



Sustainable Forests & Livelihoods (SUFAL) Project

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

Second Progress Report

July - December 2021

January 2022



Bangladesh Forest Department
Ministry of Environment, Forest and Climate Change

Second Progress Report:

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

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Cover Photo

Fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade actively participated in the second consultation on the national conservation strategy for sharks and rays. © WCS Bangladesh



Executive Summary

The Wildlife Conservation Society Bangladesh (WCS) has made strong progress on accomplishing the objectives of the *Shark and Ray and Associated Species Conservation Strategy Development and Non-Detriment Findings* assignment. This includes making 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 signing of the contractual agreement between the Bangladesh Forest Department (BFD) and WCS in January 2021. The inception report, which included a list of priority species identified for conducting CITES non-detriment findings (NDFs), was submitted in February 2021. The first progress report was submitted in July 2021, along with a baseline status and threat assessment report, a report on the first consultation conducted with representatives from Government agencies, academia, and NGOs for sharing knowledge on the status of sharks and rays and developing a *National Conservation Strategy and Plan of Action for Sharks and Rays in Bangladesh (NCSSRSR)* and the draft strategy and plan.

In October/November 2021, after the official gazette notification in mid-September 2021 of the amended list of sharks and rays protected under the Bangladesh Wildlife (Conservation and Security) Act, 2012, WCS trained 95 Government officers and citizen scientists during four two-day training workshops on shark and ray data collection and monitoring in Chattogram and Khulna.

A second consultation workshop for sharing knowledge on the status of and threats to sharks and rays and developing a NCSSRSR was held in November 2021 with 30 fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade in Kuakata. In December 2021, WCS started intensive field investigations to assess the impacts of set-bag net and longline fisheries on threatened sharks and rays.

Coordination between the BFD and other Government agencies for shark and ray conservation was further strengthened through the interagency training workshops and the engagement with a national committee appointed by the Ministry of Fisheries and Livestock (MoFL) for finalizing a National Plan of Action for Sharks and Rays. During the committee's second meeting in September, all members agreed to review the draft NCSSRSR and jointly pursue its endorsement.

Between July – December 2021, WCS completed all contractually required activities, including four technical training workshops for Government officers and citizen scientists on shark and ray data collection and monitoring. In agreement with the SUFAL Project Director (PD), the NDFs will be developed and validated in February 2022, with the finalized NDFs submitted to the CITES Secretariat in the third phase as per the approved workplan.

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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
FRSS	Fisheries Resources Survey System
IOTC	Indian Ocean Tuna Commission
IUCN	International Union for Conservation of Nature
MFO	Marine Fisheries Office
MFSMU	Marine Fisheries Survey Management Unit
MoEFCC	Ministry of Environment, Forest, and Climate Change
MoFL	Ministry of Fisheries and Livestock
MPA	Marine Protected Area
NCSSR	National Conservation Strategy and Plan of Action for Sharks and Rays in Bangladesh
NDF	Non-Detriment Finding
NGO	Non-Governmental Organization
NPoA	National Plan of Action
NT	Near Threatened
PD	Project Director
PMU	Project Management Unit
PSO	Principal Scientific Officer
SONG	Swatch-of-No-Ground
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

As per December 2021, a total of 39 shark and 63 ray species have been confirmed as occurring in Bangladesh, with the potential occurrence of an additional 13 shark and eight ray species (Figure 1). Of the species documented or suspected to occur in Bangladesh, 30 shark and 52 ray species 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.

An overview and key findings from detailed analysis of scientific investigations conducted by WCS and our networks of citizen scientists, enriched with information from published reports, were provided in the first progress report and the [Shark and Ray Assessment Report - Baseline information on status, threats and governance](#).

During the SUFAL project period, additional field data were collected and compiled. Between January and November 2021, the WCS *Citizen Scientist Shark and Ray Landing Site Data Collectors Network* made 1,655 visits to the five landing sites in Alipur Kuakata, Cox's Bazar, Parerhat, Rupsa Khulna, and on Saint Martin's Island.

Photo-verified data was recorded on 448 landings of 577,251 sharks from 13 species and two genera. Shark landings were recorded on 16.4% of the visits, with the highest number of shark landings found in Cox's Bazar (62%) and on Saint Martin's Island (12%). Sharks landed totaled to an estimated 430 metric tonnes with a selling price of over 435 lakh BDT or half a million USD.



Figure 1. NT spadenose sharks (left) and CR scalloped hammerheads (right) are by far the most landed shark species. Spadenose sharks are no longer protected, but hammerheads are strictly protected under Schedule I of the Bangladesh Wildlife Act. This means they can no longer be legally landed and must be released at sea.

Landed shark specimens were dominantly from the Carcharhinidae family (77%), with just two species accounting for nearly all landings (99.6%): Near Threatened (NT) spadenose sharks *Scoliodon laticaudus* made up 83.5% and CR scalloped hammerhead sharks *Sphyrna lewini* 16.1% of the total landed shark specimens (Figure 1). Half of all shark landings occurred in the four months from August to November following the 65-day ban period (19 May – 23 July 2021), having been caught in medium-mesh gillnets (66%), baited longlines (13%), and large-mesh gillnets (10.5%).

A total of 940 landings of 53,332 rays from 46 species, six genera, and two families were recorded during the same period. Rays were found in 22.2% of the landing site visits, with most ray landings recorded in Cox's Bazar (43.2%) followed by Saint Martin's Island (31.1%). Landed rays recorded had an estimated total weight of 234.24 metric tonnes with an approximate selling price of nearly 497 lakh BDT (577,900 USD) in total.

Rays recorded at landing were dominated by specimens from the Gymnuridae and Dasyatidae families that together made up 74% of all ray landings. Dominant species were VU Bengal whiplay *Brevitrygon imbricata* (63.7%) and longtail butterfly ray *Gymnura poecilura* (12%), and CR shorttail whiplay *Maculabatis bineeshi* (5.2%) and sharpnose guitarfish *Glaucostegus granulatus* (3.4%) (Figure 2). Fishing gear responsible for most rays caught were medium-mesh gillnets (48%) and bottom-set longlines with hundreds of unbaited hooks that specifically target rays (28.2%).



Figure 2. Bengal whiplays (top left), sharpnose guitarfish (top right), longtail butterfly rays (bottom left) and shorttail whiplays (bottom right) are the most landed ray species.

Key new discoveries made during field work conducted under the SUFAL assignment include five potential new records for Bangladesh, which remain to be verified by experts, including smoothtooth blacktip shark (*Carcharhinus leiodon*), dwarf whiplay (*Brevitrygon heterura*), sharpnose whiplay (*Maculabatis macrura*), smooth butterfly ray (*Gymnura micrura*), as well as confirmation of occurrence for Pakistani whiplays (*Maculabatis arabica*) (Figure 3).



Figure 3. Species suspected as new records for Bangladesh are the smoothtooth blacktip shark (top left), smooth butterfly ray (top right), sharpnose whiplay (bottom left), and dwarf whiplay (bottom center). The Pakistani whiplay (bottom right) was previously suspected but not confirmed to occur in Bangladesh.

Results from data collected during the SUFAL assignment are consistent with conclusions made from analyses of the more extensive data set reported in the [Shark and Ray Assessment Report](#) and confirm that Bangladesh is a stronghold for several CR and EN shark and ray species in need of urgent protection. These include the great and scalloped hammerhead sharks, giant and sharpnose guitarfish, ocellate eagle ray, spinetail devilray, and giant freshwater whiplay.

Frequent landings of large numbers of other relatively common and non-threatened species include bluespotted maskrays *Neotrygon caeruleopunctata*, grey sharpnose sharks *Rhizoprionodon oligolinx*, and spadenose sharks. This information supports the potential for developing a sustainable shark and ray fishery based on rigorous science and in compliance with national wildlife laws.

The findings also indicate the strong value of the WCS citizen science landing site data collectors' network in terms of better understanding the full range of elasmobranchs occurring in the country's waters. The training provided by WCS on shark and ray data collection and monitoring during this phase of the SUFAL assignment strengthened the capacity and motivation of Government officers for systematically recording information and photographs to confirm the species identity of sharks and rays.

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

As reported in the *Shark and Ray Assessment Report*, medium mesh gillnets (mesh size = 8.1-13.0 cm) and set-bag nets were found responsible for about three quarters of all shark landings and for 96% of all shark individuals landed. Set-bag nets account for 37.2% of all fishing gears operated along the coast, according to extensive WCS surveys. 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. To protect threatened sharks and sustain vital coastal fisheries, the WCS study presented in the assessment report recommends reducing the number of set-bag nets.

Spatial bycatch risk models for sharks and rays developed by WCS based on their presence in catches recorded by the WCS *Citizen Science Fishermen Safety Network*, predictive habitat suitability and gillnet fishing effort, show high-risk areas concentrated around the Swatch-of-No-Ground (SoNG) Marine Protected Area (MPA) particularly for sharks. This demonstrates the potential for protecting multiple species with marine spatial planning and fisheries management that concentrates bycatch reduction measures in high-risk areas. Rays were also at high risk of being caught in shallow nearshore and inshore estuarine waters. This suggests rays are vulnerable to bottom-set fishing gears in shallow water such as set-bag nets, bottom-set longlines, and small mesh gillnets. More details on these studies are also included in the [Shark and Ray Assessment Report](#).

To assess the impacts of the set-bag net and longline fishery on threatened sharks and rays in priority shallow nearshore waters between the SoNG MPA and the Sundarbans Reserved Forest, WCS initiated additional field investigations under the SUFAL assignment. From 18 December 2021 to 3 January 2022, 373 linear kilometers were surveyed by two teams of four observers each aboard two small fishing trawlers (Figure 4, top right). They searched along 20 predefined 4 km wide and approximately 20 km long transect strips from the Sundarbans Reserved Forest to the northern edge of the SoNG MPA for cetaceans, marine turtles, and fishing activities. The team encountered Irrawaddy and Indo-Pacific humpback dolphins, finless porpoises, olive ridley turtles, 208 active fishing vessels, and 768 deployed gears.

