

Illegal Wildlife Trade (IWT) Challenge Fund Main & Extra: Final Report

To be completed with reference to the "Project Reporting Information Note":
(<https://iwt.challengefund.org.uk/resources/information-notes/>).

It is expected that this report will be a **maximum of 20 pages** in length, excluding annexes.

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IWT Challenge Fund Project Information

Scheme (Main or Extra)	Main
Project reference	IWT116
Project title	Equipping southwest Indian Ocean countries to combat illegal shark trade
Country(ies)	Mozambique and Tanzania
Lead Organisation	Wildlife Conservation Society
Project Partner(s)	<ul style="list-style-type: none"> • Oceanographic Institute of Mozambique (InOM) • Deep Sea Fishing Authority (DSFA), Tanzania • Dr Rima Jabado • Dr Demian Chapman, Mote Marine Laboratory, United States • Stellenbosch University (SU), through Dr Aletta Bester-van der Merwe, South Africa
IWTCF grant value	£579,920.00
Start/end dates of project	July 1, 2022 – March 31, 2025
Project Leader's name	Dr Rhett Bennett
Project website/blog/social media	
Report author(s) and date	Dr Rhett Bennett and Dave van Beuningen (June 2025)

1. Project summary

Illegal trade in shark and ray products occurs throughout East Africa, as government capacity to enforce trade controls is inadequate. The vast majority of shark species (hereinafter understood to include ray species) that are traded are threatened (Vulnerable, Endangered or Critically Endangered), largely because they are targets in this trade, hence the listing of many of these species on the appendices of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). During this project, >100 additional shark and ray species were added to CITES Appendix II based on the threats of trade to their sustainability, of which 22 occur in Mozambique and Tanzania, thus increasing the number in these countries that require CITES trade controls and permits for legal trade.

Coastal fishing communities that rely on shark products for their food and income are affected by illegal trade that targets these species for international markets, with consequent local population declines. Effective enforcement of CITES and national trade controls would prohibit trade in species that cannot be sustainably traded and allow only sustainable levels of trade in those species that are resilient and whose populations are healthy, thus eliminating trade-driven pressure on threatened populations. The ultimate benefit would be healthier shark populations, in turn benefiting small-scale fishers who depend on these species for local sale, a local protein source, and their ecological roles in coastal ecosystems.

The project was designed to resolve issues identified in WCS's previous shark work in this region and aimed to improve government capacity in Mozambique and Tanzania for monitoring trade in shark products and enforcing trade controls to reduce illegal trade. Key activities included training government staff for visual and molecular/genetic identification of traded shark species, implementing improved resources for identification and monitoring, improving knowledge on trade and fisheries, and support to governments for policy improvement, to reduce illegal trade from these countries, with the associated ecological and social benefits.

The project's expected long-term impact is to reduce mortality of these species, by reducing pressure on their populations caused by illegal and/or unsustainable trade, leading to sustainable populations and more sustainable fisheries. In the proposal we listed 5 species (2 Critically Endangered and 3 Endangered) likely to benefit through improved enforcement of trade controls, but many others have too.

Location: Training and equipping government staff for species identification, and catch and trade surveys, took place in Mozambique and Tanzania. Samples for genetic analyses were derived from these catch monitoring sites and opportunistically through customs confiscations. Genetic analyses and some genetic training took place at Stellenbosch University, South Africa, at the Elasmobranch Genetics Group. In Years 2 and 3, we partnered with Bloom Association in Hong Kong, the global hub for shark fin trade, to access detailed trade data on shark and ray products entering Hong Kong from East Africa.

2. Project Partnerships

Oceanographic Institute of Mozambique (InOM) – InOM requested WCS support for shark conservation activities, building on our long-standing working relationship. InOM participated in project planning, advising how WCS could support InOM through training and capacity building activities. Shark catch data from the project were shared with InOM along with recommendations for reduced mortality of threatened species in coastal fisheries. In Year 2, InOM benefitted from training workshops on genetic sequencing (South Africa, Activity 1.5, Annex 5.1) and use of a rapid genetic sequencer (Mozambique, Activity 1.4, Annex 5.2), focussing on genetic validation of species identification. A consultant was contracted in Year 2 to assess the status and needs of Mozambique's fishery observer program (Activity 3.1, Annex 5.3), in consultation with WCS and InOM, and to prepare an implementation strategy for improving this program (Activity 3.2, Annex 5.4). InOM was not directly involved in the preparation of this report but contributed to previous annual reports. WCS maintains close collaboration with InOM, including through a new shark conservation project that builds partly on this IWT project.

Tanzania Deep Sea Fishing Authority (DSFA) – DSFA requested assistance from WCS for shark conservation activities and capacity building in Tanzania, particularly support to improve the industrial fishery observer program. DSFA staff benefitted from species identification training workshops in August 2022 and March 2023 (Activity 1.2, Annex 5.5), and one DSFA technician attended the Zanzibar rapid genetic sequencer training workshop (Activity 1.4, Year 2). Tanzania's fishery observer program was also assessed, in consultation with WCS and DSFA (Activity 3.1, Annex 5.3), with an implementation strategy developed to guide DSFA to improve this program (Activity 3.2, Annex 5.4). DSFA was not involved in preparing this report but contributed to previous annual reports. WCS continues to work closely with DSFA, including *inter alia* to finalise their National Plan of Action for the Conservation and Management of Sharks (NPOA-Sharks).

Dr Rima Jabado – WCS has partnered with Dr Jabado (Chair of the IUCN Shark Specialist Group) on several projects, as a global leader in shark and ray species identification training. Dr Jabado provided the species identification training in Tanzania (Activity 1.2, Annex 5.5) and Mozambique (Activity 1.2b, Annex 5.6) using the 2022 CITES shark/ray identification guides that Dr Jabado authored and revised in 2024 to include all newly listed shark and ray species. WCS continues to work closely with Dr Jabado (e.g. via a joint species identification workshop in Madagascar in March 2025, through other funding). Dr Jabado was not involved in this report preparation but supported drafting sections of a new proposal (IWTR11S2_1045) to IWTCF.

Dr Demian Chapman – Dr Chapman (Mote Marine Laboratory) provided expertise on the use of a rapid genetic sequencer, intended to improve identification speed and accuracy of CITES-listed shark products in trade. Ms Valerie Hagan, a technician from Dr Chapman's laboratory, trained ten technicians from Mozambique and 13 from Tanzania, on the use of the sequencer during two workshops in Maputo (Annex 5.2) and two in Tanzania in October 2023 (Activity 1.4; Tanzanian workshops were additional to

original project deliverables). Ms Hagan also installed genetic sequencers (Activity 1.3) (funded through matched funding) at Mozambique's Natural History Museum and Tanzania's Department of Fisheries. Dr Chapman was consulted for this report and remains a partner on genetic shark product identification tools, including work proposed under IWT proposal IWTR11S2_1045.

Stellenbosch University (SU), South Africa – The long-standing partnership between WCS and SU continued under this project, with the genetics component co-designed by Dr Aletta Bester-van der Merwe (lab manager of SU's Elasmobranch Genetics Group) and Dr Rhett Bennett (project PI at WCS). During the project, the SU lab analysed (Activity 2.3, Annex 5.7) >500 samples taken from sharks and rays landed in the coastal fisheries in Mozambique and Tanzania, or from confiscated fins, to validate species landed and traded and for phylogenetic studies. SU trained four Mozambique technicians (two each from InOM and the Natural History Museum) on genetic barcoding (Activity 1.5, Annex 5.1). The SU lab was consulted for this report, and we retain the strong partnership between WCS and SU (including 4 published peer-reviewed papers, 1 submitted and 7 in preparation, Annex 5.8), including further work proposed under IWT proposal IWTR11S2_1045.

Involvement of other stakeholders (underlined)

Mozambique

We have formally engaged with the Natural History Museum (NHM) in Maputo, which is developing a biobank and growing their genetic laboratory capacity. The NHM also benefited from the two training workshops involving InOM (Activities 1.4 and 1.5, Annexes 5.1, 5.2) and formally took responsibility for housing and operation of the rapid genetic sequencer (Activity 1.3). The NHM is expanding its “forensic” genetic work in Mozambique, to undertake barcoding in-country when unidentified specimens are intercepted in trade.

In May and August 2023 and June 2024, WCS engaged with the Zalala Beach fishing community and the Community Fishing Council of Zalala Beach (Activity 4.1, Annex 5.9) in Zambezia Province, Mozambique – an area known for extensive shark landings – through a series of focus group discussions and questionnaires, with women, traders, and fishers using different fishing gear. This was led by WCS Mozambique's marine technician, Ms Naseeba Sidat (as part of her MSc at University of California Santa Cruz) and included representatives from the Centre for Marine Research and Technology (part of Eduardo Mondlane University), District Services of Economic Activities, Provincial Delegation of the National fisheries administration and InOM.

Through the change request approved in January 2024, we shifted the training on the mobile phone communication platform (Activity 1.7 originally for Year 2) to Year 3 and incorporated additional species identification training (Activity 1.2b, Annex 5.6) for the National Institute of Fish Inspection (INIP), the frontline organization for fishery inspections and detection of illegal products. Dr Jabado trained 25 INIP inspectors in July 2024, using new (2024) CITES shark and ray guides. Two INIP inspectors also benefited from the rapid sequencer training in Maputo (Activity 1.4, Annex 5.2). In March 2025, 26 participants comprising senior staff and managers of state institutions involved in the conservation and management of sharks, from 15 different institutions (including the Public Protectors Office) attended a seminar on “Strengthening awareness and knowledge of national and international measures for the conservation of sharks and rays” (Activity 1.7b, Annex 5.10).

Tanzania

We responded to a request from the Tanzania Fisheries Research Institute (TAFIRI) in Years 1 and 2 to support preparation of a national response to a request for information from the CITES Secretariat pertaining to CITES-listed sharks and rays. The project trained one TAFIRI representative during the rapid sequencer training in Dar es Salaam (Activity 1.4) and several TAFIRI representatives at the species identification workshops in Year 1 (Activity 1.2, Annex 5.5).

We also engaged with the Department of Fisheries under the Ministry of Livestock and Fisheries, of Mainland Tanzania, to train four of their staff on the use of the rapid sequencer (Activity 1.4), and to formally hand over (Activity 1.3, Annex 5.11) one of these machines to this agency for undertaking *in situ* genetic testing of unidentified sharks and rays in the trade.

Other areas

We engaged with Bloom Association, based in Hong Kong, to access all available import and seizure data from Hong Kong, Singapore, and Taiwan, for shark and ray products originating in Mozambique and Tanzania.

We worked with the Biodiversity Enforcement division of the South African government Department of Forestry, Fisheries and the Environment, to provide support for visual and genetic identification (in partnership with SU, Activity 2.3) of shark and ray species from a large batch of confiscated fins at O.R. Tambo International Airport in Johannesburg, originating in East Africa, destined for Hong Kong.

We partnered with CapMarine (Capricorn Marine Consulting), a leading consultancy in southern Africa for observer training and monitoring programs, to develop the scoping study and implementation strategy (Annexes 5.3, 5.4) for Mozambique's and Tanzania's existing onboard fishery observer programs.

3. Project Achievements

3.1 Outputs

Output 1 – Customs agents and fisheries inspectors have improved resources and capacity for visual and molecular identification of, and national and global policy pertaining to, illegal shark and ray species in fisheries and trade, and species subject to trade controls.

