participants represented four government institutions, four universities and six non-governmental organizations (NGOs) involved in shark and ray conservation and fisheries management or socio-economic development in local resource-dependent communities. They engaged actively in facilitated working group sessions to identify practical approaches to reduce mortalities and trade of threatened species and ensure the sustainable exploitation of species not in immediate danger of extinction, including management interventions and incentives for sustainable fisheries and livelihood

alternatives, and in plenary discussions on priority conservation actions for informing a national conservation strategy and action plan.

The consultation workshop ended with an outlook on next steps for developing the *National Conservation Strategy and Plan of Action for Shark and Ray Conservation Management in Bangladesh*, and an invitation to contribute data on priority CITES Appendix II listed shark and ray species and participate in two three-day training workshops for developing Non-Detriment Findings (NDFs). The overwhelmingly positive responses from speakers and participants reflect the commitment of government and non-government partners of the BFD for improving the conservation management of sharks and rays in Bangladesh.

A detailed report on the first consultation is provided in a separate document, including the agenda, details of the participants along with short biographies of all speakers, and summaries of the presentations and discussions. The report is intended for sharing with all participants after approval from the SUFAL PD.

Recommendations informed by the baseline status report, threat assessment and governance frameworks provided in the *Shark and Ray Assessment Report* and from the first consultation workshop are incorporated in a first draft of the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh* (see below).

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

Results from scientific investigations, educational outreach, and policy related activities conducted by WCS in partnership with citizen scientists and government agencies, enriched with information from published reports, are presented in a comprehensive background document: The *Shark and Ray Assessment Report - Baseline information on status, threats and governance in Bangladesh* provides current knowledge and verified information on the status, threats and governance frameworks for sharks and rays in Bangladesh.

As detailed above, the *Shark and Ray Assessment Report* details information on shark and ray diversity in Bangladesh, catches and landings from small-scale coastal fisheries including overall landing characteristics, species occurrence, variations among landing sites, seasonality, gear types, size distribution, conservation status and economic value. Predictive mapping and spatial bycatch risk assessments underline the importance of the Nijhum Dwip and SoNG MPA with a potential expansion for spatial protection of priority shark and ray habitats.

Results from at-sea investigation of elasmobranch catches of coastal small-scale fisheries provide additional insights on fisheries practices and gear information, catch characteristics and size distribution, while a study on perceptions of small-scale fishers on sharks and rays in the coastal waters of Bangladesh indicates potential fisheries management approaches to reduce shark and ray mortalities in return for increased at sea safety and livelihood support of fishers. The review of currently applicable fishing gear regulations for marine waters, domestic and international trade in shark and ray products, and institutional and legal frameworks for the conservation and management of sharks and rays in Bangladesh, along with replicable approaches for raising public awareness and compliance are described in the comprehensive background document.

The recommendations resulting from the *Shark and Ray Assessment Report*, a baseline status and threat assessment prepared by WCS informed by results from scientific investigations, educational outreach and policy initiatives, and published reports, were used to inform the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh*, outlining priority areas of investment for donors and NGOs for advancing shark and ray conservation and management in Bangladesh, and to assess the effectiveness of interventions in supporting sustainable fisheries and fishing livelihoods (see below).

From December 2021-January 2022, WCS plans to conduct additional investigations, including systematic catch investigations and standardized interviews with small-scale fishers during at-sea surveys, with a particular focus on the most threatened species and establishing conservation management for sharks and rays in the SoNG MPA. Plans include assessing the impacts of the set-bag net fishery and unbaited bottom long-lines on threatened sharks and rays in and around the SoNG MPA. Recommendations resulting from insights gained during these investigations will be incorporated in the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh*.

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

As detailed in the inception report, we identified Vulnerable smooth hammerhead sharks *Carcharhinus falciformis* and silky sharks *Sphyrna cf. zygaena*, and Endangered spinetail/giant devilrays *Mobula mobular* and EN shortfin pygmy devilrays *Mobula kuhlii* as priority species for conducting CITES NDFs due to their being listed on CITES Appendix II, not considered Critically Endangered in the IUCN Global Red List, and the availability of sufficient landing and catch data. 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 devilrays, and then, if sufficient resources are available, attempt to develop two additional NDFs for silky sharks and spinetail devilrays.

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

Locally feasible actions for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction are reported in a first draft of the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh* based on results from the baseline status and threat assessment and refined in consultation with national experts from Government agencies, research institutions, academics, and development and conservation professional (see above).