Eleven fishing boats using five gear types, including one medium mesh drifting gillnet targeting croakers, one drifting and one anchored small mesh gillnet (mesh size = 2.5-7.6 cm) targeting small bony fish and shrimp, one boat each using unbaited bottom longlines targeting rays and baited midwater longlines targeting catfish, and four non-selective estuarine/nearshore set-bag nets were approached to check if they had caught any sharks or rays.

A single Near Threatened (NT) spadenose shark *Scoliodon laticaudus* was recorded in a set-bag net catch, and eight specimens of four ray species were caught by an unbaited bottom longliner. Five Critically Endangered (CR) sharpnose guitarfish *Glaucostegus granulatus*, one Endangered (EN) roughnose cowtail ray *Pastinachus solociroustris*, one EN round whiplay *Maculabatis pastinacoides*, and one Vulnerable (VU) longtail butterfly ray *Gymnura poecilura* were reportedly all caught in one gear set. Spadenose sharks are no longer listed in the Wildlife Act, but guitarfish and roughnose cowtail rays are strictly protected in Schedule I, with butterfly rays and the round whiplay regulated under Schedule II.

During the same period, land-based investigations of set-bag net catches were conducted during ten days in Alorkhol, the largest seasonal fish drying village on Dubla Island. A total of 851 boats were recorded in Alorkhol which unloaded 3-100 baskets of catch per boat during

this time, with large differences between weak and strong tides. Ten percent of the total weight from 100 baskets was sampled to determine the catch composition according to high and low value fish and crustacean species, including bycaught sharks and rays. No rays were found in these samples, and all sharks were NT spadenose sharks. Several different rays, including EN Bleeker's and honeycomb whiprays, and one requiem shark were seen being landed or on drying racks (Figure 4). Through standardized interview surveys at sea and on land (see below), we gathered additional information on the governance and economic value of the Dubla set-bag net fishery and the trade in sharks, rays, and fish maws or swim bladders.

A more detailed analysis of the data collected during these will be done after completing the field work in mid-January and included in the third progress report. Recommendations resulting from insights gained will be incorporated in the NCSSR.

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

Interviews conducted by WCS on the knowledge and practices of 88 fishers from 88 fishing vessels small-scale fishers in the coastal waters of Bangladesh between December-January 2017-2018 and 2018-19 are reported in the [Shark and Ray Assessment Report](#).

To gain a better understanding of shark and ray catches, reports on sawfish catches, economic and ecological impacts, processing and trade of the set-bag net fishery around Dubla Island, as well as the perceptions of fishery stakeholders on sustainable fisheries, MPAs, and legally protected wildlife, between 18 December 2021 and 3 January 2022, WCS conducted 30 land and sea-based interviews. The results of these interviews will be reported in the third progress report with resulting recommendations incorporated in the NCSSR.

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 as reported in the [Shark and Ray Assessment Report](#). Additional insights gathered during land and sea-based investigations conducted from December 2021 – January 2022 by WCS about domestic trade of sharks and rays will be reported in the third progress report and incorporated in the NCSSR.

During the technical training workshop on shark and ray data collection and monitoring conducted by WCS under the SUFAL assignment in Chattogram in October (see below), the Deputy Commissioner of the Chattogram Custom House Md. Abdul Alim was inspired to check his records for declared shark or ray export shipments. He found that during 2017 - 2021, there were only two declared export shipments of sharks and rays on record. One shipment processed in 2017 with a net weight of 700 kg was declared under Harmonized System (HS) Code 0302.92.90 as 'shark fish up to 2.5 kg', and another shipment with a net weight of 6,500 kg was exported in 2020 under HS code 0303.82.90 for 'other Rays, Skates' (Figure 5).



Figure 4. From December 2021 to January 2022, WCS conducted systematic strip transects (top left), weighed the catches (top right) and sampled the catch composition from set-bag nets (middle left) landed on Dubla Island. Mostly small-sized rays (middle right, bottom left) and large numbers of spadenose sharks (bottom right) were documented being processed for human consumption or animal feed.

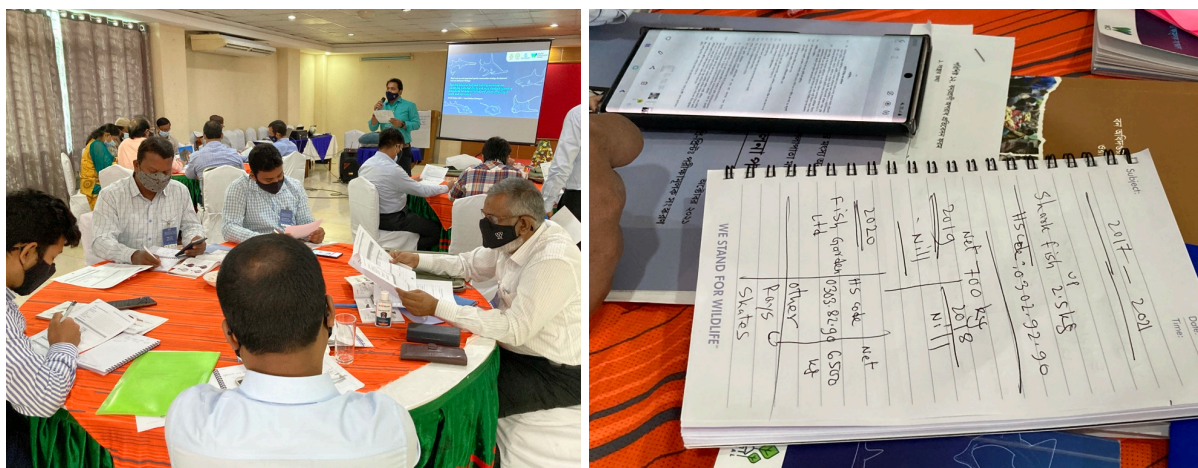


Figure 5. The Deputy Commissioner and Assistant Commissioner from the Chattogram Custom House engaged with great interest in the training for mid-level officers (left). On the second day of the workshop, they shared information on the only two export shipments of sharks or rays recorded in the past five years (right).

In the same training workshop, the Fish Inspection and Quality Control Officer Md. Aminul Islam Bhuiyan from the DoF Fish Inspection and Quality Control Office explained that due to limited resources, the DoF inspectors check only five samples from each export shipment. These samples are brought to the Fish Inspection and Quality Control Office by the traders, shipping companies or courier service providers for obtaining the export clearance.

Workshop participants commented that this practice likely resulted in grossly underreported exports of sharks, rays, and their body parts. Their recommendations for improving reporting and monitoring of shark and ray trade align with those proposed in the NCSSR.

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

On 22 September 2021, the official gazette notification of the amended listing of sharks and rays protected under the *Bangladesh Wildlife (Conservation and Security) Act 2012* was published by the Ministry of Environment, Forests, and Climate Change (MoEFCC). As per the amended listing, eight genera and 23 species of sharks and rays are now strictly protected (Schedule I). Catch and trade of one genus and 29 species of sharks and rays listed under Schedule II are only allowable with permission from the BFD.

This major step for improved conservation and management of sharks and rays in Bangladesh confirmed the Government of Bangladesh's commitment to strengthen compliance with international species protection and trade commitments. The new listing, which includes entire genera as well as look-alike species, also made the visual differentiation of protected and non-protected species easier for fishers, traders, and law enforcement agencies.

WCS is supporting the BFD in communicating the new legislation under the SUFAL shark and ray assignment through mass awareness programs and educational outreach tools, and its implementation through interagency trainings and strengthening collaborations between the

BFD with other Government agencies. Representatives from the DoF and Customs attending the technical training workshops on shark and ray data collection and monitoring suggested an official letter from the Chief Conservator of Forests (CCF) be sent to the Director General (DG) of the DoF with the Gazette Notification requesting their collaboration in communicating and implementing the amended national law.

During discussions with the Director of the DoF Marine Fisheries Office (MFO) on planned activities under the SUFAL assignment, he invited WCS to review the draft *Marine Fisheries Rules* under the *Marine Fisheries Act, 2020* to ensure the protection of threatened marine wildlife, including sharks, rays, and cetaceans. WCS will review the draft rules in the coming months and propose additions or changes, particularly to address the conservation and management of sharks, rays, and associated marine wildlife aligned with recommendations being developed under the SUFAL assignment, MPA management plans, and international species protection and trade regulations.

Educational outreach for shark and ray conservation management in Bangladesh

During the second phase of the SUFAL assignment, WCS developed a new field guide for identifying legally protected sharks and rays of Bangladesh and their commonly traded parts, created new additions to the mobile educational outreach exhibition, and developed the script and storyboard for a short film.

The pocket-size identification guide on sharks and rays in Bengali language aims 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. A draft version of the practical field guide was tested in the technical training workshops. The feedback from participants and facilitators, as well as comments from international and national experts have been incorporated. Once we receive the remaining illustrations from Marc Dando, the renowned illustrator of the acclaimed book *Sharks of the World*, the identification guide for protected sharks and rays of Bangladesh will be completed for printing and distribution.

The educational outreach exhibition *Ocean Guardians: Protecting Threatened Sharks and Rays* developed by WCS combines life-size animal models, 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 has produced additional exhibits that aim to increase public recognition of sharks and rays listed in the recently amended Schedules I and II of the Wildlife Act. The mobile exhibition will travel to four coastal communities where sharks and rays are regularly landed, processed, and traded between March – May 2022. A fifth exhibition is planned for government officials, local scientists and conservationists, and civil society in Dhaka.