Baseline condition – In Mozambique and Tanzania, human capacity (species identification, knowledge on national and global policies and their implementation requirements, and numbers of inspectors) is inadequate for trade control. Fisheries, trade, and customs agents had no capacity or resources for rapid species validation of shark and ray products. Inspectors lacked training in such identification skills. In Mozambique, laboratory technicians did not have the skills to undertake genetic barcoding to identify species from tissue samples using standard barcoding techniques. In Tanzania, fisheries/customs inspectors had no training or guides for shark/ray identification.

Progress made – In Year 1, more than 60 government officials from 21 agencies in Tanzania were trained on shark and ray identification using CITES guides (Activity 1.2, Annex 5.5). Delegates were also trained on 3D-printed replica shark fins, a set of which remains in each of Mozambique and Tanzania for future and repeat training. (In April 2025, the 3D fins were used by INIP for training they conducted in Nampula, showing the materials are benefiting a broader audience beyond the scope of the project). In Year 2, rapid genetic sequencers were installed at NHM in Maputo and the Department of Fisheries in Dar es Salaam (Activity 1.3, Annex 5.11), and 23 technicians in Mozambique and Tanzania were trained to use the sequencer to validate shark and ray species from tissue samples (Activity 1.4, Annex 5.2). Four laboratory technicians from Mozambique were trained at SU on genetic barcoding to enable species identification from tissue samples (Activity 1.5, Annex 5.1). In Year 3, 25 inspectors from the National Institute for Fish Inspection (INIP) from Maputo, Gaza, Inhambane, Sofala, Nampula, Zambézia and Cabo Delgado provinces, and a technician from the Natural History Museum in Maputo, were trained by Dr Rima Jabado on the use the revised global CITES shark and ray identification guides that were completed in June 2024 (Activity 1.2b, Annex 5.6). In Tanzania and Mozambique, a WhatsApp group was created that includes fisheries officers, government data collectors, fisheries directors, customs agents, and WCS staff experienced in shark and ray species identification (Activity 1.6), to assist with timely identification of shark and ray products. In Mozambique, a seminar was held with the aim to strengthen awareness and knowledge of national and international measures for the conservation of sharks and rays, attended by 26 participants comprising senior staff and managers from 15 state institutions involved in the conservation and management of sharks and rays, including the Public Protectors Office (Activity 1.7b, Annex 5.10).

Change recorded to date – Capacity has been considerably improved in Tanzania and Mozambique for the identification of CITES-listed, regulated and illegally traded shark and ray species, through the provision of visual identification training and materials (CITES ID guides and 3D-printed replica fins). This was added to through molecular (genetic) training (rapid sequencer training in Mozambique and Tanzania, barcoding training for Mozambique representatives) and tools (rapid genetic sequencer in each country), and support for species identification and improved data collection through the WhatsApp group. Additional capacity and awareness raising in Mozambique was achieved through training on the revised CITES shark and ray guides and a seminar in which lawyers, prosecutors, the judiciary and other state departments involved in the conservation and management of sharks and rays were trained on national and global policies pertaining to sharks and rays. The project has thus considerably strengthened capacity across multiple agencies to implement more effective monitoring and control of trade in shark and ray products.

Source of evidence for this change – Evidence includes (from Year 1) a 2-day species identification training workshop for 22 customs/fisheries agents, three 1-day species identification training workshops

for 8-20 fisheries agents each, in Tanzania (Annex 5.5), dissemination of at least 50 CITES species identification guides and a set of 3D-printed replica fins in each of Mozambique and Tanzania (all through IWT funds), and a species identification workshop in Mozambique (matched funding). Evidence from Year 2 includes two, two-day rapid sequencer training workshops in each of Mozambique (Annex 5.2) and Tanzania, training 23 people, and installation of rapid sequencers in both countries, and a two-week genetic barcoding training workshop at SU for four Mozambique technicians (Annex 5.1). Evidence from Year 3 includes a training workshop for 25 fisheries inspectors in Mozambique (Annex 5.6) on using i) updated CITES shark identification guides and ii) a communication platform for rapid identification of shark and ray products in trade; operational WhatsApp groups in Mozambique and Tanzania to assist with timely identification of shark and ray products; and a training/awareness seminar in Mozambique for 26 participants from different state departments on national and global policies pertaining to sharks and rays and their implementation (Annex 5.10). Change is evidenced by positive feedback from workshop participants, workshop reports, and before-and-after assessments of capacity for some workshops.

Did the project encounter problems achieving the output – There were minor issues achieving Activity 7b due to political instability in Mozambique after the presidential election in 2024, but shifting this to early 2025 allowed us to complete this and expand the scope of training to include a broader topic and range of participants. The issue of political instability was not initially anticipated or identified as an assumption in our original logframe but was resolved thanks to a no-cost extension (approved January 2024) which allowed an extension to the project in Year 3, giving time for the political instability to settle.

Output 2 – There is increased information and knowledge of threatened shark/ray species caught and traded, including new species-level catch and trade data through project surveys and genetic validation of species recorded, to support enforcement

Baseline condition – Although WCS has been conducting species-level shark and ray catch surveys of artisanal fisheries in Mozambique and Tanzania since 2018, there is limited species-level catch information though surveys led by government institutions. Also, knowledge on shark and ray trade volumes and value chains (domestic and international) is poor, with poor trade reporting at national level and to international bodies such as CITES.

Progress made – The project's catch surveys (Activity 2.1) provide an important source of information on shark and ray landings in coastal fisheries in Mozambique and Tanzania. These data contributed to the delineation of several Important Shark and Ray Areas (ISRAs) in these countries, as part of the IUCN Species Survival Commission, Shark Specialist Group's ISRA project. In Year 2, trade surveys (Activity 2.2) gained information on shark and ray product value chains, drivers of trade, dominant species, long term trends in trade, and other information on trade dynamics, with 48 traders, sellers and fishers interviewed in Tanzania and 87 in Mozambique. In addition, national import data were obtained from Hong Kong, Singapore and Taiwan, through a collaboration with a new partner (Bloom Association), on imports to these countries originating from Mozambique, Tanzania and neighbouring countries. These data indicate significantly greater volumes of exports from these countries than they report, with some species-level information validating information obtained from the catch surveys in terms of key species and targeting for the global fin trade. Genetic barcoding (Activity 2.3) revealed illegal trade of CITES-listed shark and ray species, and confirmed species landed in Mozambique's and Tanzania's coastal fisheries, with >500 tissue samples sequenced, including some confiscated by customs agents in Mozambique and in South Africa (for products having left Mozambique). In Year 3, using unspent funds from Year 2 catch surveys (Activity 2.1), we conducted semi-structured and informal fisher interviews (Activity 2.1b) at Beira in Sofala Province, central Mozambique (in addition to the rapid catch surveys under Activity 2.1). We also collected new information on fisheries, auctions of landed products, product value chains, legal and illegal activities, and fisher perceptions of management.

Change recorded to date – This work has improved knowledge on species caught and traded. Quantitative species-level data on catches, illegal exports and trade volumes has been improved through this project and its multi-method approach. We are also working with governments in both countries to improve implementation of CITES for sharks and rays, with much of this information feeding into non-detriment findings (NDFs) under development by government agencies with support from WCS, leading to more informed NDF assessments for several CITES-listed shark and ray species.

Source of evidence for this change – Better data (catch datasets, genetic confirmation of species landed, trade datasets, Asian import statistics, informal fisher interview datasets) and new results (including genetic sequence data from multiple confiscations of illegal products) relating to shark and ray catches in and trade from Mozambique and Tanzania.

Did the project encounter problems achieving the output – This output was achieved without major issues. There were minor issues completing Activity 2.1b (added at the end of Year 2), as we had anticipated conducting informal fisher surveys in 3 sites in Mozambique to provide information on fishery and trade dynamics. Only one site was surveyed (Beira), while interviews at the other two sites were forfeited due to a cyclone that struck central Mozambique and presidential elections which caused political instability and precluded the work due to security concerns. These issues were not initially anticipated nor identified as assumptions in our original logframe but will be considered in future projects.

Output 3 – A scoping study is undertaken to evaluate whether and how observer programs could be implemented, to expand catch/fishery monitoring to commercial and industrial vessels.

Baseline condition – There are currently limited or intermittent fisheries observer programs on commercial and industrial fishing vessels in Mozambique and Tanzania.

Progress made – In Year 2, a scoping study was conducted (Activity 3.1, Annex 5.3) to assess the status and coverage of the onboard observer programs in domestic commercial and industrial fisheries in Mozambique and Tanzania. A consulting agency with expertise in Western Indian Ocean fishery observer programs was hired and engaged with relevant Mozambique government representatives via WCS, and directly with the Deputy Director of the DSFA in Tanzania and representatives of the Tanzania Fisheries Research Institute (TAFIRI), and Zanzibar Fisheries Research Institute (ZAFIRI) to obtain relevant information. The study assessed global and regional requirements and minimum standards for onboard observers/observer programs and critically evaluated those in the two countries against these requirements and standards. Achievements, gaps, and needs were noted, and used to develop an implementation strategy (Activity 3.2, Annex 5.4) to bring these programs up to minimum standards.

Change recorded to date – Mozambique and Tanzania fisheries authorities are informed by the findings of this critical assessment as to the shortfalls and needs relating to fishery observer programs, with a detailed strategy for how to overcome these. There was no change to existing observer programs as that was beyond the scope of this project and defined as such at proposal stage; however, the report and strategy provide guidance to improve observer programs in the future, and an activity to implement actions recommended therein was included in the work proposed in IWT proposal IWTR11S2_1045.

Source of evidence for this change – A scoping report and separate implementation strategy, prepared by a leading consulting agency for observer programs, and externally reviewed by an independent observer program expert.

Did the project encounter problems achieving the output – No problems were encountered.

Output 4 – Improved regulatory framework for sharks and rays, and support from local fishing communities to adhere to improved or strengthened fishery and trade regulations.

Baseline condition – Mozambique protected 14 shark and ray species, with minimum size limits for a further 29 species, through new fisheries regulations (REPMAR) in 2020. Yet sharks and rays, including threatened species, juveniles, pregnant females and prohibited species are still caught and killed, and illicit trade occurs, including products such as CITES-listed species without relevant permits. Tanzania protects 10 shark and ray species (3 of which do not occur in Tanzanian waters). Eleven species listed on Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (required by CMS Parties to be prohibited from capture) occur in Tanzania, of which just two are protected. Tanzania's fishing regulations are inadequate for effective management of shark and ray fisheries and trade. Neither country had appropriate paperwork for legal export of CITES-listed sharks or rays.

Progress made – *Mozambique:* In Year 1, three meetings were held with fishing communities and local authorities to raise awareness (Annex 5.12) and gain support for amended fisheries regulations. In Year 2, a CCP (Community Fishing Council) at Zalala Beach, central Mozambique, encompassing five fishing communities, was engaged through a series of visits, workshops, discussion groups and feedback meetings (Activity 4.1, Annex 5.9), which helped build support for developing 25 local management measures intended to reduce fishery impacts on threatened/prohibited shark and ray species, 80% of which were recommendations from the community. In Memba/Mossuril districts, northern Mozambique, seven CCPs, encompassing 17 fishing communities, were engaged to support local management measures including those for sharks and rays. In Year 3, community engagement continued at Zalala Beach with another field visit to: i) present Zalala stakeholders with the results and recommendations of the engagement work done in 2023; ii) carry out the preliminary study assessments, such as CCP

surveys and fishing pattern mapping, to inform the development of sustainable management measures led by the Zalala communities, in accordance with the national law in force (REPMAR, CCP Statute, APGCs); and iii) continue the engagement with the community on actions needed to implement these community-led sustainable management measures. During this visit, a marine bycatch reduction expert from the WCS Global Conservation Program joined the Mozambique team to assess the situation and provide recommendations for improved management of sharks and rays at Zalala (Annex 5.13).