Priority actions to strategically and effectively (1) Reduce mortalities of threatened sharks and rays, (2) Protect priority shark and ray habitat, (3) Strengthen legal protection for threatened sharks and rays and enforce national laws and rules, (4) Engage fishing communities in shark and ray protection, (5) Improve monitoring and reporting of shark and ray fisheries and trade, and (6) Strengthen governance and coordination, are detailed in the report, which is provided as a separate document with this progress report.

This first draft will be enriched with recommended actions from a second consultative workshop with fishers, fishing vessel owners and traders engaged in shark and ray fisheries, processing, and trade, as well as mandatory conditions for trade and management measures needed to mitigate threats resulting from NDFs. Additional recommendations formulated in the next phase will include suggested governance frameworks for improving protection for the most endangered sharks and rays, ensuring that the exploitation of non-threatened species does not result in them becoming threatened, and sustaining productive fishery livelihoods, as well as proposed sustainable financing mechanisms for implementing these actions (see below).

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

The international shark and ray expert Daniel Fernando, with extensive experience in leading NDF development workshops, informed participants during the first consultative workshop about the structured analytical NDF development process. He explained the type of information needed, and presented the planned NDF development workshops as an opportunity for participants to gain practical experience and thereby help build local technical capacity for developing NDFs in Bangladesh. He encouraged participating representatives from the BFD, DoF, and other researchers to contribute available data and communicate their interest for participating in the NDF development workshops to WCS.

In the next phase, WCS will seek official nominations for NDF development training workshop participants from the BFD and DoF, collaborate with the SUFAL PD on issuing invitations, request available information on the priority species to be shared, and make necessary arrangements for the NDF development workshops scheduled between November 2021-February 2022.

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

WCS developed the first draft for the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh*, also known as the National Plan of Action or NPOA, using up-to-date information on the status, threats and governance frameworks for sharks and rays in Bangladesh presented in the *Shark and Ray Assessment Report* and proposed actions needed for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate

danger of extinction formulated in consultation with government stakeholders, academia, and conservation and development experts.

The draft strategy and action plan outlines priority areas of investment for donors and NGOs for advancing shark and ray conservation and management in Bangladesh, and to assess the effectiveness of interventions in supporting sustainable fisheries and fishing livelihoods for a healthy ocean and healthy people. Once completed, it 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.

Additional information from a second consultation workshop that WCS will conduct in November 2021 with fishers, fishing vessel owners and traders engaged in shark and ray fisheries, processing, and trade, to discuss management interventions, suggested governance frameworks, and incentives for sustainable fisheries and livelihood alternatives to strengthen the protection of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction, will be incorporated in the next phase.

In the second project phase WCS will also formulate cost estimates and propose sustainable financing mechanisms for its implementation under different scenarios, including budget allocations and contributions from private sectors, to ensure sustainability of conservation management in consultation with government and community stakeholders.

As per contractual agreement, the *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh* will then be finalized after a national consultation with 30 participants representing relevant Government agencies, institutions and ministries planned for May 2022, with submission 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

Current governance frameworks, including agency mandates and regional as well as international commitments to conserve threatened shark and ray species and manage the sustainable exploitation of non-threatened species are outlined in the *Shark and Ray Assessment Report*. Gaps in legislation and regulatory frameworks as well as regulatory recommendations from published references are also addressed in the comprehensive background document.

Suggestions for improved governance frameworks to strengthen the conservation management of sharks and rays, including scaling-up effective models for regulatory and policy changes engaging law enforcement and communities, and novel incentives to assist in poverty reduction in shark and ray dependent coastal communities, will be formulated in the coming project phases as indicated in the inception report and work plan.

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

Agendas and proposed participant lists for intensive two-day technical training workshops aiming to empower mid-level government officials to collect rigorous scientific data and monitor landings and trade in protected sharks and rays and develop legal cases for the successful prosecution of illegal shark and ray traders, and to enable field-level officials and citizen scientists to collect and report data on shark and ray catches and landings, including the identification of protected species from whole carcasses and their body parts, and safely releasing protected species at sea, were prepared (Appendices 1 and 2).

In March, WCS booked training venues 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, obtained an official letter wherein the CCF requests support and collaboration from the DoF for implementing activities under the SUFAL shark and ray assignment, and sent requests for participant nominations along with the training agenda to the BFD, DoF DG, Customs Commissioners in Khulna and Chattogram, the BFRI Director General and the Chairman of the BFDC.