The script for a new film communicating key shark and ray messages was prepared with seven sections that (i) introduce sharks and rays as ancient fish with external features distinguishable from other marine wildlife and bony fishes, (ii) describe their ecological vulnerability, (iii) explain how overfishing and demand for their body parts are threatening their survival, (iv) introduce species and species groups strictly protected under Schedule I and regulated under Schedule II of the Wildlife Act, (v) provide instructions on how to safely

release protected species at sea, and (vi) motivate viewers to become *Ocean Guardians* by complying with species protection, fisheries, and trade regulations.

The script was revised with a local filmmaker. Following her guidance, WCS prepared a detailed storyboard with a sketch of each film scene and the corresponding narration in Bangla. In the next phase, WCS will select an animator and editor to assist in the production of the 8-12-minute short film to be shown in educational outreach and training programs, workshops, and meetings.

Under the SUFAL assignment, WCS also reprinted 500 copies of the coloring book *Amazing Aquatic Animals*. Simple drawings and short Bangla texts introduce threatened marine wildlife species of Bangladesh to improve awareness about and compliance with national wildlife and international trade regulations. These books, along with stickers depicting safe release instructions for protected shark and ray species, were distributed by WCS during at-sea fisheries investigations and interviews with fishery stakeholders.

Second consultation workshop with fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade

Priority actions for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction were informed by results from a baseline status and threat assessment and a two-day national consultative workshop conducted in May 2021. The *Report on the national consultation for sharing knowledge on the status of and threats to sharks and rays in Bangladesh and developing a national conservation strategy*, which was submitted with the first progress report, details the recommendations from national experts from government agencies, research institutions, academics, and development and conservation professionals.

The objectives to engage fishing communities in shark and ray protection and to strengthen governance and coordination were at the center of the second consultation workshop for sharing knowledge on the status of and threats to sharks and rays for the NCSSR. Of particular interest were suggestions to improve compliance with species protection and trade regulations from shark and ray fishery stakeholders.

Ten fishers, twelve fishing vessel captains, and eight traders engaged in shark and ray fisheries, processing, and trade, were invited to the day-long consultation workshop in the *Alipur Majhi Shomiti* meeting house in Alipur Kuakata on 6 November 2021. WCS facilitators engaged participants in four working groups for identifying locally feasible actions or solutions to achieve NCSSR outcomes including (i) reducing catches, retention, landing, and trade of protected species, (ii) increasing awareness and local engagement in shark and ray protection efforts, and (iii) sustainably harvesting non-threatened species.

The working groups were tasked with identifying (a) incentives for shark and ray traders to comply with national and international trade regulations, (b) incentives for reducing domestic demand for protected shark and ray species, (c) approaches to promote value-enhanced products from sustainably caught non-threatened sharks and rays, and (d) incentives for shark and ray-dependent coastal communities to reduce poverty and develop supplementary livelihood alternatives especially for women (Figure 6).



Figure 6. Proposed actions were noted on flipcharts to enable participants to clarify any misunderstandings. Consensus was achieved on the recommendations through lively, generally constructive discussions (left). One participant from each of the four working groups presented proposed actions to the plenum with an opportunity for others to reflect and comment on the proposed actions (right).

A detailed *Report on the 2nd Consultation Workshop with fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade, for sharing knowledge on the status of and threats to sharks and rays for a national conservation strategy* is provided as a separate document, including the proceedings, agenda, details of the participants, and recommended actions and suggested governance frameworks for inclusion in the NCSSR.

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

Along with the first progress report, WCS submitted a comprehensive background document reporting 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. 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.

The baseline status and threat assessment of sharks and rays presented in the *Shark and Ray Assessment Report* was used to inform the draft NCSSR prepared and submitted by WCS with the first progress report.

In December 2021, WCS initiated additional at-sea and land-based investigations on threatened shark and ray species and establishing conservation management in the Swatch-of-No-Ground (SoNG) Marine Protected Area (MPA). Research objectives of the ongoing marine wildlife and fisheries survey include assessing the impacts of the set-bag net fishery and unbaited bottom-set long-lines targeting rays around the SoNG MPA and the adjacent waters around Dubla island in the Sundarbans Reserved Forest (see below). A detailed analysis of these investigations will be completed and detailed in the third progress report. Resulting recommendations will be incorporated in the NCSSR before its finalization during a third consultation with senior representatives from respective ministries and agencies in May 2022. The results will also be incorporated into the *Integrated Management Plan for the SoNG MPA*. WCS has already prepared a draft of this document and submitted it to the BFD for finalization in consultation with the Government and relevant stakeholders.

3. Identify priority species for conservation management and conducting CITES non-detriment findings (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 to determine the impacts of international trade on wild populations. These science-based species or genera specific assessments can also set mandatory conditions for trade and provide advice for management measures to mitigate conservation concerns and pressures, including restrictions on catch or export quantities or improved monitoring and control systems to ensure compliance with such limits or traceability from catch to consumer (Figure 7).

As detailed in the inception report, WCS identified Vulnerable smooth hammerhead sharks *Sphyrna zygaena* and silky sharks *Carcharhinus falciformis*, and Endangered giant devilrays *Mobula mobular* and 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 that sufficient catch or landing data are available to evaluate the species.

During the first consultation with national shark, ray, and fishery experts, WCS requested representatives from research institutions and the DoF Marine Fisheries Survey Management Unit (MFSMU) and Fisheries Resources Survey System (FRSS), Bangladesh Fisheries Research Institute (BFRI), and the Bangladesh Fisheries Development Corporation (BFDC), to contribute information on NDF candidate species including numbers and fisheries that catch them, locations of landing sites where they have been recorded, discards at sea, value and end use of landed catches, domestic and international trade, seasonality or trends observed over time in catches or landings, locations of mating, pupping, or nursery grounds, and any other data they feel would be of value to the NDF development process.

WCS is compiling available information on these species required for the NDF process in advance of the NDF development workshops under guidance from the NDF development training workshop facilitator, Daniel Fernando. Conditions for trade and management to mitigate conservation concerns resulting from the NDFs will be integrated in the NCSSR. More information on the NDF development plan and preparations is provided in section 5 below.

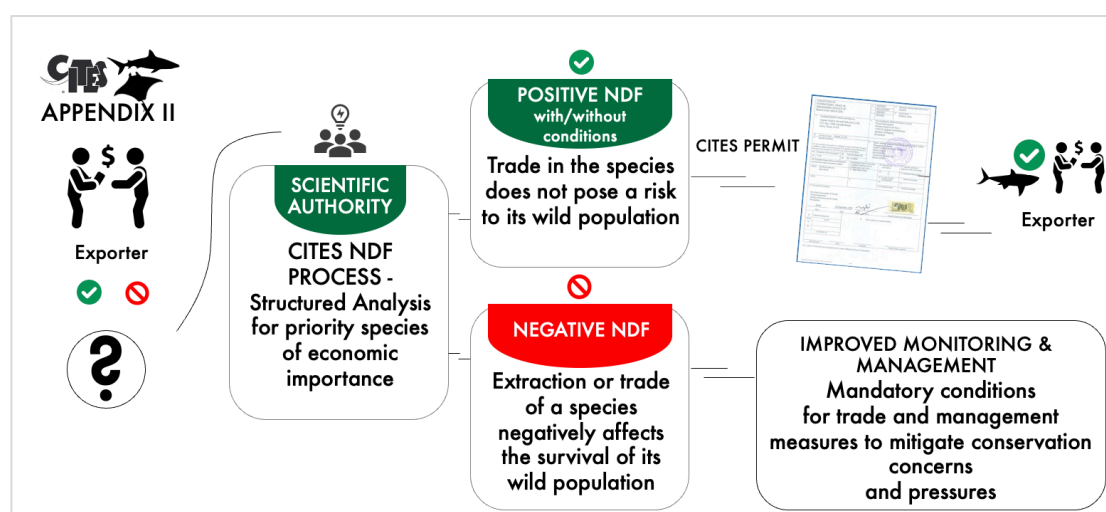


Figure 7. NDF process for CITES Appendix II listed sharks and rays.

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

Priority actions to (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, based on the baseline status and threat assessment were refined during a two-day consultative workshop conducted in May 2021 with national experts from government agencies, research institutions, academics, and development and conservation professionals. To further refine and ‘ground-truth’ the recommended actions and governance framework, a second day-long consultation workshop was conducted in November 2021 with 30 fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade in Kuakata (see below).

Recommendations from the second consultative workshop will be included in the NCSSR. Strategic actions proposed for the conservation of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction in the NCSSR will be further enriched with mandatory conditions resulting from NDFs for trade and management measures to mitigate threats to be completed in February 2022 (see below), and results from investigations conducted by WCS from December 2021 – January 2022 focusing on the most threatened shark and ray species and establishing conservation management for sharks and rays in the SoNG MPA and the adjacent nearshore waters around Dubla Island.

As per contractual agreement, the NCSSR will be finalized after a third consultation with 30 senior representatives from relevant Government agencies, institutions and ministries planned for May 2022, with submission for official Government endorsement by June 2022.

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

The Wildlife Advisory Board of the BFD, which functions as the National CITES Scientific Authority, is required to verify that international trade will not negatively impact the survival of the identified priority CITES Appendix II listed species in the wild. Export permits for these species can only be issued by the National CITES Management Authority, which is the Chief Conservator of Forests (CCF) for Bangladesh, if trade is permitted under the *Bangladesh Wildlife Act 2012* and a *positive* or *positive with conditions* NDF.

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.