In Year 3, a consultant was contracted to work with Mozambique's National Fisheries Administration (ADNAP) to assess all relevant national legislation against international policy. The consultant drafted a framework of recommendations (Activity 4.2, Annex 5.14) for improved/strengthened fishery and trade regulations for sharks and rays, which is supported by government. WCS supported a revision of the national CITES legislation in Mozambique, with a focus on improved implementation and domestication of CITES trade controls. The revised version formed part of the consultant's recommendations. WCS continued to support the development of the National Plan of Action for Conservation and Management of Sharks (NPOA-Sharks, through matched funds), which was finalized at a national stakeholder meeting in March 2025 (funded via CEFAS, through Ocean Country Partnership Program funding, and technical support and local facilitation from WCS), and is pending gazettelement and official launch in July 2025.

Tanzania: Eleven fishing communities were engaged (part funded by IWT116) to map shark and ray presence in various fishing grounds, providing information that was integrated into the first micro-MSP (Marine Spatial Plan) in Zanzibar (2022-2024), with the goal of integrating knowledge on location of ecological hotspots into management of fishery resources. Communities identified areas for temporary and permanent closures and discussed and agreed on expansion of the Misali MPA. The micro-MSP (Annex 5.15) was finalised in May 2024, and was accepted by community members and Government.

Through matched funds, WCS supported the development of the NPOA-Sharks for the United Republic of Tanzania (Tanzania and Zanzibar together), which was finalized in April 2025, and led a training workshop on implementing CITES for sharks and rays in Tanzania (July 2023), which resulted in the development of a non-detriment finding (NDF) that guides trade in seven threatened ray species.

For both countries, species lists were submitted to governments to guide management authorities on shark and ray species that require strengthened management measures, full protection, or trade controls. These are being considered during the processes to revise national fishery regulations.

Change recorded to date – 23 fishing communities from eight CCPs in Mozambique are aware of issues around overexploitation of threatened sharks and rays, their needs and concerns have been stated, and their support gained for strengthened fishery measures. In Tanzania, 11 fishing communities have been engaged, and areas for temporary and permanent closures identified, with a micro-MSP accepted by the fishing communities and government. Management authorities have improved information to guide improved protections, management measures and trade controls, towards reduced mortality of and unsustainable trade in threatened and prohibited shark and ray species. The completed NDFs that guide trade in certain species constitute policy change by activating domestic regulations under CITES, while the shark NPOAs provide policies to guide regulatory change. The draft framework of recommendations for improved/strengthened fishery and trade regulations of sharks and rays in Mozambique will be used after the project through ongoing engagement between WCS and the relevant Mozambican authorities, with the aim of ensuring these draft measures are promulgated in legislation.

Source of evidence for this change – Completed NPOA-Sharks and recommendations for protected species in both countries; a completed NDF in Tanzania; a micro-MSP for rezoning off Pemba Island in Tanzania; field visit reports; and a final framework document supported by the Mozambique government on recommendations on the management measures needed for improved legislation for sharks and rays.

Did the project encounter problems achieving the output — Although final community management plans have not been developed in Mozambique to encompass specific measures for sharks and rays (Activity 4.1), we made significant progress toward achieving this goal, in particular securing community support for this, through the actions mentioned above. The output under Activity 4.1 was achieved in Tanzania, through the zoning of several areas off Pemba Island including fishing gear restrictions that will reduce mortality of threatened sharks and rays. Under 4.2, the output was achieved through the recommended policy changes, which form the basis of WCS's continued engagement with the Mozambique government to support policy reform, while in both countries the NPOA-Sharks provides clear national policies to guide improved regulations for sharks and rays.

3.2 Outcome

“Improved capacity for effective enforcement, improved fishery and trade knowledge, and fisher and government support for improved management facilitate reduced illegal trade in regulated/threatened shark/ray species, in Mozambique and Tanzania”. This was partially achieved. Capacity for enforcement, and fishery and trade knowledge, have been improved. Fishers and governments support improved management. The extent to which this has led to “reduced illegal trade in regulated/threatened species” is defined by the indicators, which are discussed below (supporting details in Annex 5.16).

Indicator 0.1: Reduction in Fisheries Mortality

Indicator 0.1 aimed for a 25% reduction in fisheries mortality of threatened/prohibited species by 2024 compared to 2020/2021 levels. In Mozambique, CPUE (catch-per-unit-effort) of threatened and protected sharks and rays declined from 1.89 individuals landed per survey day in 2020 (before the project) to 1.24 in 2023. This represents a 34% decline, achieving the targeted 25%, although this was not statistically significant ($p > 0.05$). Furthermore, the proportion of threatened shark and ray species in the catches in Mozambique decreased slightly during the project, from 66% in 2020 to 53% in 2023, an almost 20% decrease, while surprisingly no prohibited shark or ray species were recorded during the project.

In Tanzania, catch surveys indicated no real change in the rate of capture (CPUE) of threatened sharks and rays. From 2021, prior to the study, to 2024, Year 3 of the study, there was a significant increase ($p < 0.05$) in the rate of landings of threatened species, with CPUE rising from 0.46 per day in 2021 (before the project) to 1.31 in 2023, decreasing to 0.85 in 2024. However, there was no change from Y1 (2022) to Y3 (2024) of the project with CPUE identical in these years at 0.851 threatened sharks and rays recorded per day. There were also no changes in the proportions of threatened and prohibited shark and ray species, respectively representing 48% and 5.4% of the catch in Y1 and 45% and 4.7% in Y3.

The project partly achieved the target under Indicator 0.1, with a greater change seen in Mozambique.

Indicator 0.2: Reduction in Illegal Trade

Indicator 0.2 aimed to reduce illegal trade in prohibited/CITES-listed species by 25% by 2024 relative to 2020/2021 levels. In Tanzania, limited data were available to evaluate this indicator. Despite efforts to gather information—e.g., engaging customs authorities and other government bodies—no seizures of shark or ray fins/products were reported during the project period, including in Hong Kong’s customs data on seizures. There were also no recorded exports of CITES-listed shark and ray species from Tanzania in the CITES Trade Database. The only data source to indicate shark and ray exports from Tanzania is the Hong Kong customs import database. This indicated no shark or ray products imported from Tanzania from 2019–2021, but a rapid increase to a peak of 1,320 kg in 2023, 100% of which was fins (no data yet for 2024). This indicates an increase, rather than a decrease, but as the data are not disaggregated by taxonomic group it is impossible to discern if these are CITES-listed or prohibited species. Considering there are no records in the CITES trade database and no Hong Kong seizure data, it is possible that these represented legal, non-CITES-listed species (which aligns with the increase in non-threatened shark and ray species in the catch data, from 48% in 2022 to 64% in 2023).

For Mozambique, the CITES Trade Database reports 304 kg of fins of *Rhynchobatus djiddensis* (a wedgefish listed on CITES Appendix II in 2019) exported to Hong Kong in 2022, compared to 200 kg in 2024—a 44% decrease. However, 1,738 kg of “*Carcharhinus*” fins were also exported from Mozambique to Hong Kong in 2024, but because of the genus-level reporting, and as some species in this genus were listed on CITES before the project and others during, no comparison is possible for Indicator 0.2.

The dominance (80%) of CITES-listed species in a 2023 confiscation in South Africa—originating from Mozambique—suggests little change in the proportion of CITES-listed species in illegal fin exports as similar confiscations occurred in 2018, 2019 and 2022. However, the proportion of prohibited species in the seizures decreased from 7% in 2018/2019, to zero for the two confiscations made during the project.

Overall, while some positive trends were observed in Mozambique, the project has only partially met its intended outcome of significantly reducing illegal trade in shark and ray species, as per Indicator 0.2.

The partial achievement of the intended Outcome was largely due to the limitations of the selected indicators being ambitious relative to the project’s timeframe. A key underlying assumption was that our interventions would lead to measurable decreases in catch and trade during the project period, which

was only partly the case. However, we had acknowledged from the outset that the Activities and Outputs were likely to take longer to influence the Outcome, potentially extending beyond the project's duration.

This challenge was also noted by the Year 2 reviewer, who stated: *“The Outcome is ambitious and is quite far from the project team’s control. Therefore, there is some risk to its achievement (which the team openly admit).”* The reviewer also recognized the strength of the project's design and commended the project's approach and implementation, while noting the challenges and the risk of not achieving the outcomes: *“What is clear is the logic of the project – if we train people to better identify sharks and rays for trade AND reduce fishing impacts through education, awareness, management measures (including observer program), THEN we should see a decrease in trade of threatened/prohibited species.”*

While the Outcome was not fully met as per the proposed indicators, we believe the project was a success. The planned activities were largely completed to a high standard and capacity was built in both countries; thus, a strong foundation has been laid, which will lead to achieving the planned reductions in the catch and trade of threatened, prohibited and CITES-listed species, over the longer term.

3.3 Monitoring of assumptions

The pathway to change remains true. New information, training and tools, for improved knowledge and capacity, and gaining support from resource users and managers, helps create an environment with the will and capacity for more sustainable, better-enforced management measures for sharks and rays.

Outcome and Output assumptions were monitored throughout the project. Assumptions did not change, other than to add Output assumption 1.7b (for Activity 1.7b added at change request in January 2024).

Outcome level assumptions

Assumption 0.1: Reduced proportions in catches reflect reduced targeting or capture, not further population decline (indirectly validated through ongoing fishery-independent ecological studies).

Comments: We feel this assumption holds true. This is partly validated by the trend in targeting following that of the catch results, in Tanzania. Catch surveys indicated that 57% of respondents targeted sharks/rays in Year 1, compared to 82% and 62% in Years 2 and 3. This aligns with the trends of the catch metrics (catch rate, proportion of threatened species, proportion of prohibited species – see section 3 and supporting information in Annex 5.16). In Mozambique, proportions of threatened species in the catch showed a decline, while fishery-independent ecological surveys in Mozambique using baited remote underwater video (other projects), provided a comparative dataset for coastal shark and ray species, and preliminary results indicated no notable declines in shark/ray abundance in these surveys.

Assumption 0.2: Trade routes have not changed in avoidance of new enforcement measures.

Comments: We feel this assumption holds true and is partly validated by import data into Hong Kong, Taiwan and Singapore, provided by Bloom Association, a partner based in Hong Kong. Most shark products (mainly fins) from all over the world are imported into Hong Kong, where data are recorded better than countries of origin, meaning Hong Kong import data remain a stable source of information on shark and ray trade. New CITES listings in 2023 for at least 22 species of sharks and rays in the region complicate this indicator as the CITES trade database imports into Hong Kong from Mozambique are at genus level *Carcharhinus*, which includes some species listed in 2023 and some before the project.

Output level assumptions

Assumption 1.1-1.5: Staff take up the knowledge shared during training to become able to identify to species level and to undertake molecular laboratory-based analysis.

Comments: Species identification training was well received with participants noting critical knowledge gains useful to their profession, most showing improved capacity (in workshops with brief before-after capacity assessments) and most interested in further training and resources.

Assumption 1.6-1.7: Shark identification experts are willing to offer expertise and rapid responses to allow communication platform to be effective.

Comments: There are several experts included in WhatsApp groups for shark and ray identification in Mozambique, Tanzania and South Africa, who respond rapidly to species identification queries. WCS works regularly with taxonomists and identification experts to validate species identification.

Assumption 2.1-2.2: Results are dependent on fishers agreeing to share relevant information, some of which is sensitive. But previous surveys suggest that fishers are generally forthcoming with information.