We were unfortunately forced to postpone the technical training workshops in compliance with Government guidelines for reducing the risks of Covid-19 infections (<https://cabinet.gov.bd/>). These trainings in particular require hands-on experiences and on-location interactions that are very difficult to convey virtually. In addition to the extended lock-down, we also had to consider the fishing ban period ending on July 22nd during which time officers from the DoF are unable to participate in training programs and official landing sites remain closed. WCS informed the SUFAL PD on March 31st and June 17th in this regard.

The technical training workshops have tentatively been rescheduled for 8-9/11-12 August (Khulna) and 22-23/25-26 August (Chattogram), in the hope that the Covid-19 situation will improve by then and allow us to complete these trainings before the next fishing ban commences in early October. We regret these adverse circumstances and anticipate that we will be able to include a report on the technical trainings in the second progress report.

WCS did, however, make good progress with strengthening institutional collaborations, a key objective of this assignment. With substantial assistance from Dr. Syed Arif Azad, former Director General of the DoF, Senior Advisor to the WCS Bangladesh Marine Conservation Program, and key expert for the SUFAL shark and ray assignment, WCS briefed 13 key officers from the DoF, BFRI and BFDC about the SUFAL assignment objectives and planned activities, opportunities for strengthening technical capacities and the collaborative development of a *National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh* and at least two NDFs for priority CITES Appendix II listed shark and ray species. Details on these communications are provided in Appendix 3.

9. Develop mass communication instruments for shark and ray conservation

In the first project phase, WCS initiated the development of an identification guide on protected sharks and rays of Bangladesh, scripts for a short documentary film, and two new episodes of our popular *Ocean Guardians Radio Program* to be produced by WCS under this assignment.

The pocket-size identification guide in Bengali language aims to empower law enforcement officers, fishers, shark and ray traders and citizen scientists to identify shark and ray species protected under the Wildlife (Conservation and Security) Act 2012 and regulated for international trade under CITES, from carcasses and commonly traded body parts. With additional financial support from the Shark Conservation Fund, WCS is obtaining professional illustrations of around 100 species portrayed in the guide from the highly acclaimed artist Marc Dando.

We anticipate the official gazette notification of the Wildlife Act amendment to be published in the coming months, so that we can finalize the identification guide, update and reprint richly illustrated posters and pamphlets used for identifying sharks and rays to support training and mentoring activities, and to 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, in the second project phase. Stickers encouraging fishers to safely release of protected sharks and rays will also be reprinted in the next phase.

A new 8 to 12-minute documentary film in Bengali language highlighting efforts by the Government of Bangladesh to protect threatened sharks and rays through science-based, community informed conservation management will be completed by the end of the year as per contractual agreement. The film will be shown during training, consultation, and outreach events and made available for public sharing through social media channels. The two radio program episodes will be finalized in the next phase in collaboration with six coastal community radio stations to further highlight shark and ray conservation efforts under this project, including the updated list of sharks and rays protected under the Wildlife Act, and generate local support for their implementation.

The mobile exhibition *Ocean Guardians: Protecting Threatened Sharks and Rays in Bangladesh* developed by WCS, aiming 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, is scheduled to be held between February and May 2022 for two days each in four coastal communities where sharks and rays are regularly landed, processed, and traded, and in Dhaka for government officials, local scientists and conservationists, and civil society.

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. 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 Ministry of Fisheries and Livestock (MoFL) and the Ministry of Commerce.

During this phase, WCS followed up on the revised list of sharks and rays protected under the Wildlife (Conservation and Security) Act, 2012. We assisted the BFD in preparing for the inter-ministerial meeting scheduled by the MoEFCC on 4th April 2021 by providing a presentation and ensuring the support from DoF delegates. The proposed amendment was approved, and WCS reviewed the documents for the official gazette notification. In anticipation of the publication of the amendment, WCS prepared a press release for national and international media with supporting visuals.

WCS also assisted the BFD with preparations for the first meeting of a national committee appointed by the MoFL for developing a national action plan for shark and ray conservation management. The delegates gratefully acknowledged the proactive efforts of the BFD through the SUFAL shark and ray assignment, and agreed to adopt the proposed development process as outlined therein. This was a significant decision in favor of a collaborative interagency approach to improve the conservation management of sharks and rays in Bangladesh.