Supporting the BFD in conducting NDFs for priority shark and ray species of economic importance is a key objective of the SUFAL shark and ray assignment. Twenty-four nominated

representatives from the Fisheries and Forest departments together with experts from academia and WCS will develop at least two NDFs through a structured process, which will also enable institutional capacity for conducting additional NDFs in the future. The NDFs resulting from these workshops, including mandatory conditions for trade and management measures to mitigate conservation concerns and pressures, will be presented to the National CITES Scientific Authority, senior Government representatives, and international and national experts in a third workshop on 17 February 2022 for validation and submission to the CITES Secretariat.

Preparations for two NDF development training workshops with 12 participants were initiated in November and have progressed well. WCS sent requests for nominations of suitable participants to the BFD, DoF, BFRI, and invitations to national experts from Universities in Chattogram and Dhaka. Venues and overnight accommodation for the three-day NDF development workshops scheduled for 8-10 February in Chattogram and 13-15 February in Dhaka, as well as the venue for the validation workshop were booked. Supporting documents to inform and enable preparations by participants in advance of the NDF development training workshops were prepared for sharing upon receipt of the nominations.

Travel arrangements for the international shark and ray expert Daniel Fernando, who has extensive experience in leading CITES NDF development workshops and will be facilitating the NDF development with WCS, have also been confirmed. He has reviewed all documents for participants and will guide WCS experts in preparing the available information according to the structured analytical process required for the NDFs ahead of the workshops.

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 NCSSR 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 for improving 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, the NCSSR 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.

Sustainable financing mechanisms for implementing these actions, including Government budget allocations, offset financing, existing or new trust funds, and contributions from private sectors, and budget estimates proposed by WCS were included in a revised section *Strategic Actions for Shark and Ray Conservation in Bangladesh (2023-2033)* (Appendix 1) for inclusion in the NCSSR.

Recommendations for governance frameworks and incentives to strengthen the protection of threatened sharks and rays and the sustainable exploitation of species not in immediate danger of extinction, which were refined in the second consultation, along with those resulting from ongoing field investigations, and monitoring and management conditions resulting from NDFs will be incorporated in the NCSSR during the next phase. As per contractual agreement, the NCSSR will be finalized after a national consultation with 30 senior representatives from relevant Government ministries, agencies, and institutions in May 2022 for submission and Government endorsement by June 2022.

During this phase, WCS also supported the BFD in the second committee meeting of the Ministry of Fisheries and Livestock (MoFL) appointed national committee for finalizing an NPOA for shark and ray conservation management. SUFAL DPD Modinul Ahsan and Conservator of Forests, Wildlife and Nature Conservation Circle, Mollah Rezaul Karim presented developments made on the NCSSR with strategic actions for shark and ray conservation management in Bangladesh fulfilling NPOA requirements. Considering the advanced status and robustness of these recommendations, the committee agreed to jointly pursue the draft NCSSR.

Discussions held during the technical training workshops with two senior officers and NPOA committee members, Dr. Muhammad Tanvir Hossain Chowdhury, Deputy Chief (Marine Wing) and Shoukat Kabir Chowdhury, Assistant Director (Director General's Office), and Mollah Rezaul Karim, confirmed their commitment to collaborate on the development of a single document. The two senior DoF representatives, who are leading the NPOA development process, assured their assistance in pursuing interministerial approval for government endorsement and in implementing the NCSSR.

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 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 addressed in the background document prepared by WCS under the SUFAL shark and ray assignment.

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, were discussed in the second consultative workshop with 30 local shark and ray fishery stakeholders in Kuakata on 6 November 2021 (Figure 8). Recommendations formulated in the second consultation for refining the NCSSR, along with the proceedings and details of the participants are detailed in the separate *Report on the 2nd consultation workshop with fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade, for sharing knowledge on the status of and threats to sharks and rays for a national conservation strategy*.



Figure 8. Thirty fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade, participated in a second consultation workshop in Kuakata for sharing knowledge on the status of and threats to sharks and rays for the NCSSR.

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 training workshops on shark and ray data collection and monitoring

Between October-November 2021, WCS conducted four two-day long technical training workshops for field and mid-level government officers and members of the WCS citizen science networks. A total of 95 participants and guests from the BFD, DoF, BFRI, BFDC, Customs, and citizen science vessel captains, fishermen, and landing site data collectors participated in the intensive workshops arranged in Chattogram and Khulna (Figure 9). The mid-level government officers were trained 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. Field-level officers and citizen scientists were trained in identifying CITES-listed sharks and rays and their products, collecting data using standardized data collection protocols and procedures, safely releasing legally protected marine wildlife, and using a GPS for safe navigation and collecting information on the locations of fishing gear deployment and retrieval. Details on the trainings, including the proceedings, detailed lesson plans, an impact assessment, and post-training mentoring support are provided in a separate

Report on technical training workshops on shark and ray data collection and monitoring for field and mid-level government officers.



Figure 9. Officers from the Forest and Fisheries departments actively engaged and interacted in the technical training workshops on shark and ray data collection and monitoring.

WCS maintained regular correspondence with the DoF and other government agencies relevant to shark and ray conservation management during this phase. An overview of communications with Government agencies conducted between July-December 2021 to strengthen collaborations with the BFD under the SUFAL shark and ray assignment is provided in Appendix 2.

Strengthening coordination with the DoF MFO for improved monitoring and reporting of sharks and rays caught and landed by industrial fisheries and in export shipments, and aligning marine wildlife protection and trade regulations with marine fisheries regulations

Pelagic trawl fisheries likely catch large numbers of pelagic sharks and rays that 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 gain a better understanding of current DoF practices for monitoring shark and ray catches, landings, and export shipments from small-scale and commercial fisheries, identify feasible approaches for improving compliance with CITES and Indian Ocean Tuna Commission (IOTC) reporting requirements, and strengthen collaborations between the BFD and DoF, WCS visited the MFO in Chattogram on invitation from the Director Dr. Sharif Uddin.

The meeting attended by the Director along with about 20 DoF officers commenced with WCS providing an overview of activities under the SUFAL shark and ray assignment. Dr. Sharif Uddin highly appreciated the presentation by WCS. Having heard about the successful training on shark and ray data collection and monitoring provided by WCS, he asked if WCS would assist in providing hands-on training to all DoF Upazilla officers. WCS suggested that DoF officers who successfully completed the training under the SUFAL assignment were empowered to pass on their acquired knowledge. The Director assigned his assistant to plan for trainings on the detection and identification of protected sharks and rays at landing and in trade during meetings in the 16 coastal Upazillas. Dr. Sharif Uddin also encouraged the trained DoF inspectors to inform processors and traders about the sharks and rays protected under the Bangladesh Wildlife Act.

The MFO Director commended the BFD on the Wildlife Act amendment for improving protection globally threatened sharks and rays known or suspected to occur in Bangladesh.

As a national law, the Wildlife Act was to be followed to by everybody. He suggested that species protection regulations specified in the Wildlife Act be reflected in the Marine Fisheries Rules and awareness about protected marine wildlife raised among all fishery stakeholders to ensure maximum compliance.

Dr. Sharif Uddin was grateful to WCS for providing information on marine capture fisheries related with targeted, bycatch, or incidental catch of marine mammals for compatibility with the United States of America Marine Mammal Protection Act (US MMPA) Import Provisions. Given the importance of the US as seafood importer, complying with their legal requirements was paramount for Bangladesh. WCS had compiled the list of cetaceans available in Bangladesh's Economic Exclusive Zone (EEZ) along with available population estimates, fishing gear known to entangle them, mortality rates, and bycatch reduction and educational outreach efforts. To fulfil US MMPA reporting requirements, the DoF recently issued an order requiring industrial trawl vessels to report on any dolphins, porpoises, and whales accidentally caught or injured (Figure 10).

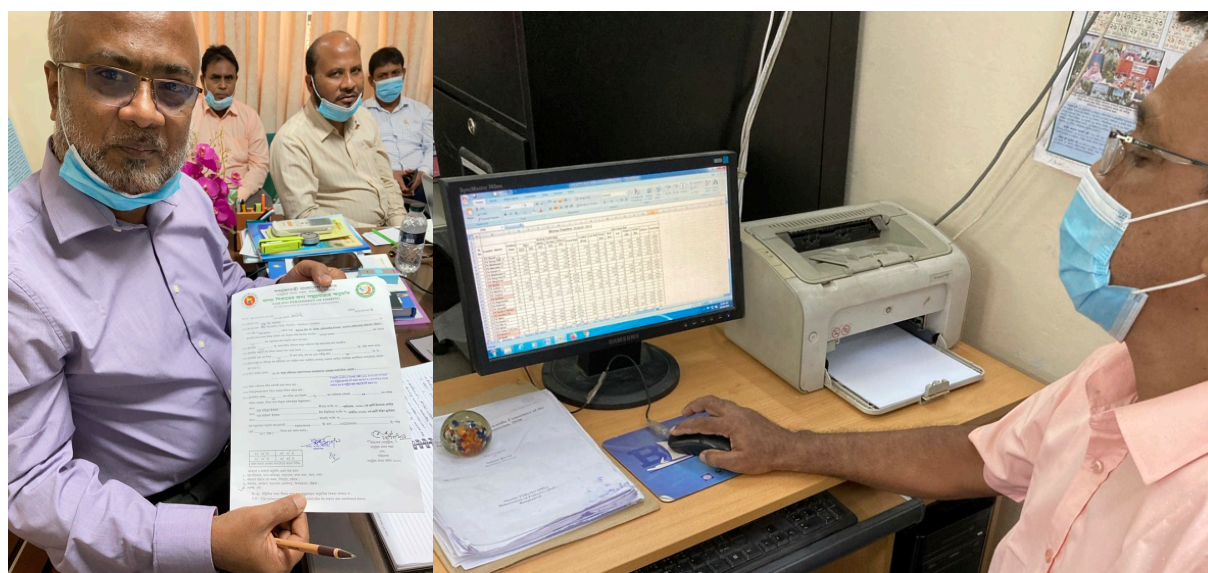


Figure 10. The Director of the Marine Fisheries Office Dr. Sharif Uddin presents the recent directive for reporting marine mammal bycatch (left). Commercial catch records are manually entered in non-automated excel sheets (right) in the DoF MFO in Chattogram for inclusion in the annually published fishery statistics.