Comments: Fishers were willing to share information with data collectors in Tanzania throughout the project. There was a period in Mozambique when fishers hid shark catches from authorities and data collectors, but this was resolved through several sensitisation meetings with fishers and local authorities, with sharks and rays again being recorded in catches. Community members shared considerable knowledge during engagement activities and trade surveys in Mozambique.

Assumption 2.3: Fishers and traders will be willing to allow data collectors to collect biological material to allow genetic analysis, but previous sampling suggests that will not likely be a problem.

Comments: Fishers allowed data collectors to take biological samples throughout the project period.

Assumption 3.1: Requires willingness of governments and fishing industry to engage. WCS support for implementing such observer programs has been called for by governments in both countries, therefore government support should be forthcoming. The fishing industry will be encouraged to collaborate.

Comments: Governments in both countries requested this activity and provided information to assist with the assessment, particularly InOM in Mozambique, and DSFA, TAFIRI and ZAFIRI in Tanzania.

Assumption 3.2: Assumes that an observer program is financially and logistically feasible.

Comments: The completed implementation strategy outlines feasible actions needed to implement an improved observer program in each country.

Assumption 4.1: Assumes a basic willingness by fishing communities to shift to sustainable practices/levels of fishing.

Comments: Engagement with fishing communities during the project confirmed fishing communities in Mozambique and Tanzania are strongly in support of more sustainable fishing, understanding that more effective management would lead to more sustainable fisheries. In both countries, communities engaged showed strong support for the development of local management measures that include the needs of sharks and rays. IWT proposal IWTR11S2_1045 submitted in March 2025 includes several activities to implement such measures, including opportunities for alternative incomes, in these communities.

Assumption 4.2: Assumes government processes are not so slow as to delay the outcomes.

Comments: This assumption remained partly true. In previous reports we acknowledged that policy development and legislative changes are slow processes, and the risk that activity 4.2 and its outputs may be achieved beyond the end of this grant. While no new regulations were gazetted during the project, in Mozambique a framework of recommendations for strengthened fishery and trade regulations for sharks and rays was drafted and is supported by government, with a revised version of the CITES regulation submitted to government, and the NPOA-Sharks pending gazettelement as a guiding policy. We will continue to engage relevant authorities to support promulgation of these measures into legislation.

3.4 Impact

The Impact in our original application form was “Reduced mortality and illegal trade in regulated species, which in turn lead to healthier shark/ray populations and ecosystems, which support improved fisher catches, more sustainable fisheries, and more secure livelihoods”.

Project’s contribution to higher-level impact on illegal wildlife trade: Capacity to enforce wildlife trade controls in Mozambique and Tanzania is improved through: improved human capacity and tools for species identification (with real-time access to expert knowledge and near real-time molecular species confirmation); and improved knowledge and understanding of legal and illegal fisheries and trade (including drivers of fishing and trade, trade routes, species being traded). More than 60 government agents in Tanzania and 20 in Mozambique have improved capacity to identify species of sharks and rays; 21 Mozambican and Tanzanian agents have capacity to use a rapid genetic sequencer; and four technicians in Mozambique are able to conduct standard genetic barcoding. Each country is equipped with CITES-listed shark and ray identification guides, 3D-printed replica fins, and a rapid genetic sequencer. 26 high-level government officials in Mozambique have increased knowledge on national and global policies pertaining to sharks and rays and their implementation, with a framework for regulatory change needed in Mozambique for more effective shark and ray management and conservation.

Bottom-up and top-down measures are improved towards sustainable fishing of and trade in sharks and rays. Stronger fishery and trade measures (informed by better information) and better capacity to implement these will reduce the pressure on shark and ray populations, particularly from illegal activities. As key ecological role players that shape food webs and maintain ecosystem balance, healthier shark and ray populations should result in healthier fish populations, benefiting the ecosystem and its users.

Project's contribution to a higher-level impact on human development and wellbeing (poverty reduction): Fishing communities were engaged to understand their socio-economic situations, dependence on shark and ray resources, drivers of shark and ray fishing and trade, the needs of the communities, potential alternative livelihoods, reasons why some fishers break the rules, the general understanding of fishery and trade regulations, and opinions on locally-feasible management; this to ensure the needs, opinions, and knowledge of small-scale fishers are appropriately considered in fishery management decisions.

Supporting coastal communities to develop local management measures to reduce shark and ray mortality contributes indirectly to poverty alleviation in the long term, by empowering communities to manage their own resources, providing more equitable access and gaining support for more sustainable use. The impacts on their livelihoods should be carefully self-managed, whilst having the power to prevent excessive exploitation or overharvesting that may be caused by a handful of unlawful fishers or unsustainable fishing behaviours. Contributing to improved institutional capacity whilst working with governments to promote policy reform and improved governance for the management of sharks, rays and their fisheries will also contribute to population sustainability and poverty alleviation in the long term.

Trade controls come largely from CITES, which governs international trade only. By working towards strengthened enforcement of CITES trade controls, including science-based NDF decisions that prohibit unsustainable trade and permit sustainable trade, the greatest impact of effective CITES implementation would be on those exporting or importing products illegally in breach of CITES, or from unsustainable species/fisheries (largely commercial and industrial fishers and traders), with minimal impact on small-scale fishers (generally those most reliant on the resource) who would be permitted to continue to catch, consume and locally sell products of most of these species. Short-term impacts of stricter enforcement of CITES would have greatest impact in industrial fisheries, and minimal impact on small-scale or coastal fishers. In the long-term, stronger and more effectively implemented regulations, along with better enforcement of CITES trade controls, will have positive impacts on reducing shark and ray mortality, supporting more sustainable populations and ultimately more sustainable catches for coastal fishers.

4. Contribution to IWT Challenge Fund Programme Objectives

4.1 Thematic focus

Notable achievements relating to theme 3 (Strengthening law enforcement) include:

- Rapid genetic sequencers installed at Natural History Museum in Maputo, Mozambique, and Department of Fisheries in Dar es Salaam, Tanzania (Annex 5.11), offer rapid validation of species traded (infrastructure, no specific IWTCF standard indicator for this).
- 21 government staff in Mozambique and Tanzania are equipped to use a rapid genetic sequencer, after four training workshops by Mote Marine Laboratory (IWTCF-D01, IWTCF-D04, Annex 5.2).
- Four Mozambique laboratory technicians are capable of genetic sequencing to identify species from tissue samples, after training at Stellenbosch University, South Africa (IWTCF-D01, Annex 5.1).
- 82 government staff in Mozambique and Tanzania have improved capacity for shark and ray species identification, using new CITES identification guides (IWTCF-D01, IWTCF-D04, Annexes 5.5, 5.6).
- 76 government staff in Mozambique and Tanzania have access to and capacity to use a mobile-phone platform for real-time shark and ray species confirmation (IWTCF-D01).
- The status and requirements of commercial and industrial fishery observer programs in Mozambique and Tanzania are detailed in a scoping report and an implementation strategy developed to guide activities to improve these programs in the future (IWTCF-D16, Annexes 5.3, 5.4).
- Improved species-level information on artisanal shark and ray catches in each country (IWTCF-B17).
- Information on the factors driving shark and ray trade, product value changes and other aspects of trade is improved in Mozambique and Tanzania, through trade surveys and import data on sharks and rays from Hong Kong, Taiwan, and Singapore (the global shark trade hubs) (IWTCF-B17).
- Improved species-level information on catches and illegal exports, through genetic barcoding of >500 shark and ray samples from coastal fisheries and confiscations (IWTCF-B17, Annexes 5.7, 5.8).

Notable achievements relating to theme 2 (Ensuring effective legal frameworks and deterrents) include:

- Government delegates in Tanzania have improved knowledge on CITES implementation for sharks and rays (IWTCF-D01, IWTCF-D04), with 1 NDF drafted for 7 CITES-listed rays (matched funds).
- 16 government institutions in Tanzania and 15 in Mozambique with enhanced awareness and understanding of biodiversity and associated poverty issues (IWTCF-C05).
- 26 high-level legal officials (including prosecutors, judiciary) have improved knowledge on national and global policies pertaining to sharks and rays and their implementation (IWTCF-D01, Annex 5.10).
- 22 coastal fishing communities in Mozambique and 11 in Tanzania are more aware of the need for improved shark conservation and support strengthened management measures at local level through engagement visits and interviews (Annexes 5.9, 5.12) (no IWTCF standard indicator for this).
- Management measures and amendments of national fishery regulations needed for Mozambique to ensure improved/strengthened fishery and trade regulations of sharks and rays have been presented to and are supported by government (will meet IWTCF-B16 when implemented, Annex 5.14).

4.2 Impact on species in focus

The proposal listed five species (all CITES Appendix II) – pelagic thresher sharks, shortfin mako sharks, scalloped hammerhead sharks, shortfin devil rays and whitespotted wedgefish. The project has contributed towards improved knowledge and policy for these focal species and many others.

Catch survey datasets with photographs revealed numerous shark and ray species (>70 species in Tanzania alone). For example, Critically Endangered scalloped hammerheads are caught in very high numbers, particularly in Mozambique. In Tanzania, Endangered Mobula rays (*Mobula* genus), listed on CMS Appendix I and prohibited under the Indian Ocean Tuna Commission, are caught in high numbers.

In Year 1, we reported on a seizure from September 2022, comprised of >80% CITES-listed species, including whitespotted wedgefish and scalloped hammerhead shark (both focal species and Critically Endangered). In Year 2, we sampled a seizure, made in South Africa of fins originating in Mozambique, comprised of over 90% CITES-listed species, including whitespotted wedgefishes (85%) and hammerhead sharks (10%). Approximately 70 of 128 samples genetically sequenced were confirmed to species level, including hammerhead sharks, wedgefishes, and CITES-listed requiem sharks.

NDFs (through matched funding) for scalloped hammerhead shark in Mozambique and whitespotted wedgefish (among other wedgefish and guitarfish species) in Tanzania confirm that international trade cannot be done sustainably, and that exports will not be permitted. Both NDFs were partly informed through the project's catch surveys and genetic barcoding results.

Trade data from Hong Kong confirm that thresher sharks and hammerheads form important components of illegal trade from the southwest Indian Ocean, providing useful data to inform future NDFs, and to encourage stricter fishery measures for these species in Mozambique and Tanzania.

4.3 Project support for multidimensional poverty reduction

Contribution to improved human development and wellbeing: Those affected by illegal trade in sharks and rays (or unsustainable legal trade in threatened species) include local fishers who rely on sharks and rays for food and income. Fishery policy in Tanzania and Mozambique is inadequate (yet improving) and adherence to environmental agreements (e.g., CITES trade controls, protection under CMS) is poor, compounded by inadequate capacity for species identification, knowledge of implementing requirements, and resources to support implementation. Illegal and unsustainable trade in sharks and rays negatively impact wild populations (particularly the most threatened species, which contribute most to illegal trade), negatively affecting coastal ecosystems, as well as coastal fishers by decreasing their opportunities for food and income from legal capture, consumption, and trade; such loss of ecosystem services is also a form of poverty. Furthermore, some of the highest value fins globally come from species (e.g., scalloped hammerhead sharks, whitespotted wedgefish, both Critically Endangered and CITES-listed) caught in coastal fisheries in Mozambique and Tanzania, having direct negative impacts on coastal fishers. This project was the first engagement on sharks and rays with most of these communities, and changes and benefits will be realised only beyond the project. We acknowledged this from the outset, as did the Year 2 reviewer: *"Given the timeline of IWT funding we would rarely see a sustainable end point to community fisheries management unless significant work had been undertaken before IWT funding commenced"*.