In the next phases, WCS will assist 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. WCS will also follow up on requests from senior DoF officers to assist with the formulation of proposed rules under the new Marine Fisheries Act 2020 to align with the amended shark and ray listing under the Wildlife (Conservation and Security) Act, 2012, and propose additional fisheries management regulations to improve the protection of threatened sharks and rays and the sustainability of the extraction of non-threatened species.

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

The consultation assignment contract was signed on January 13th 2021. WCS submitted the inception report within the first month on February 4th 2021. The proposed activity plan was approved for implementation after a meeting with the SUFAL PMU on February 22nd 2021. A required Professional Liability Insurance was purchased by WCS for the purpose of this project as per contractual requirements and submitted to the SUFAL PD, upon which the first financial installment was received on May 30th 2021.

The deliverables under this first progress report include a baseline status report and threat assessment detailing results from shark and ray research, a report on the first consultation workshop conducted with academics and Government officers for sharing knowledge on the status of sharks and rays and developing a national conservation strategy for sharks and rays, and a draft conservation strategy for sharks and rays including proposed actions for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction. These are provided as separate documents:

- a. *Shark & Ray Assessment Report* – Baseline status and threat assessment prepared by the Wildlife Conservation Society informed by results from scientific investigations, educational outreach and policy initiatives, and published reports
- b. *Report on the first consultation workshop with the government stakeholders for sharing knowledge on the status of the sharks and rays and developing a national conservation strategy*
- c. *Draft National Conservation Strategy and Plan of Action for the Conservation Management of Sharks and Rays in Bangladesh*

WCS has completed all activities as per the plan presented in the inception report and all deliverables as per contractual agreement, with the exception of the training workshops on species identification and data recording that had to be postponed in compliance with Government directives for reducing the risks of Covid-19 infections.

In the next phase we hope to be able to conduct the training workshops on shark and ray data collection, and as planned the two training workshops for developing NDFs for commercially valuable priority shark and ray species listed under CITES Appendix 2, conduct scientific investigations in priority shark and ray habitats, and enrich the draft strategy and action plan with suggested governance frameworks to strengthen the conservation of threatened sharks and rays and the sustainable exploitation of non-threatened species in consultation with government and community stakeholders.

WCS gratefully acknowledges the support received from the BFD, particularly from the CCF and the SUFAL team, and the Marine Fisheries Wing of the DoF for successfully completing the first phase of the assignment.

Appendix 1. Agenda for an intensive two-day technical training workshop for mid-level Government officers on identifying protected sharks and rays, and prosecuting illegal shark and ray traders.

This training workshop aims to empower mid-level government officials to collect rigorous scientific data and monitor landings and trade in protected sharks and rays and develop legal cases for the successful prosecution of illegal shark and ray traders.

Day 1

<i>Time</i>	<i>Objective/Content</i>
09:00	Registration
Inaugural Session	
09:30	<i>“Protecting Threatened Sharks and Rays in Bangladesh”</i> – screening of a WCS documentary film
09:45	Welcome and introductions
10:00	Guest speeches
10:20	Training workshop overview: objectives, activities, logistics
10:30	Tea break
1st Session – Current knowledge on legally regulated sharks and rays in Bangladesh	
11:00	Current knowledge on sharks and rays in Bangladesh, their threats and trade based on results from WCS citizen science networks and at-sea surveys
11:30	Legal protection of sharks and rays – National and international legislation regulating their catch and trade
2nd Session – Enforcing legal protection for threatened sharks and rays in Bangladesh	
12:00	Detecting and identifying illegal sharks and rays in trade – Interactive session with an introduction to identification guides and their applications
13:00	Lunch and prayer break
14:00	Detecting and identifying illegal shark and rays from carcasses and body parts – Interactive introduction to identification guides and their practical applications
15:00	Investigating illegal trade in sharks and rays (smuggling techniques, evidence processing and prosecution)
3rd Session – Improving wildlife crime reporting and applying Standard Procedures for collecting data on sharks and rays	
15:45	Introduction to Standard Operating Procedures for collecting data on sharks and rays
16:30	Reporting wildlife crimes
16:45	Summary of the day, preparations for Day 2
17:00	Refreshments - End of Day 1