The MFO Director said that the DoF needed to learn more about protected marine wildlife in Bangladesh for minimizing mortalities that negatively affect marine biodiversity and productivity. He invited WCS to propose practical ways to optimize industrial trawl fishery logs for reporting priority species in compliance with IOTC, CITES, and the Convention on Migratory Species (CMS).

The MFO Director assured his full support for the development of NDFs for CITES Appendix II listed sharks and rays by sharing available information, nominating appropriate participants for the NDF development training workshops, providing a workshop venue in the MFO premises, and participating in the validation meeting in February 2022.

After the meeting with Dr. Sharif Uddin, we were shown the current processes of fishing data management for catch logs and vessel licensing in the headquarters of the Marine Fisheries Department. Industrial trawl fishing vessels are required to record all shark and ray catches in their daily fishing log and tally sheet by reporting the total weight of 'Shark/Rays' without any species-specific detail (Figure 11). Mackerel and small tuna species, swordfish, sailfish, and turtles are recorded in a separate 'IOTC sheet', as are Hilsa catches.

The figure displays three forms used for recording fishing data in Bangladesh:

- Top Left: Daily Fishing Log (Partial View)**
 - Header: **GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH MARINE FISHERIES OFFICE, DEPARTMENT OF FISHERIES**
 - Form Title: **DAILY FISHING LOG**
 - Fields: Vessel Name (Sharkfisher), Type of Vessel (Midwater), Registration (F-8319), Name of Company (Day Trade), Name of Skipper (Signature), Departure Date (16/09/2021), Arrival Date (03/10/2021), Fishing Date (18/09/2021), Type of Net (HW), Mesh Size (60mm), Head Rope (67m).
 - Table: **FISH CATCH (KG)** with columns for Trawl No., Shooting Position, Towing Time, Tow Duration, Depth Range, and various fish species (Sardine, Croaker, Ribbon, Grunter, Scads, Mackerel, Sole/Fat fish, Cat fish, Red Snapper, Small Tuna, Pomfret, Red fish, Eel, Shark/Rays, etc.).
 - Handwritten entries show catches for various species, with **Shark/Rays** circled in red.
- Top Right: Tally Sheet**
 - Header: **Daily Fishing Log**
 - Table: **Tally Sheet** with columns for Species, Quantity, and Total.
 - Handwritten entries show catches for various species, with **Shark/Rays** circled in red.
- Bottom: Daily Fishing Log (Full View)**
 - Header: **GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH MARINE FISHERIES OFFICE, DEPARTMENT OF FISHERIES**
 - Form Title: **DAILY FISHING LOG**
 - Fields: Vessel Name (Sharkfisher), Type of Vessel (Midwater), Registration (F-8319), Name of Company (Day Trade), Name of Skipper (Signature), Departure Date (16/09/2021), Arrival Date (03/10/2021), Fishing Date (18/09/2021), Type of Net (HW), Mesh Size (60mm), Head Rope (67m).
 - Table: **FISH CATCH (KG)** with columns for Trawl No., Shooting Position, Towing Time, Tow Duration, Depth Range, and various fish species (Sardine, Croaker, Ribbon, Grunter, Scads, Mackerel, Sole/Fat fish, Cat fish, Red Snapper, Small Tuna, Pomfret, Red fish, Eel, Shark/Rays, etc.).
 - Handwritten entries show catches for various species, with **Shark/Rays** circled in red.

Figure 11. Industrial fishery operators are currently required to submit records of their catches on multiple forms, including the daily fishing log (top left and bottom) and the tally sheet (top right). Shark and ray catches (circled in red) are recorded by total weight.

DoF inspectors mentioned during discussions in the technical training workshops that they monitor industrial catches and sample export shipments, but that limited capacity hampers their effectiveness. DoF officers also noted that the time-consuming registration process for artisanal fishing vessels was discouraging for vessel owners (Figure 12). We were told that given the low number of officially registered artisanal fishing vessels, the DoF is considering removing the registration requirement for smaller fishing vessels.

CERTIFICATE OF REGISTRATION OF FISHING VESSELS

This is to certify that the Fishing Boat F.B. "MAA JANAN-1" owned by: Mr. Abdul Montalib, S/o. Late Abdul Shohid, of village: Charbiribiri, P.O. Jabbarpur-3890, P.S. Hatiya, District- of Bangladesh Merchant Shipping Ordinance, 1983.

The particulars of the above vessel are appended below:

HULLS		MACHINERY	
Date of Built	2021	Name & address of Makers	Weschai Diesel Engine Co.
Place Built	Chattogram	Year of Manufacture	China
Built By	Md. Miraz Uddin	Country of Manufacture	1220K008403
Type	Wooden Hull Fishing Boat	Engine No.	WD10C
No. of watertight Bulkhead	-	Model No.	One
No. of Decks	1(One)	No. of Main shafts	62.50 mm
Length Overall	18.32 m	Dia. of Shaft	6
Breadth overall	5.30 m	No. of Cylinders	155 mm
Depth (modified)	1.90 m	Bore	165 mm
Draught (Loaded)	1.40 m	Stroke	2100
Draught (empty)	0.67 m	R.P.M.	278
Gross Tonnage	30	BHP	6 Knots
Registered Tonnage	17	Speed	
D.W.T.	43		

Name and Nationality of Master: Mr. Maksudur Rahman, Bangladeshi.

Certificate of Competency No.: _____ Date of issue: _____

This Certificate will remain in force unless and otherwise withdrawn or cancelled by the Registrar of Shipping, Chattogram.

Issued at Chattogram on 07th September, 2021

SEAL: _____

Registrar of Bangladesh Ships
Mercantile Marine Office,
Chattogram.

Registration Form (Right):

নৌকোত্মক বিবরণ: "মির্জান" (Vessel Name: "Mirjan")

স্বত্বাধারক নাম ও ঠিকানা: জাহাঙ্গীর আলী, জাহাঙ্গীর আলী, জাহাঙ্গীর আলী (Owner Name & Address: Jahangir Ali, Jahangir Ali, Jahangir Ali)

বাসস্থান: চাট্টগ্রাম, হাতিয়া, চাট্টগ্রাম জেলা (Residence: Chattogram, Hatiya, Chattogram District)

নৌকোর ধরন: মাছ ধরার নৌকা (Boat Type: Fishing Boat)

নৌকোর দৈর্ঘ্য: ১৮.৩২ মি. (Boat Length: 18.32 m)

নৌকোর প্রস্থ: ৫.৩০ মি. (Boat Breadth: 5.30 m)

নৌকোর গভীরতা: ১.৯০ মি. (Boat Depth: 1.90 m)

নৌকোর ড্রাফ্ট (লোডেড): ১.৪০ মি. (Boat Draught (Loaded): 1.40 m)

নৌকোর ড্রাফ্ট (এম্পি): ০.৬৭ মি. (Boat Draught (Empty): 0.67 m)

নৌকোর গ্রেস টননেজ: ৩০ (Boat Gross Tonnage: 30)

নৌকোর রেজিস্টার্ড টননেজ: ১৭ (Boat Registered Tonnage: 17)

নৌকোর ডি.ই.টি. (D.W.T.): ৪৩ (Boat D.W.T.: 43)

নৌকোর মাস্টারের নাম ও জাতীয়তা: মাকসুদুর রহমান, বাংলাদেশি (Master Name & Nationality: Maksudur Rahman, Bangladeshi)

নৌকোর রেজিস্ট্রারের নাম ও ঠিকানা: মাকসুদুর রহমান, চাট্টগ্রাম (Registrar Name & Address: Maksudur Rahman, Chattogram)

নৌকোর রেজিস্ট্রেশন নং: ১৭৩৮৬ (Boat Registration No.: 17386)

নৌকোর রেজিস্ট্রেশন তারিখ: ০৭/০৯/২০২১ (Boat Registration Date: 07/09/2021)

Figure 12. Current regulations require all motorized fishing vessels to register with the Mercantile Marine Office (top left) and the Marine Fisheries Office (top right).

The clarifications from officers responsible for entering the information collected in catch logs and tally sheets of industrial fishing vessels were helpful for gathering ideas on how to optimize the monitoring of shark and ray catches and landings from pelagic trawl fisheries.

We also visited the MFSMU, primarily responsible for conducting surveys on marine demersal fish diversity and stocks, led by Principal Scientific Officer (PSO) Md. Golam Kibria. Along with all four MFSMU officers, he attended the two-day technical training on shark and ray data collection and monitoring provided by WCS under the SUFAL assignment. While initially very skeptical about the usefulness of the training, the PSO became enthusiastic about its benefits within the first day.

While we were unable to visit the Inspection and Quality Control Section of the MFO in Chattogram or Khulna, inspectors attending the technical training workshops explained that they check five product samples per shipment supplied by the exporters for obtaining an export clearance certificate. A trader in Chattogram who exports mainly dried swim bladders (fish maws) confirmed this practice. He mentioned that shark and ray fins are stashed in boxes with fish maws and shipped abroad through local courier services.