We will continue to support local fisher communities (through other projects, including potentially from IWT proposal IWTR11S2_1045 submitted March 2025, which would scale the current project) to

implement their own management measures for greater sustainability, whilst excluding fishers or traders operating illegally or unsustainably. Ecological and social benefits will hopefully be visible in a few years.

The project has supported WCS's ongoing efforts to improve human development and wellbeing by i) implementing actions to reduce mortality and illegal/unsustainable capture of and trade in threatened or prohibited shark and ray species (e.g., nationally protected, CMS Appendix I) or those subject to trade controls (CITES); ii) improving government capacity to enforce regulations and trade controls for sharks and rays; iii) providing better information to inform management of these species; and iv) supporting fishing communities and governments to strengthen local/national measures for sharks and rays.

We continuously engage with governments on these matters, and governments have requested capacity building and implementation support. Improved enforcement capacity and support for stronger national-level fishery and trade measures will provide the legal framework for safeguarding of shark and ray species for sustainable and legal use. Government engagement will continue after this IWT project.

Project beneficiaries and benefits the project generated for them: Project beneficiaries are law-abiding coastal fishers—traditional, subsistence and artisanal—whose livelihoods depend on sharks and rays. These fishers will benefit from project activities that have created an enabling environment for improved monitoring and enforcement of illegal shark and ray trade. The project contributed indirectly to poverty alleviation in the long-term, through several mechanisms (those aligned with the IWT poverty alleviation guidelines in *italics*): 1) improved capacity to enforce trade and fishery regulations; 2) better information on shark and ray fisheries and trade; and 3) improved local and national level management for sharks and rays through fishing community and government engagement. Awareness is increased on a) the poor conservation status of sharks and rays, b) their contribution to healthy ecosystems (*“increased awareness about the value of wildlife”*), c) needs for improved conservation, and d) existing regulations. This *“improved community governance”* will promote more equitable access to resources and more sustainable resource use. *“Improved ecosystem services”* will include healthier fishery resources benefitting ecosystems and resource users, including improved food security and income for fishers, traders, and processors. Indirect contributions to poverty alleviation include greater community participation in management and decision-making processes, and increased gender equality through addressing the needs of women in coastal fisheries and trade.

Overall, the project built a solid foundation for reducing mortality and illegal/unsustainable trade in regulated/threatened species, which in turn will lead to healthier shark/ray populations and ecosystems, supporting more sustainable and productive fisheries and more secure livelihoods in the long term.

4.4 Gender Equality and Social Inclusion (GESI)

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	X
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

The project design ensured equity among partners, recipients of training, and potential beneficiaries, all within the framework of fisheries and trade, which are known to be male dominated. Three of the project partners (SU, Dr Rima Jabado and InOM) are led and dominated by women, while others (WCS, Mote Marine Laboratory) tasked one or more woman to implement this project. Female project partners include experts who provided training (e.g., Dr Jabado and SU) and those who received training (particularly InOM and the NHM).

The project supported gender equality in access to project benefits: 42% of 154 individuals trained were women (75% for one workshop), and each survey included female respondents (33% of all respondents in Tanzania and 14% in Mozambique). Building on these efforts, WCS's IWT proposal IWTR11S2_1045, submitted March 2025, includes an activity to further improve our understanding of women's roles in the shark and ray fisheries and trade.

During community engagement in Zalala Beach, Mozambique, a focus group was held for 10 women to gather information on how they participate and benefit from fishing and trading. This women-only group, led by two female WCS staff, allowed the participants to voice their real insights, opinions, and needs, without any potential bias or concern for repercussions that may have influenced the findings if men had been included. This facilitated a better understanding of how to accommodate woman's needs and possible threats/risks in the process of securing more sustainable fisheries.

In the Memba/Mossuril district, Mozambique, where catch surveys started in Year 2, a gender action plan was developed (partially supported by IWT) and implemented in June 2023. Under this plan, pairs (one man, one woman) of data collectors at each catch survey site received training, equipment, and support during the implementation of their activities; and six new CCPs were established across 17 fishing communities, with women comprising 60% of CCP leadership.

Notable project achievements in gender equity include conducting the woman's focus group in Zalala; ensuring women's participation in project trainings; achieving gender parity in data collection teams in Memba/Mossuril; and having women lead three of the five main project partner teams.

5. Monitoring and evaluation

There were no major changes to the project design. The change request in January 2024 made minor changes to the logframe (Annex 2). Most include the expansion of activities in the original proposal through new opportunities in Mozambique which we believe brought considerable extra value to the project's outcomes and impact and improved the project's value for money. These changes are a result of constant and adaptive M&E for this project, to ensure we deliver what we committed to, and to ensure good value for money. Specific changes to the logframe include the addition of the following activities (with SMART Indicators, Means of Verification and Important Assumptions in the logframe in Annex 2):

- 1.2b) By the end of Year 3, 20 government staff in Mozambique are trained on shark and ray identification and use of revised CITES identification guides, compared to zero agents currently (no agents in Mozambique have received training on the revised guides)
- 1.7b) By the end of Year 3, 5 lawyers/prosecutors and members of the judiciary in Mozambique have been trained on national and global policy for sharks and rays, compared to zero currently
- 2.1b) Informal fisher surveys are conducted in at least 3 sites in Mozambique to provide information on fishery dynamics, and other aspects.

The project's M&E system was practical and helpful. Most M&E was done by WCS as the success of the project and its outcomes are the lead organisation's responsibility. Irrespective of partner actions, WCS is ultimately accountable to DEFRA and IWTCF to deliver on the project. Having previously been let down by project partners, WCS took responsibility for most of the M&E work. SU conducted M&E linked to the genetic laboratory work. Project results and progress were shared periodically with partners and government (partner and non-partner) agencies, through virtual and in-person meetings, and a formal "end-of-project" feedback meeting with the Mozambique government (Annex 5.17). This final report will be shared with the British High Commission in Mozambique, following a request from Mr Leone Tarabusi (East Africa Regional Advisor for the Blue Planet Fund), at the British High Commission in Maputo. Our M&E tracked progress against logframe activities, indicators, and outputs, and activities outside this project. Our workplan with deadlines, responsible authority and actions needed for implementing, was adequate for achieving each output. For each activity, meetings were held with the project team, relevant partners, and experts who could assist with the best approach, to ensure effective delivery. Regular project meetings took place throughout the project. WCS project staff had multiple in-person meetings with Dr Jabado, Dr Chapman, Dr Bester-van der Merwe, and engaged frequently with DSFA and InOM.

The only external evaluation of the project occurred during the annual reporting periods. The project underwent two such reviews, both of which gave an Achievement of Outputs/Outcome Score of 2 (Likely to be largely achieved) and for the Year 2 review a Reporting Quality and Evidence Provision Score of 1 (Good) (there was no such score issued in the Year 1 review). Annual report review comments were useful for the project team – see Actions taken in response to Annual Report in Section 7 below.

6. Lessons learnt

The main lesson learned was to have outcome indicators that are more easily measurable and more appropriate to the timeline of the project, whilst still being ambitious.

Also, careful budget management made it possible to increase the numbers of participants for most workshops in this project, for greater capacity building. Securing experts as project partners during proposal development allowed most activities to start and be completed on time. Activities requested by governments tended to be implemented more easily, as they had immediate government support.

Activities not tasked to a specific project partner or that did not have a clearly defined mechanism for implementation, particularly those that were not time bound (e.g., genetic sample collection from seized shipments) were more difficult to manage and complete on time.

If we had the opportunity to repeat the project, outcome indicators would be more easily measurable and appropriate to the duration of the project, and each activity would be more clearly planned out, identifying from the outset all key role players and mechanisms for achieving each step of each deliverable.

Projects would benefit from 1) carefully designed and well linked indicators and activities, 2) early engagement with fishing communities and governments; and 3) clearly defining work plans, responsible parties and mechanisms for each activity, from the outset. As counter wildlife trafficking and trade controls operate over broad spatial scales, developing partnerships across multiple sectors is important.

We believe this project was well designed and achievable, albeit with an ambitious outcome. If we had followed our own guidance in the points above, the project may have been more efficiently implemented.

7. Actions taken in response to Annual Report reviews

We have received two annual report reviews, corresponding to Years 1 and 2. Actions to accommodate concerns raised by reviewers in the Year 1 report were thoroughly addressed in the Year 2 annual report. The Year 2 reviewer (see details Annex 5.16) noted that these issues had been successfully resolved, making the project easier to understand and clarifying the roles of all participants.

From the Year 2 report, the reviewer had one main comment. 1) *"It is noted the team have targeted gender equality with a significant proportion (44%) of women being included in training. It would be good to understand whether that is representative of employee gender splits or whether this has required targeted recruitment of female trainees and what the response has been to that"*.

Gender splits were partly reflective of both employee gender splits (for example three of five (60%) of the project partner teams being led and dominated by women (see section 11), but only one third (37%) of Tanzanian government agents trained in species identification being women), and the natural gender split within the fishery and trade sectors (e.g. 33% of trade survey respondents in Tanzania and 14% in Mozambique were women). However, we also made deliberate efforts to include women in community-based work. In Tanzania, efforts were made to ensure representation of all fisheries community groups, which often includes fish processors and gleaners - professions with a large female representation. In Mozambique, this included conducting dedicated focus group discussions with women only (Annex 5.9), ensuring their perspectives were heard in a safe and inclusive space. Notably, this was the only group that gave full consent for a group photo, showing the women's engagement, willingness to participate, and ownership of the process. In terms of data collection in Memba/Mossuril, Mozambique, a 50:50 gender split was targeted and achieved. Despite these efforts, in training sessions held with government entities, we recognize that there are systemic limitations beyond our control. Even though we requested gender balance in nominating individuals to attend the training, the reality is that female representation in some technical departments remains low. Moving forward, we will continue to raise awareness with our government partners about the importance of gender equity in trainings and workshops.

8. Risk Management

No risks not previously accounted for have arisen in the last Year, and no noted risks have become more serious, thus there was no need to amend the project or risk register. But, to manage two of the potential risks "Political will is limited, leading to poor uptake and implementation of the project's opportunities" and "Fishers are not willing to support more sustainable fishing practices or stricter regulations, making enforcement more challenging", we submitted two change requests (approved January 2024 and December 2024) to extend the project by six months and then a further three months, in Year 3, which allowed us to complete the planned activities effectively.

9. Scalability and Durability

At community level (resource users), long-term engagement throughout the project has given multiple platforms through which to share project information and recommendations, and to solicit opinions and suggestions for more sustainable practices. At government level, we engage continuously through project-focused meetings to work collaboratively with relevant government departments and share all findings with governments in each country. Scientific publications are shared with government partners prior to publication, for approval, awareness raising, and in certain instances co-authorship, and where possible published in open-access journals. Genetic sequences generated are uploaded to open access online genetic reference databases. In Mozambique, the main results and next steps of the project were presented at a final stakeholder feedback meeting (Annex 5.17) and summarized in a four-page brochure (Annex 5.18) that was shared with key stakeholders.

Several stakeholders have shown interest in the project, such as that from NHM to partner on genetic barcoding, and from INIP to receive training on species identification (new Activity 1.2b). After Year 1 identification training, the Tanzanian government requested further capacity building, so we expanded Activity 1.4 to provide training on the rapid genetic sequencer in Tanzania also. In Mozambique, the NHM showed an interest in genetic capacity, with a strong proposal that secured the installation of the rapid sequencer (Activity 1.3) at NHM, so we added two NHM technicians to the number proposed for the rapid genetic sequencer and genetic barcoding training (Activities 1.4 and 1.5). The Mozambique government requested further species identification training, which we provided in Year 3 (new Activity 1.2b). Fishing community members showed interest in the project's intended outcomes, evidenced through willingness to contribute and offer potential solutions, during community engagement activities (Annexes 5.9, 5.12). The NPOA-Sharks in both countries align well and will build on activities in this grant, showing the interest of multiple stakeholders in each country to align with this work.