Day 2

<i>Time</i>	<i>Objective/Content</i>
4th Session – Visit to fish landing and market sites	
07:00	Practical session on identifying and reporting landings of protected sharks and rays at fish landing sites and markets
09:00	Breakfast
09:30	Practical session on identifying and reporting trade in body parts from protected sharks and rays.
11:00	Tea break
11:30	Review of collected data and reports, addressing challenges and questions
12:00	Data processing and reporting with examples from WCS citizen science networks
12:30	“Ocean Guardians: Protecting Threatened Sharks and Rays in Bangladesh” - Guided tour through the educational exhibition developed by WCS for awareness raising
13:30	Lunch and prayer break
5th Session – Improving effectiveness of protection for threatened sharks and rays in Bangladesh	
14:30	Facilitated discussion on suggested approaches and measures to improve the compliance with catch and trade regulations among fishers, traders and consumers/buyers
15:30	Assessment of training workshop effectiveness with individual evaluation
Closing Session	
16:00	Summary of training workshop
16:15	Words of thanks
16:30	Certification, Group photo
17:00	Refreshments, End of training workshop

Appendix 2. Agenda for an intensive two-day technical training workshop for field-level Government officers and citizen scientists on standard operating procedures for data collection on protected sharks and rays and their safe release at sea.

This training workshop aims to empower field-level officials and citizen scientists to collect and report data on shark and ray catches and landings, including the identification of protected species from whole carcasses and their body parts, and safely releasing protected species at sea.

Day 1

Time	Objective/Content
09:00	Registration
Inaugural Session	
09:30	<i>"Protecting Threatened Sharks and Rays in Bangladesh"</i> – screening of a WCS documentary film
09:45	Welcome and introductions
10:00	Guest speeches
10:20	Training workshop overview: objectives, activities, logistics
10:30	Tea break
1st Session - What do we know about sharks and rays in Bangladesh?	
11:00	Current knowledge on sharks and rays in Bangladesh and their threats based on results from WCS citizen science networks and at-sea surveys
11:45	Identifying protected sharks and rays in Bangladesh from carcasses and their body parts – introducing identification guide
13:00	Lunch and prayer break
2nd Session - How can I tell which sharks and rays are legally regulated?	
14:00	Legal protection of sharks and rays – National and international laws regulating their catch and trade
14:15	Release or retain? – Interactive session on the identification of protected sharks and rays
15:00	Group A: (Government officers, citizen science landing site data collectors): Identification of protected sharks and rays from their body parts Group B (Fishing vessels captains and owners): Safe release of protected marine wildlife
3rd Session – Standard Procedures for collecting data on sharks and rays	
15:45	Group A: (Government officers, citizen science landing site data collectors): Standard Operating Procedures for collecting data on sharks and rays from landing sites Group B (Fishing vessels captains and owners): Standard Operating Procedures for collecting data on sharks and rays at sea
16:45	Summary of the day, preparations for Day 2
17:00	Refreshments - End of Day 1

Day 2

<i>Time</i>	<i>Objective/Content</i>
4th Session – Visit to fish landing site for collecting data on sharks and rays	
07:00	Practical session on applying the Standard Operating Procedures for collecting data on sharks and rays
09:00	Breakfast
10:00	Review of collected data, addressing challenges and questions
10:30	Data processing and reporting-with examples from WCS citizen science networks
11:00	Tea break
11:30	Improving the use of a GPS for navigation and collecting location data on shark and ray catches by WCS citizen science fishermen
12:15	“Ocean Guardians: Protecting Threatened Sharks and Rays in Bangladesh” – a guided tour of the interactive educational exhibition developed by WCS
13:00	Lunch and prayer break
5th Session – Improving effectiveness of protection for threatened sharks and rays in Bangladesh	
14:00	Facilitated discussion on suggested approaches and measures to improve the compliance of fishers, traders and consumers/buyers on shark and ray catch and trade rules
15:00	Assessment of training workshop effectiveness with individual evaluation
Closing Session	
16:00	Summary of training workshop
16:15	Words of Thanks
16:30	Certification, Group photo
17:00	Refreshments, End of training workshop

Appendix 3. Overview of communications between WCS and Government agencies aimed to strengthen collaborations with the Bangladesh Forest Department under the SUFAL sharks assignment.