Preliminary suggestions resulting from discussions with the DoF MFO and MFSMU for improving the monitoring and reporting of sharks and rays in industrial trawl catches and

export shipments, and aligning marine wildlife protection and trade regulations with the Marine Fisheries Rules, are to:

- Include a visually enhanced list of protected marine wildlife and instructions for their safe release at sea in the next edition of the fishing license booklet that is provided to all registered artisanal fishing vessels.
- Develop a single log form for industrial fishing vessels to report species-specific information required by IOTC, CMS, and CITES currently recorded on multiple sheets.
- Enable excel sheets with basic formulas to make catch data entries more efficient, reduce opportunities for erroneous entries, and optimize reporting through automated summary statistics.
- Conduct information sessions for fish product processors and local courier service providers on the implications of illegal wildlife trade, and regulations pertaining to sharks and rays or their parts.
- Support DoF inspectors in monitoring landings of sharks, rays, and associated marine wildlife in catches of industrial fishing operations through trained citizen scientists.
- Increase detection of illegal marine wildlife or their parts in export shipments by enabling DoF inspectors to examine larger portions of the goods on site and instructing courier service providers to verify declarations of packaged goods.
- Mandate species/genera specific records of sharks, rays, or their parts in DoF and Customs records and reports.
- Align the Marine Fisheries Rules with species protection and trade regulations specified under the Wildlife Act and incorporate conservation management regulations that aim to significantly reduce mortalities of threatened marine wildlife.

Dolphin Mortality Monitoring Training for Kuakata Dolphin Rokha Committee

While the WCS team was in Kuakata for the second NCSSR consultation with local shark and ray fishery stakeholders (see below), we accommodated a request from the *Kuakata Dolphin Rokha Committee* for a dolphin mortality monitoring training. Although this activity was not specified in the contractual agreement, it aligns with the SUFAL assignment objectives with cetaceans being ‘associated species’ of sharks and rays. Given the extensive experience of WCS with cetacean research and conservation, we agreed to meet with the group of motivated local volunteers, including tour operators, tour guides, journalists, fishers and fishing vessel owners, businessmen, and students, who keep track of and report dolphin carcasses washing ashore in their area.

On the evening of 5 November 2021, WCS shared information about the cetaceans of Bangladesh, threats they face, and ongoing conservation efforts - including on the *Shark and Ray and Associated Species Conservation Assignment* under the SUFAL project by the BFD. In a more hands-on training session, we covered cetacean basics, safe release procedures, and the systematic reporting of length measurements, carcass condition, gender, and probable cause of death. The 24 participants, including the BFD assistant range officer from Mohipur (Appendix 4), were highly appreciative of WCS and the BFD/SUFAL for this training opportunity.



Figure 12. WCS provided a training on dolphin mortality monitoring to members of the *Kuakata Dolphin Rokha Committee* in conjunction with the second NCSSR consultation conducted in Kuakata (top). Participants highly appreciated the opportunity to learn about the marine wildlife conservation efforts under the SUFAL shark and ray assignment.

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

In the second project phase, WCS developed of a new identification guide on protected sharks and rays of Bangladesh, prepared the script and storyboard for a short documentary film, reprinted the coloring booklet *Amazing Aquatic Animals* introducing threatened marine wildlife of Bangladesh including sharks and rays, and drafted two new episodes of the popular *Ocean Guardians Radio Program* to be produced under the SUFAL shark and ray assignment.

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

The technical training workshops on shark and ray data collection and monitoring (see above) coincided with the official gazette notification of the Wildlife Act amendment for protected sharks and rays in September 2021 (see below) and were an ideal opportunity to test the guide on its applicability and identify improvements. In the next phase, WCS will finalize and produce this new shark and ray species identification tool for distribution through training programs, educational outreach and mass awareness events.



Figure 13. During at-sea fishery investigations WCS distributed the reprinted booklets on threatened marine wildlife, including sharks and rays, (left) and stickers that aim to motivate fishers to recognize and safely release strictly protected sharks or rays at sea (right).

WCS reprinted a coloring booklet *Amazing Ocean Giants*, developed as a mass communication instrument to introduce threatened marine wildlife including sharks and rays of Bangladesh. During land and sea-based investigations conducted from December to January in this phase, WCS distributed 500 booklets among fishers, traders, and fishing boat owners encountered on Dubla island or adjacent waters in the Bay of Bengal (Figure 13). Copies were also provided to all participants of the training programs and second NCSSR consultation conducted during this phase.

The script and storyboard for a new 8 to 12-minute film in Bengali language highlighting efforts by the Government of Bangladesh to protect threatened sharks and rays through science-based, community informed conservation management were completed in this phase. In collaboration with local animators and film editors, WCS will produce the shortfilm in the next phase and make it available for public sharing through social media channels and show it during training, consultation, and outreach events in the next phase. The scripts for two radio program episodes will be finalized in collaboration with six coastal community radio stations to highlight shark and ray conservation efforts of the BFD under this SUFAL assignment, including the updated list of sharks and rays protected under the Wildlife Act.

The mobile exhibition *Ocean Guardians: Protecting Threatened Sharks and Rays in Bangladesh* developed by WCS aims to create mass awareness about threatened sharks and rays and support their conservation management by educating visitors about their critical role in maintaining a healthy ocean ecosystem and on the laws and rules governing their exploitation and trade. Enriched with new exhibits highlighting the recent amended listing of sharks and rays under the Bangladesh Wildlife Act is scheduled to be held between February-May 2022 for two days each in four coastal communities where sharks and rays are regularly landed, processed, and traded. Government Covid-19 safety guidelines permitting, WCS also plans to arrange an exhibition 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

In September 2021, the proposed amendment to the list of sharks and rays to be included in Schedule I and II of the Bangladesh Wildlife (Conservation and Security) Act, 2012, was officially gazetted. WCS prepared the revised listing on request from the BFD, facilitated the revision by local and international experts for approval by the BFDs CITES Scientific Advisory Committee, and assisted the BFD in obtaining interministerial approval for Government endorsement in April 2021. WCS is prepared to assist the BFD on request with formulating additional recommendations to amend the Wildlife (Conservation and Security) Act, 2012, for clarifying the definitions of Schedule I and II or suggesting penalties for exploitation, trade, possession, and consumption of Schedule I/II listed species.

In the next phase, WCS will follow up on requests from the DoF MFO to assist with formulating rules under the new Marine Fisheries Act 2020 to align with the amended shark and ray listing and other marine wildlife protected under the Wildlife (Conservation and Security) Act, 2012, and 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 13 January 2021 between the BFD and WCS. The inception report was submitted within the first month on 4 February 2021. The proposed activity plan was approved for implementation after a meeting with the SUFAL PMU on 22 February 2021. A required Professional Liability Insurance was purchased by WCS for the purpose of this project as per contractual requirements, upon which the first financial installment was received on 30 May 2021.

The first progress report, including a baseline status and threat assessment report, a report on the first consultation workshop conducted in May 2021 with representatives from Government agencies, academia and NGOs for sharing knowledge on the status of sharks and rays and developing a national conservation strategy, and the first draft of the *National Conservation Strategy and Plan of Action for Sharks and Rays in Bangladesh* (NCSSR), was submitted on 12 July 2021. The draft NCSSR was revised as per comments received from the SUFAL PMU on 18 August and resubmitted on 23 September. The second financial installment was received on 6 October 2021. The draft NCSSR was approved for external comments on 8 December 2021 and shared by the SUFAL PMU with participants of the first consultation workshop on 23 December 2021.

In addition to contractual reporting requirements, WCS prepared a quarterly progress report in May 2021 and presented an overview of the SUFAL shark and ray assignment and progress made to date to a delegation from the World Bank delegation and at a meeting with Divisional Forest Officers in October 2021 on request from the SUFAL PMU.

Between July and December 2021, WCS trained 95 field and mid-level government officers from five agencies and citizen science fishing vessel captains and landings site data collectors on shark and ray data collection and monitoring followed by mentoring calls. A second consultation to refine the NCSSR with inputs from 30 local shark and ray fishery stakeholders

was conducted in November 2021 and scientific investigations in priority shark and ray habitats initiated in December 2021.

The deliverables under this second progress report are a report on the consultation workshop with fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade, for sharing knowledge on the status of and threats to sharks and rays for a national conservation strategy, and a report on the technical training workshops for field and mid-level Government officers on shark and ray data collection and monitoring. Both reports are provided as separate documents:

- a. Report on technical training workshops on shark and ray data collection and monitoring for field and mid-level government officers*
- b. Report on the second consultation workshop with fishers, fishing vessel owners, and traders engaged in shark and ray fisheries, processing, and trade, for sharing knowledge on the status of and threats to sharks and rays for a national conservation strategy*

WCS completed all activities as per the workplan and all deliverables as per contractual agreement for the second reporting period, including the technical training workshops postponed from the previous reporting period in compliance with Government Covid-19 directives.

In consideration of the large number of trainings for Government officers within January 2022, it was decided in a meeting held on 9 September 2021 to conduct the two NDF development workshops in February 2022. Requests for nominations were sent out accordingly. The NDF validation meeting with national experts to finalize at least two NDFs for priority shark and ray species listed under CITES Appendix II for submission to the CITES Secretariat will be completed as per contractual agreement by February 2022.

In the next phase, WCS will analyze findings from ongoing scientific investigations on the impacts of set-bag net and longline fisheries on threatened sharks and rays in shallow nearshore waters adjacent to the Sundarbans and the SONG MPA and incorporate resulting recommendations along with the management and monitoring conditions resulting from the NDFs and local stakeholder inputs from the second consultation in the NCSSR for finalization in a consultative meeting with senior government representatives in May 2022.

WCS will arrange five educational outreach programs to raise awareness among fisherfolk, fish traders, vessel owners, local Government officers, elected leaders, and grass-root NGOs about the ecological importance and conservation status of sharks and rays to encourage compliance with catch and trade regulations and highlight government efforts to protect threatened sharks and rays.

WCS gratefully acknowledges the support received from the BFD, particularly from the CCF and the SUFAL team, and the DoF MFO for successfully completing the second phase of the SUFAL shark and ray assignment.

Appendix 1. Strategic Actions for shark and ray conservation in Bangladesh (2023-2033) with proposed budget estimates and funding sources.