The key stakeholders were considered from the outset. The project was designed to provide capacity for better enforcement of trade controls, which would in turn allow a balance between the social needs of coastal fishing communities and minimum ecological needs. Providing governments with tools to implement such an environment would benefit the resource managers. Having the tools to balance these needs will allow a more durable fishery and trade environment.

Several policy-related outputs were achieved (Objective 4 in section 3.2 and Annex I), including a gap analysis of legislation pertaining to fisheries and trade with recommendations for policy reform and draft revised national CITES legislation (in Mozambique), and proposed protected species lists and completed NPOA-Sharks in each country. These will lead to legal policy changes beyond the project's end.

Communities engaged showed a real interest, as noted in field reports. In Zalala, Mozambique, communities welcomed back the project team on each return visit and made valuable contributions to developing true "community-led" recommendations (Annex 5.9) for improving sustainability of fishing practices. Individuals receiving training showed evidence that they had learned considerably, with before-after assessments revealing improved knowledge for most individuals.

The project aimed to build technical capacity by providing new materials and equipment and supporting agents to deliver more effective enforcement, while capacity-building activities were intended to increase knowledge and skills of inspection staff for application during and after the project. Frequent application of training to real-life trade interventions should facilitate long-term retention of learned skills, while materials and equipment will remain in country for post-grant use. We have achieved this through delivering all training in excess of what was planned (see section 3.1 and Annex I) and by disseminating materials and tools as planned to remain in each country.

We have established functioning WhatsApp communication groups with multiple agencies in each country to support more rapid and accurate species identification, raised fundamental awareness across a diversity of stakeholders from resource users to management and enforcement agencies (including the judiciary in Mozambique), and provided tools and materials for long-term use in each country. Beyond this project, we continue to engage governments in both countries to support improved implementation of CITES and other measures for sharks and rays, and we are developing a WIO species identification guide to facilitate in-field identification of sharks and rays. To scale the work of this IWT project, we are planning to provide further species identification training, provide training-of-trainers to develop in-country capacity for species identification training, implement satellite-based technology to identify potential illegal fishing/trade activity, better understand trade dynamics and value chains, better understand gender roles in shark and ray fishing and trade, scale activities to industrial fisheries in the

region, support further policy reform, and engage with communities on alternative livelihoods to reduce pressure on threatened shark and ray species in Mozambique, Tanzania, Kenya and Madagascar (included in IWT proposal IWTR11S2_1045, submitted in March 2025).

Capacity built and tools provided for better enforcement will remain in country post-project and endure as long as these individuals remain in their roles. Working with communities and governments should secure long-term support from both, for improved local and national management measures to reduce mortality and allow more stable shark and ray populations post-project. Ultimately, the community-led and formal legal policy changes should endure, as they are the result of broad stakeholder outreach and engagement, and science-based policy and management recommendations.

The sustained legacy and impact of this project are long-term. Improved enforcement should benefit the resources in the long-term, through reduced illegal activities. Capacity built in this project will be retained and should be inexpensive to maintain. We will build further capacity in the future, including training of trainers in government agencies for in-country training capacity. We plan to scale activities and outputs from this project, in the future, to expand coverage and impact within Mozambique and Tanzania, and other WIO countries (through IWT proposal IWTR11S2_1045, submitted in March 2025).

No staff were brought on for this project only. Staff working on this project will continue to work on shark-related and other marine species conservation, through other WCS projects, including through a grant secured from the Shark Conservation Fund for combating illegal trade and improving spatial management for sharks and rays Mozambique, Tanzania, Kenya and Madagascar, and through proposed work in illegal trade in sharks the same countries (IWT proposal IWTR11S2_1045).

10. IWT Challenge Fund Identity

The IWTCF funding was recognised as a distinct project and has been named as a parallel grant (in some cases matched funds) in all project reports to other funders. The IWTCF is known in Tanzania and Mozambique, with government partners in both engaged during proposal preparation. Project IWT116 is known to the DSFA, TAFIRI and Department of Fisheries in Tanzania; and to InOM, NHM, INIP, ADNAP, Centre for Marine Research and Technology (Eduardo Mondlane University), the District Services of Economic Activities, and Public Protectors Office, in Mozambique, and was made known to the British High Commission in both countries. The project does not have any social media platforms. The UK Government's contribution to this project work has been acknowledged (with logo for most) as follows:

- A popular [article](#) published at Medium
- As a significant contribution to work on reducing illegal shark and ray trade in the project countries, during global planning meetings of several NGO stakeholders and funders working on shark and ray conservation (New York, Geneva 2023; Belize, New York 2024)
- Sensitization meetings with fishing communities and fisheries enforcement agencies, and during community engagement meetings with fishing communities, in Mozambique
- Species identification (Tanzania and Mozambique), rapid genetic sequencer (Tanzania and Mozambique) and genetic barcoding (South Africa) training workshops in Year 1 and Year 2
- Presentations (2) at Southern African Shark and Ray Symposium (South Africa, Oct 2023)
- Presentation at Indo-Pacific Fish Conference (New Zealand, Nov 2023)
- Presentation at Nairobi Convention Science to Policy meeting (Mozambique, Dec 2023)
- Several presentations delivered by students from the SU genetics laboratory
- Project brochure disseminated across a diverse stakeholder group in Mozambique (Annex 5.18)
- National workshop to strengthen awareness and knowledge of national and international measures for sharks/rays, with 26 senior staff and managers from 15 different state institutions in Mozambique involved in conservation and management of sharks and rays (March 2025, Annex 5.10)
- Final project feedback meeting to government agencies in Mozambique (March 2025, Annex 5.17)

11. Safeguarding

12. Finance and administration

12.1 Project expenditure

Project spend (indicative) since last Annual Report	2024/25 Grant (£)	2024/25 Total actual IWTCE Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	115,593	112,407		

Staff employed (Name and position)	Cost (£)
Rhett Bennett - WCS WIO Shark Program Manager	
Dave van Beuningen - WCS WIO Shark Program Assistant	
Hugo Costa - WCS MZ Marine Program Director	
Rosalina Cossa - WCS MZ Marine Project Assistant	
Jorge Siteo - WCS MZ Marine Project Assistant	
Abdallah Abdulla - Research Assistant Tanzania	
TOTAL	

Capital items – description	
N/A	Capital items – cost (£)
TOTAL	

Other items – description	Other items – cost (£)
Consumables	
Communication materials (roll-up, poster, brochure)	
Lawyer fees	
Audit fees	
TOTAL	

12.2 Additional funds or in-kind contributions secured

Matched funding leveraged by the partners to deliver the project	Total (£)
WCS_2022-23	
WCS_2023-24	
WCS_2024-25	
TOTAL	

Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project	Total (£)
TOTAL	

12.3 Value for Money

The project provided good value for money. The project fully achieved almost all planned outputs, and in most cases delivered more than proposed. For example, the proposal was to train at least 20 Tanzanian government agents on species identification, while the project trained 23 female and 39 male agents in Tanzania, along with 11 female and 14 male agents in Mozambique (no training was originally planned for Mozambique). The project aimed to train 5 Mozambican delegates on the use of the rapid sequencer, while the project trained 7 females and 3 males in Mozambique, as well as 6 females and 7 males in Tanzania (no sequencer training was originally planned for Tanzania). In addition, 4 delegates from Mozambique received sequencing training in South Africa, instead of the proposed 2.

The change request approved in January 2024 made minor changes to the logframe (Annex 2), most of which involved expansion of activities in the original proposal to include new opportunities in Mozambique not originally planned, such as policy awareness raising with the judiciary, additional trade dynamics surveys, and species identification training for 25 Mozambican government agents (building on training funded through CEFAS in 2021). We believe that implementing these changes and being dynamic with funding and project management brought considerable extra value to the project's outcomes and impact and improved value for money. The outputs and outcomes are also intended to leave an impact beyond the life of the project, and the activities provide a platform for scaling both within Mozambique and Tanzania, and to other WIO countries.

13. Other comments on progress not covered elsewhere

The project design in general did not change over the life of the project, although minor changes were made to the logframe, to allow for additional activities and to accommodate challenges such as weather-related delays or delays due to political instability. There were no changes to the exit strategy, other than to leave more people trained than planned, and to ensure that the project ended as a platform for scaling successful activities. There were no major challenges, although effecting policy change is slow, and the policy change outputs will be realised beyond the end of the project. There are no other issues to raise.

14. OPTIONAL: Outstanding achievements of your project (300-400 words maximum). This section may be used for publicity purposes

I agree for the Biodiversity Challenge Funds to edit and use the following for various promotional purposes (please leave this line in to indicate your agreement to use any material you provide here).

The project has enhanced capacity in Mozambique and Tanzania for enforcement of fishery and trade controls for sharks and rays. A series of workshops in Tanzania in 2022 and 2023, delivered by Dr Rima Jabado, provided training for 62 government staff (23 females and 39 males) on shark and ray species identification. A further series of workshops in 2023, delivered by Valerie Hagan of Mote Marine Laboratory, provided training for 10 technicians (7 female, 3 male) in Mozambique and 13 (6 female and 7 male) in Tanzania, on the use of a rapid genetic sequencer and specific methods for confirming species of sharks and rays from unidentified products in trade, in near real time. Four Mozambican technicians (3 female, 1 male) were trained on standard genetic barcoding for species identification, during a two-week training course in the Stellenbosch University Department of Genetics, in South Africa. Landing site surveys conducted over two years have provided species-level data on sharks and rays landed in coastal fisheries, while trader surveys have provided information on shark and ray trade dynamics. Genetic barcoding, conducted at SU, has provided molecular confirmation of shark and ray species landed in the fisheries, and (through sampling of confiscated products) those being illegally exported. Mozambique's legislation was reviewed to identify gaps for policy reform for sharks and rays, including a review and draft revision of the current CITES legislation, while high level fishery management authorities (including members of the judiciary and the Public Protector's Office) were sensitized to national and international policy for shark and ray conservation. The information and outputs from this project are supporting engagement with local fishing communities and national governments in Mozambique and Tanzania and will help to inform strengthened measures for reduced mortality and illegal trade in sharks and rays, for healthier populations.

We have no photos or videos for reasons of sensitivity.