<i>Date</i>	<i>Name, designation, agency</i>	<i>Communications</i>
16. Feb 2021	Dr. Tanvir Hossain Chowdhury, Deputy Chief, Marine, DoF	SUFAL key expert Dr. Syed Arif Azad briefed Dr. Tanvir on SUFAL assignment objectives and activities by phone. Dr. Tanvir assured full cooperation to WCS/FD.
16. Feb 2021	Quazi Shams Afroz, Director General (DG), DoF	Letter sent by team leader requesting opportunity to brief DG and senior DoF officers on SUFAL plans for strengthening coordination between the FD and DoF for achieving CITES compliance, ensuring the participation of DoF officers in planned consultations and trainings to establishing strong capacity for the conservation management of sharks and rays, and sharing of information for monitoring shark and ray landings from small-scale and commercial fisheries.
23. Feb 2021	Quazi Shams Afroz, Director General, DoF	Letter sent by team leader about first training and consultation workshops scheduled to commence in April, requested permission to correspond directly with Dr. Sharif Uddin, Mr. Tanvir Hossain, Mr. Kabir Chowdhury, Mr. Atiar Rahman.
22. Mar 2021	Secretary, BFDC	Team leader provided virtual briefing on SUFAL assignment objectives and activities, particularly technical training opportunities.
23. Mar 2021	Monika Das, Assistant Director, DoF	SUFAL key expert Md Tariqul Islam followed up on nominations of technical training courses on systematic data collection for shark and ray landings.
25. Mar 2021	Khandaker Mahbubul Haque, PD Sustainable Coastal and Marine Fisheries Project; Shoukat Kabir Chowdhury, Assistant Director Marine; and Dr. Tanvir Hossain Chowdhury, Deputy Chief, Marine, DoF	Virtual briefing with presentation by team leader on SUFAL project objectives and activities, and the role of the DoF. All three senior DoF officers assured their full cooperation to WCS/FD.
3. April 2021	Dr. Sharif Uddin, Principal Scientific Officer (PSO), MSFMU, Marine Fisheries Office, DoF	Virtual briefing with presentation by team leader on SUFAL project objectives and activities, and the role of the DoF. Dr. Sharif appreciated the initiative focusing on shark and ray conservation management, and assured his and his units full cooperation to WCS/FD.
5. April 2021	Dr. Enamul Haque, Former Director, and Dr. Ehsanul Karim, Senior Scientific Officer, Bangladesh Fisheries Research Institute (BFRI)	Virtual briefing with presentation by team leader on SUFAL project objectives, activities, and arrangements of consultation workshop with national shark and ray experts. Both welcomed the FD initiative, assuring BFRI support and participation in consultations and trainings
6. April 2021	Dr. Yahia Mahmud, Director General, Bangladesh Fisheries Research Institute (BFRI)	Virtual briefing with presentation by team leader on SUFAL project objectives and activities, particularly training and consultation workshop opportunities for the BFRI officers and the joint development of a national

		strategy and action plan for the conservation management of sharks and rays. The DG viewed the efforts positively and assured collaborative support from BFRI.
6. April 2021	National NPoA committee, appointed by MoFL and chaired by DG DoF	Team leader and key expert Dr. Zahangir Alom represented WCS in the first meeting of the committee formed by the MoFL for preparing a National Plan of Action for sharks and rays. The SUFAL DPD presented the strategic and inclusive development process proposed by WCS under SUFAL, to which committee members agreed on in principle.
12. April 2021	Dr. Sharif Uddin Director, Marine Fisheries Office, and PSO MSFMU, DoF	Discussion with SUFAL team leader and key expert Dr. Syed Arif Azad about national expert consultation agenda and participants, requesting him to chair the event and present. He confirmed his participation and confirmed his support.
19. April 2021	Quazi Shams Afroz, DG DoF; Dr. Yahia Mahmud, DG BFRI; Dr. Enamul Haque, Former Director BFRI; and Ahsanul Haque, Manager of the BFDC Fish Landing Center in CXB	Invitation sent by team leader, along with SUFAL briefing document, for participating/speaking/nominating participants in the first national consultation workshop on May 4. -5. 2021.
21. April 2021	Shoukat Kabir Chowdhury, Assistant Director and IOTC focal person, DoF	Virtual briefing with presentation by team leader on SUFAL project objectives and activities, and the joint development of a national strategy and action plan for the conservation management of sharks and rays. He was pleased with the plans and assured his support and participation.
21. April 2021	Ahsanul Haque, Manager of the BFDC Fish Landing Center in Cox's Bazar	Briefing by team leader on project objectives and activities, particularly on opportunities for technical trainings. He accepted invitation to speak at consultation workshop, but requested guidance from WCS. Team leader shared key questions for framing his talk.
26. April & 3. May 2021	Quazi Shams Afroz, DG DoF	Follow-up email sent by team leader to inform her about two-day virtual consultation workshop requested her to authorize invited speakers and nominated participants from DoF.