The National Conservation Strategy envisions sharks and rays effectively protected and sustainably managed, delivering ecological and socio-economic benefits to people and ecosystems. It provides strategic guidance on conservation management for sharks and rays to protect threatened species and populations from extinction and manage the sustainable utilization of non-threatened species for a healthy ocean and healthy coastal people. The objectives are to reduce mortalities of threatened shark and ray species, protect priority habitats, strengthen governance and enforcement, engage fishing communities, and improve monitoring and reporting. A summary of strategic actions that need to be taken to achieve these objectives, with indicative requirements for financial and human resources, possible sources of funding, possible outcomes, and performance indicators, is provided in Table 1, with a brief justification and further details in the section on ‘How to get involved’ above in the NCSSR.

Note: This table was refined with estimated costs and suggested financing sources suggested by WCS for inclusion in the *National Conservation Strategy and Plan of Action for Sharks and Rays in Bangladesh* (NCSSR, pg. 22 Table 1).

NCSSR objectives, action(s), and possible source of funding			Short Term (1-3 years, 2023-2026)	Mid Term (4-7 years, 2024-2031)	Long Term (8-10 years, 2032-2042)	Indicative Resource Requirement in million BDT	Manpower/ Human Resources	Possible Source of Funding	Possible Outcome	Performance Indicators
Reduce mortalities of threatened shark and ray species	Reduce catches of threatened species through gear restrictions, time/area closures, and live-release requirements.	Restrict use of long-lines.	x			55	Fishery stakeholders informed about fishery regulations, able to identify threatened species, and motivated to release protected species. Government officers trained and equipped to enforce fishery laws and rules.	Government budget allocations, MPA trust fund	Fewer shark and ray mortalities lead to recovery of threatened species.	Catches and landings of threatened species reduced.
		Prohibit bottom set fishing gears in <10m water.	x							
		Mandate live release of protected species under Marine Fisheries Rules.	x							
	High Priority	Implement species-specific size restrictions under Marine Fisheries Rules.		x						
		Mandate gear modifications under Marine Fisheries Rules.			x					

NCSSR objectives, action(s), and possible source of funding			Short Term (1-3 years, 2023-2026)	Mid Term (4-7 years, 2024-2031)	Long Term (8-10 years, 2032-2042)	Indicative Resource Requirement in million BDT	Manpower/ Human Resources	Possible Source of Funding	Possible Outcome	Performance Indicators
Protect priority shark and ray habitat	Incorporate priority shark and ray habitat in marine spatial plans, MPA management and other effective area-based conservation measures (OECM). High Priority	Incorporate priority habitats in marine spatial plans.	x			233	Fishers trained, equipped, and engaged in monitoring MPAs/OECMs.	MPA trust fund, Government budget allocations	Bycatch risk reduced leading to population recovery of threatened species and sustainable fisheries.	Reduced infractions reported by law enforcement and community patrols together with reduced catches, landings and trade in protected sharks and rays.
		Effectively protect priority habitat through SMART enforcement and monitoring patrols.		x			Law enforcement officers trained and equipped to plan, conduct, and report interagency SMART enforcement and monitoring patrols.			
		Adapt NSC/NPOA to further improve habitat protection.			x					
Strengthen legal protection for threatened sharks and rays and enforcement of national laws and rules	Amend laws and rules to be consistent with biodiversity protection priorities and obligations to CITES, CMS and IOTC. Medium Priority	Mandate non-retention/live release of protected sharks and rays and specify permissible fishing gear in Marine Fisheries Rules.	x	.		11	Interagency implementation of species protection and trade regulation institutionalized.	Government budget allocations, NGO/Donor grants	Threatened sharks and rays protected by law. Non-threatened species regulated under fisheries rules. Enforcement institutionalized.	Gazette notifications of amended Wildlife Act and Marine Fisheries Rules. Exports reported by species. Number of NDFs developed and CITES export permits issued.
		Conduct NDFs for enabling species-specific catch or trade permits and improving fisheries management.	x				Government officers trained in developing NDFs for CITES Appendix II species.			
		Fully operationalize the Wildlife Act. Review and update species protected under the Wildlife Act every five years.		x						

NCSSR objectives, action(s), and possible source of funding		Short Term (1-3 years, 2023-2026)	Mid Term (4-7 years, 2024-2031)	Long Term (8-10 years, 2032-2042)	Indicative Resource Requirement in million BDT	Manpower/ Human Resources	Possible Source of Funding	Possible Outcome	Performance Indicators
Conduct joint law enforcement operations to stop the illegal possession, trade and consumption of protected sharks and rays and their products. High Priority	Make combatting illegal shark and ray trade a core responsibility of all LE agencies.			x					
	Institutionalize interagency cooperation.			x					
	Update the NCSSR/NPOA in 2033.			x					
	Improve monitoring and enforcement of MPAs through joint SMART patrols.	x			11	Law enforcement agencies empowered to plan, conduct, and report joint operations for detecting, identifying, seizing, and prosecuting illegal possession, trade or consumption of protected sharks and rays.	MPA trust fund, Government budget allocations, NGO/Donor grants	Export shipments and processing centers inspected and infractions reported and prosecuted	Number of seizures and convictions initially increase followed by a decline as the number of protected sharks and rays traded also declines.
	Enhance BFD WCCU capacity to carry out training and mentoring for law enforcement frontline staff.	x							
	Share available infrastructure and technical expertise among Government agencies to process evidence for prosecution.		x						
	Create a web-based national wildlife crime database.		x						
	Provide resources for law enforcement agencies to combat illegal shark and ray trade.			x					
	Incentivize equitable law enforcement achievements.			x					

NCSSR objectives, action(s), and possible source of funding			Short Term (1-3 years, 2023-2026)	Mid Term (4-7 years, 2024-2031)	Long Term (8-10 years, 2032-2042)	Indicative Resource Requirement in million BDT	Manpower/ Human Resources	Possible Source of Funding	Possible Outcome	Performance Indicators
	Empower law enforcement officers with training, mentoring and the provision of resource materials to combat illegal trade of protected sharks and rays.	Provide interagency training and mentoring on detecting, identifying, and prosecuting illegally landed, processed, and traded sharks and rays.	x				Law enforcement officers trained, equipped, and motivated to detect, identify, confiscate, and prosecute illegally traded species or their parts.	NGOs, Developmoent partners	Export shipments are inspected and infractions reported and prosecuted	Number of seizures and convictions initially increase followed by a decline as the number of protected sharks and rays traded also declines.
	High Priority	Adapt identification guides for dried fins and gill plates of CITES listed species and training implemented in Government training institutes for law enforcement officers.		x						
Engage fishing communities in shark and ray protection	Empower fishers and traders to identify protected species with tools and training.	Develop visually enhanced, locally-tailored, durable identification guide for identifying protected shark and rays, and distribute during training, patrols and outreach activities.	x			64	Fishery stakeholders empowered to comply with species protection regulations and motivated to safely release threatened species.	Government budget allocations, Offset payments from industrial trawl fisheries	Protected species not retained, landed, traded, or consumed	Landings and detection of illegal trade in protected species declines.
	High Priority	Create incentives for traders to comply with national and international trade regulations.		x						
		Institutionalize training on protected species and areas for fishers and traders.			x					

NCSSR objectives, action(s), and possible source of funding			Short Term (1-3 years, 2023-2026)	Mid Term (4-7 years, 2024-2031)	Long Term (8-10 years, 2032-2042)	Indicative Resource Requirement in million BDT	Manpower/ Human Resources	Possible Source of Funding	Possible Outcome	Performance Indicators
Reduce domestic demand for protected species through targeted awareness raising.	Medium Priority	Publicize revised laws, rules and reporting requirements through audience-tailored communication tools.	x			14	Consumers informed about species protection regulations. Government officers trained and provided with tools to communicate species protection regulations and debunk beliefs in curative powers of threatened species.	Government budget allocations, NGO/Donor grants	Protected species not traded or consumed	Documented increase in awareness, reduced infractions, and increased local engagement in shark and ray protection efforts.
		Develop targeted communication strategy and tools to stop consumption of protected sharks and rays and assess the effectiveness of communication efforts.		x						
		Use successful prosecutions to exemplify punishments faced by offenders to deter others.			x					
Empower community-based monitoring of protected species.	Medium Priority	Communicate regulations on spatial and gear restrictions to empower ocean stewardship.	x			236	Fishing communities trained and equipped as citizen scientists for systematically recording shark and ray landings. Fishers trained and equipped as citizen scientists to record and report catches of threatened species, and to safely release them. Government officers trained and motivated to manage, analyze and report citizen science records.	MPA trust fund, Government budget allocations, cost-sharing with development partners	Protected species not retained or landed.	Landings of threatened species reduced and verified reports of shark and ray catches increased.
		Empower community-based SMART patrols and assess the effectiveness of these patrols.		x						
		Engage citizen science data collectors in monitoring landing and trade.		x						
		Strengthen prosecution of illegal shark and ray possession, landing and trade.			x					

NCSSR objectives, action(s), and possible source of funding			Short Term (1-3 years, 2023-2026)	Mid Term (4-7 years, 2024-2031)	Long Term (8-10 years, 2032-2042)	Indicative Resource Requirement in million BDT	Manpower/ Human Resources	Possible Source of Funding	Possible Outcome	Performance Indicators
Promote value-enhanced products from sustainably caught non-threatened sharks and rays.	Low Priority	Identify opportunities for improved quality, efficiency and profit derived from non-threatened species.	x		.	12	Private enterprises and processors informed, trained, and motivated to diversify products and use only non-threatened species.	Private-Public partnerships, Start-up grants	Protected species not retained, landed, traded, or processed.	Proportion of threatened species in trade reduced. Populations of threatened and non-threatened species stable.
		Provide training on quality control and product diversification to increase financial benefits from legally obtained non-threatened species.		x						
		Enforce existing licensing, business, and trade regulations.			x					
Improve monitoring and reporting of shark and ray fisheries and trade	High Priority	Institutionalize recording and reporting of shark and ray catches and landings.	x	.	.	49	Government officers and citizen scientists trained as landing site data collectors. Government officers trained to analyze, and report shark and ray landings.	Offset payments from industrial trawl fisheries, Private-Public partnerships	Protected species not retained, landed, traded, or processed.	Proportion of protected species reported in fisheries statistics reduced. Species populations stable.
		Mandate the recording and reporting of priority shark and ray species landed at fish landing and marketing centres.		x						
		Report species/genus specific catch, landing, and trade information in Government statistics.			x					