Annex 1 Report of progress and achievements against logframe for the life of the project

Project summary	Progress and achievements
Impact Reduced mortality and illegal trade in regulated species, which in turn lead to healthier shark/ray populations and ecosystems, which support improved fisher catches, more sustainable fisheries and more secure livelihoods	The impact will be realised beyond the end of the project. This is a long-term impact. Furthermore, the outcome indicators were not fully realised during the project (as noted in section 3), as these were also ambitious for the project's time frame. However, with the capacity built, guiding policy, and stakeholder support, we have laid a solid foundation for improved enforcement and improved willingness by fishers for more sustainable practices, putting in place the necessary first steps towards realising the impact in the future.
Outcome Improved capacity for effective enforcement, improved fishery and trade knowledge, and fisher and government support for improved management facilitate reduced illegal trade in regulated/threatened shark/ray species, in Mozambique and Tanzania	
Outcome indicator 0.1 By 2024, fisheries mortality of threatened/prohibited species has reduced by 25% against 2020/2021 data	This indicator was partially achieved. In Mozambique, the catch rate and proportion of threatened sharks and rays declined, based on landing site surveys of the artisanal fishery, and there were no prohibited species recorded landed during the project. In Tanzania, there was no change in the catch rate or proportion of threatened sharks and rays, or the proportion of prohibited sharks and rays, based on landing site surveys of the artisanal fishery. (Annex 5.16)
Outcome indicator 0.2 By 2024, illegal trade in prohibited/CITES species has reduced by 25% against 2020/2021 data	This indicator was also partially achieved. In Mozambique, CITES trade data suggest a decrease in the traded volumes of one CITES-listed species, group but were inconclusive for another due to data not reported to species level. In seizures of fins illegally exported from Mozambique, the proportion of prohibited species decreased from before the project, to zero in the two confiscations made during the project; however, the proportion of CITES-listed species in the seizures has not declined. In Tanzania, there were minimal data available on trade. The only data indicating exports from Tanzania were Hong Kong imports, of which 100% were fins, but not broken into taxonomic groups, so no information was available to assess the proportions of prohibited or CITES-listed species being traded. (Annex 5.16)
Output 1 Customs agents and fisheries inspectors have improved resources and capacity for visual and molecular identification of, and national and global policy pertaining to, illegal shark and ray species in fisheries and trade, and species subject to trade controls	
Output indicator 1.1 By the end of Year 1, CITES shark/ray identification guides in local language are printed and disseminated to 50 agents in Tanzania (already underway in Mozambique), compared to zero agents currently	50 copies of each of three volumes of the CITES ID guides (whole animals, trunks, dried products) were printed and disseminated to agents in Tanzania in Y1, and a further 43 copies of the "whole animal" volume were disseminated during later trainings in Y1. 50 copies of each volume were also printed in Portuguese and disseminated in Mozambique. Each country also received a set of 3D-printed CITES-listed shark species fins produced by TRAFFIC, for identification training.

Output indicator 1.2 By the end of Year 1, 20 government staff in Tanzania trained on shark and ray identification and use of CITES identification guides (already completed in Mozambique), compared to zero agents currently (to our knowledge no agents in Tanzania have received such training)	By the end of Year 1, 62 government staff (39 male, 23 female) from 21 government agencies, as well as 11 WCS data collectors, had been trained on shark and ray identification (Annex 5.5).
Output indicator 1.2b By the end of Year 3, 20 government staff in Mozambique are trained on shark and ray identification and use of revised CITES identification guides, compared to zero agents currently (no agents in Mozambique have received training on the revised guides)	By the end of Year 3, 25 inspectors (14 male, 11 female) from 2 organizations in Mozambique had been trained on shark and ray identification (Annex 5.6).
Output indicator 1.3 By the end of Year 2, a rapid genetic sequencer for CITES listed shark/ray species is installed and operational in Mozambique, the first ever in Mozambique	By the of Year 2, a rapid genetic sequencer was installed in Mozambique, and an additional sequencer was secured and installed in Tanzania (Annex 5.11)
Output indicator 1.4 By the end of Year 2, 5 staff in Mozambique trained on use of rapid genetic sequencer, compared to zero staff trained on the use of a rapid genetic sequencer	By the end of Year 2, 10 individuals (3 male, 7 female) in Mozambique trained on use of rapid genetic sequencer, as well as 13 (7 male, 6 female) in Tanzania (Annex 5.2)
Output indicator 1.5 By the end of Year 2, 2 government technicians from Mozambique trained in genetic barcoding for species identification, compared to zero technicians currently (to our knowledge no technicians in Mozambique have received dedicated training in this field)	By the end of Year 2, 4 government technicians (1 male, 3 female) from Mozambique had been trained in genetic barcoding for species identification (Annex 5.1)
Output indicator 1.6 By the end of Year 2, a mobile phone-based communication platform is developed and operational, the first of its kind for sharks and rays in these two countries	By the end of Year 2, the mobile phone-based communication platform was developed and operational in Tanzania, and by the end of Year 3 in Mozambique
Output indicator 1.7 By the end of Year 3, fisheries and inspection agents are trained on use of the mobile phone-based communication platform, compared to zero technicians currently.	By the end of Year 2, technicians in Tanzania had been trained to use the mobile phone-based communication platform, and by the end of Year 3 in Mozambique
Output indicator 1.7b By the end of Year 3, 5 lawyers/prosecutors and members of the judiciary in Mozambique have been trained on national and global policy for sharks and rays, compared to zero currently.	By the end of Year 3, 26 (16 male, 10 female) lawyers, prosecutors, members of the judiciary, and senior fisheries managers, in Mozambique had been sensitized to national and global policy for sharks and rays (Annex 5.10)
Output 2. There is increased information and knowledge of threatened shark/ray species caught and traded, including new species-level catch and trade data through project surveys and genetic validation of species recorded, to support enforcement	
Output indicator 2.1. Coastal fisheries catch surveys are conducted weekly in at least 5 sites in each country to increase information on CITES and threatened shark/ray species caught in coastal fisheries	Shark and ray catch surveys were planned for 5 sites per country and took place at 8 sites in Tanzania and 7 sites in Mozambique throughout Year 1, and 7 sites and 5 sites respectively during Year 2. Seven new sites were started in the Memba/Mossuril district in Mozambique in July 2023. Catch surveys ran until the start of Year 3 in Mozambique and the end of Year 3 in Tanzania.

Output indicator 2.1b Informal fisher surveys are conducted in at least 3 sites in Mozambique to provide information on fishery dynamics, and other aspects	By the end of Year 3, informal fisher surveys had been conducted in 1 site in Mozambique. A second site had been surveyed opportunistically in Year 2, that was a driver for the change request to add in these surveys in Year 3, thus making a total of 2 sites surveyed.
Output indicator 2.2 Trade surveys are conducted by the end of Year 2 to improve knowledge on trade in shark/ray products	By the end of Year 2, trade surveys were conducted with 48 traders, sellers and fishers in Tanzania and 70 in Mozambique, and trade data from Hong Kong, Singapore and Taiwan were obtained. By the end of Year 3, updated import data from these countries were obtained for comparison.
Output indicator 2.3 Genetic barcoding of samples collected during fishery and trade surveys is conducted to improve knowledge of shark/ray species in trade	Genetic barcoding of sharks and rays landed in Mozambique's and Tanzania's coastal fisheries, and those from trade seizures, continued throughout the project, with >500 tissue samples sequenced (Annex 5.7)
Output 3. A scoping study is undertaken to evaluate whether and how observer programs could be implemented, to expand catch/fishery monitoring to commercial and industrial vessels	
Output indicator 3.1 By the end of Year 2, a scoping study with government agencies and commercial/industrial fisheries companies is completed to understand needs and risks of developing and implementing an observer program.	By the end of Year 2, a scoping study was completed in Mozambique and Tanzania, and a report prepared that details needs and risks of national observer programs in each (Annex 5.3).
Output indicator 3.2 By the end of the project, a strategy for implementing commercial/industrial scale data collection through observer programs is developed	By the end of Year 2, a strategy for improving onboard observer programs for national commercial/industrial fisheries in Mozambique and Tanzania had been prepared (Annex 5.4)
Output 4. Improved regulatory framework for sharks and rays, and support from local fishing communities to adhere to improved or strengthened fishery and trade regulations	
Output indicator 4.1 By the end of the project, there is support for strengthened local fishery and trade regulations in target fishing communities, through the inclusion of fishery and trade measures in community management plans.	By the end of the project, a micro-MSP is in place in Tanzania (Annex 5.15), covering 18 fishing communities, and accepted by the fishing communities and government. Recommendations have been developed for community management plans in two areas in Mozambique, encompassing 5 and 17 fishing communities, with the former (5 communities) developing 25 (mostly community led) recommended actions (Annex 5.9). Recommendations for reduced bycatch in this site have also been developed (Annex 5.13).
Output indicator 4.2 By the end of the project there is a draft regulation in place or amendment to existing regulations to support improved or strengthened fishery and trade regulations	By the end of the project, in Mozambique, there is a draft set of proposed changes to national legislation and policy (Annex 5.14), for sharks and rays, along with draft revised CITES national legislation. The micro-MSP in Tanzania (Annex 5.15) contributes a formal policy for spatial management. Both countries have completed NPOA-Sharks.

Annex 2 Project's full current logframe as presented in the application form (unless changes have been agreed)

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: Reduced mortality and illegal trade in regulated species, which in turn lead to healthier shark/ray populations and ecosystems, which support improved fisher catches, more sustainable fisheries and more secure livelihoods (Max 30 words)			
Outcome: Improved capacity for effective enforcement, improved fishery and trade knowledge, and fisher and government support for improved management facilitate reduced illegal trade in regulated/threatened shark/ray species, in Mozambique and Tanzania	0.1 By 2024, fisheries mortality of threatened/prohibited species has reduced by 25% against 2020/2021 data 0.2 By 2024, illegal trade in prohibited/CITES species has reduced by 25% against 2020/2021 data	0.1 Inspected catch records which contain fewer threatened/prohibited species 0.2 Inspected shipment records which reveal fewer prohibited/ CITES-listed shark products	0.1 Reduced proportions in catches reflect reduced targeting or capture, not further population decline (indirectly validated through ongoing fishery-independent ecological studies) 0.2 Trade routes have not changed in avoidance of new enforcement measures
Outputs: 1. Customs agents and fisheries inspectors have improved resources and capacity for visual and molecular identification of, and national and global policy pertaining to, illegal shark and ray species in fisheries and trade, and species subject to trade controls	1.1 By the end of Year 1, CITES shark/ray identification guides in local language are printed and disseminated to 50 agents in Tanzania (already underway in Mozambique), compared to zero agents currently 1.2 By the end of Year 1, 20 government staff in Tanzania trained on shark and ray identification and use of CITES identification guides (already completed in Mozambique), compared to zero agents currently (to our knowledge no agents in Tanzania have received such training) 1.2b By the end of Year 3, 20 government staff in Mozambique are trained on shark and ray identification and use of revised CITES identification guides, compared to zero agents currently (no agents in Mozambique have received training on the revised guides) 1.3 By the end of Year 2, a rapid genetic sequencer for CITES listed shark/ray species is installed and operational in Mozambique, the first ever in Mozambique 1.4 By the end of Year 2, 5 staff in Mozambique trained on use of rapid genetic sequencer, compared to zero staff trained on the use of a rapid genetic sequencer 1.5 By the end of Year 2, 2 government technicians from Mozambique trained in genetic	1.1 Distribution lists (disaggregated by sex) 1.2 and 1.2b Training terms of reference, participant list (disaggregated by sex) 1.3 Genetic sequencing reports, photos 1.4 Training terms of reference, participant list (disaggregated by sex) 1.5 Training terms of reference, participant list (disaggregated by sex) 1.6 Project reports 1.7 and 1.7b Training terms of reference, participant list (disaggregated by sex)	1.1 – 1.5 Staff take up the knowledge shared during training to become able to identify to species level and to undertake molecular laboratory-based analysis. 1.6 – 1.7 Shark identification experts are willing to offer expertise and rapid responses to allow communication platform to be effective. 1.7b Participants take up knowledge shared during training on national and global policy for sharks and rays