NCSSR objectives, action(s), and possible source of funding			Short Term (1-3 years, 2023-2026)	Mid Term (4-7 years, 2024-2031)	Long Term (8-10 years, 2032-2042)	Indicative Resource Requirement in million BDT	Manpower/ Human Resources	Possible Source of Funding	Possible Outcome	Performance Indicators
Ensure that international reporting requirements on shark and ray catches and trade are fully met.	Medium Priority	Increase border controls, confiscate shipments with shark and ray products from protected species and prosecute traders without appropriate permits.	x			29	CITES and IOTC focal points trained to meet reporting requirements. Fishers trained and motivated to maintain logbook and release protected species. Onboard observers trained to monitor industrial catches and releases. Customs inspectors trained to verify HS codes.	Offset financing from industrial trawl fisheries, Government budget allocations	National Export-Import Policy mandates species/ product specific HS codes.	Timely reporting to IOTC, CITES, and CMS. Export statistics include species-specific shark and ray information.
		Mandate reporting of species-specific information on shark and ray catches and landings.		x						
		BFD-issued CITES trade licenses listed online.		x						
		Mandate species-specific declaration of export shipments.			x					
		Report revenue payments levied on shark and ray products in annually published Government statistics.								
Evaluate monitoring results to ensure that protection efforts are being effectively applied.	Medium Priority	Conduct NDFs for priority species.	x			50	Policy makers and senior government officers capable of developing and implementing adaptive conservation management.	Offset financing from industrial trawl fisheries, Government budget allocations, MPA trust fund,	Threatened species mortalities and landings reduced, priority habitats protected, and non-threatened species caught at sustainable levels.	Monitoring reports published annually. Policies updated.
		Strengthen DoF capacity to analyse and report data on sharks and rays.	x							
		Build capacity in BFD and DoF to analyse and report on SMART enforcement and monitoring patrols, fisheries catches and landings, and trade.		x						
		Update wildlife protection, fisheries, and trade regulations.			x					

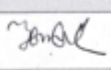
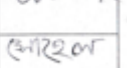
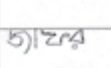
Appendix 2. Overview of communications between WCS and Government agencies aimed to strengthen collaborations with the Bangladesh Forest Department under the SUFAL shark and ray assignment from July – December 2021.

Date	Name/Designation	Agency	Communications
3 August	Dr. Sharif Uddin, Director Marine	DoF MFO	Email regarding press release on amendment of shark and ray listing under the Wildlife Act
19 August	Dr. Sharif Uddin, Director Marine	DoF MFO	Informal discussion on progress and upcoming activities under SUFAL Shark and Ray assignment
23 August	Dr. Sharif Uddin, Director Marine	DoF MFO, MFSMU	Information on marine mammal diversity, populations, bycatch, and bycatch reduction and awareness raising efforts provided on request of the DoF MFO/MFSMU to update to the List of Foreign Fisheries and application for comparability finding under the Marine Mammal Protection Act Import Provisions by the USA.
31 August	Director (DG) DoF, DG BFRI, Chairman BFDC, Customs Commissioners for Chattogram and Khulna	DoF, BFRI, BFDC, Customs	Nomination requests sent for SUFAL technical training workshops on CITES shark and ray identification and monitoring
12 September	DG DoF, NPOA committee members	MoFL, DoF, BFD	National NPOA committee meeting attended with CF Wildlife and SUFAL DPD, comments on draft matrix presented by DoF and update on SUFAL NCSSR development provided
19/20 September	Monika Das, Assistant Director	DoF	Follow-up on trainee nomination for SUFAL technical training workshops on CITES shark and ray identification and monitoring
28 September	DG	DoF	Congratulatory email with copy of published gazette notification amending shark and ray listing under the Wildlife Act
3 October	DG	BFRI	Introductory briefing for newly appointed DG Dr. Khalil on SUFAL shark and ray assignment by WCS key expert Dr. Azad and request for trainee nominations
6 October	Secretary MOEFCC and invited ministry and agency representatives, BFD, WCS	MOEFCC, BFD, DoF, DoE, Parjatan, MoS	Interministerial meeting to discuss proposal for Saint Martin's MPA developed by WCS on request from BFD
10 October	DG, Chief Scientific Officer (CSO) BFRI, and Chairman, BFDC	BFRI, BFDC	Follow-up on trainee nominations for SUFAL technical training workshops on CITES shark and ray identification and monitoring
17 October	CSO	BFRI	Follow-up on trainee nominations for SUFAL technical training workshops on CITES shark and ray identification and monitoring
24 -25, 27-28 October	Invited guests and nominated participants	BFD, DoF MFO/MFSMU, BFRI, BFDC, Customs	Technical training workshop on CITES shark and ray identification and monitoring in Chattogram
26 October	Director MFO and officers, MFSMU Principal Scientific Officer and officers, Chattogram	DoF MFO, MFSMU	Meeting at DoF MFO in Chattogram to present SUFAL shark and ray assignment objectives and activities, discuss improved monitoring of sharks and rays in catches and landings from industrial fishery and in export shipments inspected by

			DoF, revision of Marine Fisheries Rules, upcoming NDF development training workshops (see section 8).
31 Oct - 1 Nov, 2-3 November	Invited guests and nominated participants	BFD, DoF MFO/MFSMU, BFRI, BFDC, Customs	Technical training workshop on CITES shark and ray identification and monitoring in Chattogram
17 November	Dr. Shoukat Chowdhury, Assistant Director (Marine)	DoF MFO/MFSMU	Provided information on sharks (brief summary of key national strategies, finning regulations, trends in shark interactions, and on blue sharks) at request from DoF.
1 December	Director Marine and officers at HQ	DoF, BFD	Responded to request for information about existing fish sanctuaries by BFD DCCF Jahidul Kabir.
2 December	Dr. Sharif Uddin, Director Marine	DoF MFO	Informal discussion on progress and upcoming activities under SUFAL Shark and Ray assignment, follow-up on improved reporting format for monitoring of sharks and rays in catches and landings from industrial fishery and in export shipments inspected by DoF, additional trainings, revision of Marine Fisheries Rules, potential candidates and venue for NDF development training workshops, and a visit with the SoNG MPA survey.
5 December	Jahidul Kabir, DCCF	BFD	Requested information on existing spatial protection for fish and slides on possible Blue Belt OECM provided to DCCF for presentation at international OECM congress.
13 December	Dr. Tanvir Hossain Chowdhury, Deputy Chief	DoF	Follow-up on trainee nominations for SUFAL NDF development training workshops.



Appendix 3. Details of participants in Kuakata dolphin mortality monitoring training.

Sl. No.	Name	Organization and occupation	Contact (e-mail and phone)	Consent for using photo for educational purpose		Signature
				Yes	No	
1.	md. Jamal Khan	Dolphin conservation team, Kuakata	01730189149	✓		
2.	md. Ebrahim Khalifa	DET, and Tour operator	01718500089	✓		
3.	md. Abdul Rahman	DET, and Tourist guide	01716661650	✓		
4.	md. Abdul Aziz	DET, and Fishermen	01628185719	✓		
5.	md. Sohel Khan	DET, and Fishermen	017403063027	✓		
6.	Abu Jafar	DET, and Fisherman	01714315890	✓		
7.	K.M. Bachu	DET, Tour operator	01737002925	✓		
8.	md. Jahirul Islam	DET, and Tour operator	01740124198 km.jahirulkuakata@gmail.com	✓		
9.	Abul Hossain Raju	DET, and Tour operator	01725497938 rajuphoto23@gmail.com	✓		
10.	Asaduzzaman Miraj	DET, and Journalist	01713932267 mirajkuakata24@gmail.com	✓		
11.	md. Jewel Rana	DET, and Businessman	01710620727	✓		
12.	md. Juhurul Islam meron	DET, and Journalist	01721535791 juhirul252@gmail.com	✓		
13.	Nasir Uddin Biplob	president, Kuakata Press club	01711120055 kuakata.biplob@gmail.com	✓		
14.	Ruman Imtiaz Tushar	Tour Leader, Dolphin Rescue Committee	0171113412 tusharakuakata09@gmail.com	✓		
15.	Anowar Hossain Anu	Journalist	01719689796 anuakuakata@gmail.com	✓		
16.	md. Abul Kalam Azad	Range officer, Mohupur, FD	01701845469	✓		
17.	md. Masrat Hossain	Businessman	01733048015	✓		
18.	Arifur Rahman	DET, and Photo Journalist	01712198667 arifphotography50@gmail.com	✓		
19.	Sohel Mahmud	DET, and Student	01710552748 sohelkuakata75@gmail.com	✓		
20.	Joni Alamgir	president, owner Tourist-bro, Amritur	01734773580 joni.alamgir@gmail.com	✓		
21.	md. Faruk Alam	Assistant Ranger, Mohupur, FD	01849894852	✓		
22.	md. Faruk Haq Khan	DET, and Businessman	01716838125	✓		
23.	md. Mizanur Rahman	DET, and Tour operator	01712654297	✓		
24.	md. Asaduzzaman	Journalist	01722109754 asad28@yahoo.com	✓		