	<p>barcoding for species identification, compared to zero technicians currently (to our knowledge no technicians in Mozambique have received dedicated training in this field)</p> <p>1.6 By the end of Year 2, a mobile phone-based communication platform is developed and operational, the first of its kind for sharks and rays in these two countries</p> <p>1.7 By the end of Year 3, fisheries and inspection agents are trained in using the mobile phone-based communication platform, compared to zero technicians currently.</p> <p>1.7b By the end of Year 3, 5 lawyers/prosecutors and members of the judiciary in Mozambique have been trained on national and global policy for sharks and rays, compared to zero currently.</p>		
<p>2. There is increased information and knowledge of threatened shark/ray species caught and traded, including new species-level catch and trade data through project surveys and genetic validation of species recorded, to support enforcement</p>	<p>2.1 Coastal fishery catch surveys are conducted weekly in at least 5 sites in each country to increase information on CITES and threatened shark/ray species caught in coastal fisheries</p> <p>2.1b Informal fisher surveys are conducted in at least 3 sites in Mozambique to provide information on fishery dynamics, and other aspects</p> <p>2.2. Trade surveys are conducted by the end of Year 2 to improve knowledge on trade in shark/ray products</p> <p>2.3 Genetic barcoding of samples collected during fishery and trade surveys is conducted to improve knowledge of shark/ray species in trade</p>	<p>2.1 Catch dataset with photographs, and species-level information</p> <p>2.1b Field reports</p> <p>2.2 Datasets from trade surveys, and schematic representations of product value chains</p> <p>2.3 Datasets of genetic sequences confirming species genetically analysed</p>	<p>2.1-2.2 Results are dependent on fishers agreeing to share relevant information, some of which is sensitive. But previous such surveys suggest that fishers are generally forthcoming with information</p> <p>2.3 Assumes fishers and traders will be willing to allow data collectors to collect biological material to allow analysis, but previous sampling suggests that will not likely be a problem</p>
<p>3. A scoping study is undertaken to evaluate whether and how observer programs could be implemented, to expand catch/fishery monitoring to commercial and industrial vessels</p>	<p>3.1 By the end of Year 2, a scoping study with government agencies and commercial/industrial fisheries companies is completed to understand needs and risks of developing and implementing an observer program.</p> <p>3.2 By the end of the project, a strategy for implementing commercial/industrial scale data collection through observer programs is developed</p>	<p>3.1 Scoping report detailing assessments of risks, engagement with governments and industry, proposed operational plan and proposed budget.</p> <p>3.2 Implementation strategy for industrial scale data collection</p>	<p>3.1. Requires willingness of governments and fishing industry to engage. WCS support for implementing such observer programs has been called for by governments in both countries, therefore government support should be forthcoming. The fishing industry will be encouraged to collaborate</p> <p>3.2 Assumes that an observer program is financially and logistically feasible</p>

4. Improved regulatory framework for sharks and rays, and support from local fishing communities to adhere to improved or strengthened fishery and trade regulations	4.1 By the end of the project, there is support for strengthened local fishery and trade regulations in target fishing communities, through the inclusion of fishery and trade measures in community management plans. 4.2 By the end of the project there is a draft regulation in place or amendment to existing regulations to support improved or strengthened fishery and trade regulations	4.1 Stronger fishery and trade measures are included in the community-managed fishing area management plans 4.2 Draft regulation or amendment to existing regulations which are supported by the Government	4.1. Assumes a basic willingness by fishing communities to shift to sustainable practices/levels of fishing. 4.2. Assumes government processes are not so slow as to delay the outcomes.
<p>Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)</p> <p>Output 1: Customs agents and fisheries inspectors have improved resources and capacity for visual and molecular identification of illegal shark and ray species in fisheries and trade, and species subject to trade controls</p> <p>Activity 1.1 CITES shark/ray identification guides in local language are printed and disseminated to agents in Tanzania</p> <p>Activity 1.2 Government staff in Tanzania trained on shark and ray identification and use of CITES identification guides</p> <p>Activity 1.2b Government staff in Mozambique trained on shark and ray identification and use of revised CITES identification guides</p> <p>Activity 1.3 Rapid genetic sequencer for CITES listed shark/ray species is installed and operational in Mozambique</p> <p>Activity 1.4 Government staff in Mozambique trained on use of rapid genetic sequencer</p> <p>Activity 1.5 Government technicians from Mozambique trained in genetic barcoding for species identification</p> <p>Activity 1.6 Mobile phone-based communication platform is developed and operational</p> <p>Activity 1.7 Fisheries and inspection agents are trained on use of the mobile phone-based communication platform</p> <p>Activity 1.7b Lawyers/prosecutors/judiciary in Mozambique trained on national and global policy for sharks and rays</p> <p>Output 2: There is increased information and knowledge of threatened shark/ray species caught and traded, including new species-level catch and trade data through project surveys and genetic validation of species recorded, to support enforcement</p> <p>Activity 2.1 Coastal fishery catch surveys are conducted in each country to increase information on CITES and threatened shark/ray species caught in coastal fisheries</p> <p>Activity 2.1b Informal fisher surveys are conducted in Mozambique to provide information on <i>inter alia</i> fishery dynamics</p> <p>Activity 2.2 Trade surveys are conducted to improve knowledge on trade in shark/ray products</p> <p>Activity 2.3 Genetic barcoding is conducted to improve knowledge of shark/ray species in trade</p> <p>Output 3. A scoping study is undertaken to evaluate whether and how observer programs could be implemented, to expand catch/fishery monitoring to commercial and industrial vessels</p> <p>3.1 A scoping study with government agencies and commercial/industrial fisheries companies is completed to understand needs and risks of developing and implementing an observer program</p> <p>3.2 A strategy for implementing commercial/industrial scale data collection through observer programs is developed</p> <p>Output 4: Improved regulatory framework for sharks and rays, and support from local fishing communities to adhere to improved or strengthened fishery and trade regulations</p> <p>4.1 Engagement with local fishing communities to gain commitment to supporting and adhering to local fishery and trade regulations</p> <p>4.2 Governments are engaged to develop draft regulations or amendments to existing regulations, to support improved or strengthened fishery and trade regulations</p>			

Annex 3 Standard Indicators

Table 1 Project Standard Indicators

IWTCF Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (shark and ray species identification, and use of a mobile-phone platform for real-time species confirmations, Tanzania, Activity 1.2)	People	Women, Tanzania	23			23	10
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (shark and ray species identification, and use of a mobile-phone platform for real-time species confirmations, Tanzania, Activity 1.2)	People	Men, Tanzania	39			39	10
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (shark and ray species identification, and use of revised CITES identification guides, Mozambique, Activity 1.2b)	People	Women, Mozambique			11	11	0
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (shark and ray species identification, and use of revised CITES identification guides, Mozambique, Activity 1.2b)	People	Men, Mozambique			14	14	0
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (use of rapid genetic sequencer for <i>in situ</i> species confirmation, Mozambique, Activity 1.4)	People	Women, Mozambique		7		7	2-3
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (use of rapid genetic sequencer for <i>in situ</i> species confirmation, Mozambique, Activity 1.4)	People	Men, Mozambique		3		3	2-3
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (use of rapid genetic sequencer for <i>in situ</i> species confirmation, Tanzania, Activity 1.4)	People	Women, Tanzania		6		6	0
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (use of rapid genetic sequencer for <i>in situ</i> species confirmation, Tanzania, Activity 1.4)	People	Men, Tanzania		7		7	0
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (genetic barcoding of unidentifiable shark/ray meat/fin products, Mozambique, Activity 1.5)	People	Women, Mozambique		3		3	1
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (genetic barcoding of unidentifiable shark/ray meat/fin products, Mozambique, Activity 1.5)	People	Men, Mozambique		1		1	1

IWTCF Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (use of a mobile-phone platform for real-time species confirmations, Mozambique, Activity 1.7)	People	Women, Mozambique			5	5	5
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (use of a mobile-phone platform for real-time species confirmations, Mozambique, Activity 1.7)	People	Men, Mozambique			9	9	5
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (Lawyers/prosecutors/judiciary in Mozambique trained on national and global policy for sharks and rays, Mozambique, Activity 1.7b)	People	Women, Mozambique				10	0
IWTCF-D01	Number of people from eligible countries who have received structured and relevant training (Lawyers/prosecutors/judiciary in Mozambique trained on national and global policy for sharks and rays, Mozambique, Activity 1.7b)	People	Men, Mozambique				16	0
IWTCF-D15	Number of new/improved community management plans available and endorsed (community management plans with improved measures for sharks and rays, Tanzania, Activity 4.1).	Number	Tanzania			1	1	1
IWTCF-D15	Number of new/improved community management plans available and endorsed (community management plans with improved measures for sharks and rays, Mozambique, Activity 4.1).	Number	Mozambique				0	1
IWTCF-D16	Number of best practice guides and knowledge products (i.e. product identification etc.) published and endorsed (Implementation strategy for improving the national fishery observer program, Mozambique, Activity 3.2)	Number	Mozambique		1		1	1
IWTCF-D16	Number of best practice guides and knowledge products (i.e. product identification etc.) published and endorsed (Implementation strategy for improving the national fishery observer program, Tanzania, Activity 3.2)	Number	Tanzania		1		1	1
IWTCF-B16	Number of policies and frameworks developed or formally contributed to by projects and being implemented by appropriate authorities (micro-MSP in place including strengthened fishery measures, Pemba, Tanzania, Activity 4.2).	Number	Tanzania			1	1	1
IWTCF-B16	Number of policies and frameworks developed or formally contributed to by projects and being implemented by appropriate authorities (draft regulation in place or amendment to existing regulations to support improved or strengthened fishery and trade regulations, Mozambique, Activity 4.2).	Number	Mozambique			1	1	1
IWTCF-B17	Number of databases established that are used for law enforcement. (Catch data, trade data, genetic sequence database, Tanzania, Activities 2.1, 2.2, 2.3)	Number	Tanzania			3	3	3

IWTCF Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
IWTCF-B17	Number of databases established that are used for law enforcement. (Catch data, trade data, genetic sequence database, Mozambique, Activities 2.1, 2.1b, 2.2, 2.3)	Number	Mozambique			3	3	3
IWTCF-C05	Number of government institutions/ departments with enhanced awareness and understanding of biodiversity and associated poverty issues. (Tanzania, determined as number of institutions/departments with representatives attending awareness meetings; Y2 excludes institutions/departments counted in Y1)	Government institutions	Mozambique		11		11	5
IWTCF-C05	Number of government institutions/ departments with enhanced awareness and understanding of biodiversity and associated poverty issues. (Mozambique, determined as number of institutions/departments with representatives attending awareness meetings; Y3 excludes institutions/departments counted in Y2 and Y1)	Government institutions	Country	4	1	15	15	5
IWTCF-D04	Number of local/national organisations with improved capability and capacity as a result of the project (Tanzania).	Government institutions	Tanzania	11	5		21	5
IWTCF-D04	Number of local/national organisations with improved capability and capacity as a result of the project (Mozambique).	Government institutions	Mozambique	8	1	6	15	5

Table 2 Publications

Title	Type (e.g. journals, best practice manual, blog post, online videos, podcasts, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Safeguarding Livelihoods and Shark and Ray Populations in Mozambique *	Blog post	Naseeba Sidat (WCS), 2023	Female	Mozambican	Medium, online	Safeguarding Livelihoods and Shark and Ray Populations in Mozambique by Wildlife Conservation Society Our Ocean, Our Future Medium

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the correct template (checking fund, type of report (i.e. Annual or Final), and year) and deleted the blue guidance text before submission?	Yes
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	No
Is your report more than 10MB? If so, please consider the best way to submit. One zipped file, or a download option, is recommended. We can work with most online options and will be in touch if we have a problem accessing material. If unsure, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	Yes, attachments sent via wetransfer
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 14)?	No photos
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Have you provided an updated risk register? If you have an existing risk register you should provide an updated version alongside your report. If your project was funded prior to this being a requirement, you are encouraged to develop a risk register.	Yes
Have you involved your partners in preparation of the report and named the main contributors?	Where appropriate
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	