Illegal Wildlife Trade (IWT) Challenge Fund Evidence: 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.

Submission Deadline: no later than 3 months after agreed end date.

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IWT Challenge Fund Project Information

Project reference	IWTEV009
Project title	Gathering evidence to address illegal trade in African fish maws
Country(ies)	Senegal, Gabon, Madagascar, and Hong Kong Special Administrative Region of China (match-funding)
Lead Organisation	TRAFFIC International
Project partner(s)	NA
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Project Leader's name	Simone Louw
Project website/blog/social media	https://www.traffic.org
Report author(s) and date	Simone Louw & Markus Burgener

1. Project summary

The fish maw trade is a complex issue that has conservation, resource management, and governance concerns that extend from small-scale fisheries through the market chain to the end consumer demand. The lure of high returns in the short term at the expense of the long-term sustainability of stocks is a temptation for many small-scale fishers living in Africa, and the very high value obtained by certain fish maws is a major incentive for uncontrolled and illegal trade. Left unmanaged, this could lead to the collapse of fish stocks, a valuable source of protein for coastal and inland communities in Africa.

Illegal fish maw trade will also undermine an important opportunity for legal and sustainable catch and export of high-value maws, which has the potential to make a positive contribution to the livelihoods of African fishers, processors, and traders. It would also generate State revenue by taxes on legitimate fish maw exports, which are currently going undetected from most African countries.

However, information on fish maw catches, fishing gear (e.g., gillnets), trade dynamics such as the supply and value chain, and the associated livelihood implications, especially for maws traded from Africa, is extremely limited. There is no information on the harvesting of maw from marine fishing along the African coastline, yet import data indicate a growing supply from the continent.

Recent evidence also suggests maws are increasingly being used as a substitute for shark fins. This shift may become even more evident after the recent CITES listings that now see more than 70% of international shark trade regulated under CITES. As the maw trade expands, it is imperative to understand

which species are being targeted and the level of threat posed both to fish populations and the livelihoods of coastal fishers, dependent on healthy fish stocks.

Across Asia and Africa, there is a diversity of species known to be used for their fish maws, especially members of the croaker (Sciaenidae) family. However, in recent years, there has been a growing concern that the demand for croakers may be increasing and resulting in intensifying small-scale fisheries, and as a result, the IUCN World Congress published a new resolution (in 2021) on controlling and monitoring the trade in croaker swim bladders. The IUCN World Congress has urged members to document catches of croakers and exports of fish maws from major source countries and encouraged states to incorporate specific provisions regulating these fisheries that are vital to local livelihoods, food security, and national economies.

From a social and economic perspective, the high value of fish maw can be an important boost to the incomes of small-scale fishers. Managed properly, such a boost would be a welcome source of revenue, but in the unregulated and open-access fisheries that are common in many African countries, coupled with weak governance and the very high unit value of certain maw types, the potential for illegal capture and trade is high.

This project aims to investigate and gather evidence on the fish maw trade in major source countries such as Senegal, Gabon, and Madagascar, including one major consumer destination: Hong Kong Special Administrative Region of China (SAR). This information is currently lacking for these countries and will greatly contribute towards ensuring effective legal frameworks and deterrents that are not in place for the growing fish maw trade in Africa.

2. Project Partnerships

The Fish Maw Project is international, multidisciplinary, and highly collaborative in nature. Effective collaboration with various consultants and stakeholders was essential to achieving the project's objectives in each target country and to ensuring the overall success of the initiative. These collaborators enabled the sharing of knowledge, resources, and expertise, which strengthened the project's outcomes.

Consultants

- **The Institute of Marine Sciences (IHSM)** in Toliara, Madagascar, served as the local consultant for this project. Six students, under the supervision of senior lecturers, conducted fieldwork across three regions in western Madagascar, supported by local guides. The surveys aimed to better understand the dynamics of the fish maw supply chain and to identify the fish species involved in the trade. The university's participation proved highly valuable, as fishermen were more willing to engage with the students and share their knowledge about the trade. This marked the first time the fish maw trade had been studied by students in Madagascar, offering the university a unique opportunity to build expertise in this area and potentially develop long-term research initiatives for ongoing monitoring of the fish maw trade in Madagascar.

- **The Interprofessional Council for Artisanal Fisheries in Senegal (CONIPAS)** played a key role in this project by offering invaluable local expertise and insights into the dynamics of Senegal's artisanal fisheries. As a well-established and trusted organisation, CONIPAS facilitated survey implementation along various points of the Senegalese coastline, leveraging its strong network of local contacts and in-depth understanding of the sector. Their support was instrumental in gaining access to fishing communities and collecting reliable data on the fish maw trade.

  In addition to logistical and technical support, CONIPAS brings significant credibility and influence on the project. The organisation maintains strong relationships with both government authorities and local fishing communities, positioning it as an effective intermediary for communicating the project's findings and advocating for evidence-based policy recommendations. Looking ahead, CONIPAS is expected to play a central role in promoting further research, stakeholder engagement, and sustainable management of the fish maw trade in Senegal.

- **Independent consultants** - experienced fisheries researchers from Gabon and Cameroon were engaged to carry out field surveys for this project in Gabon. The research team consisted of a

Gabonese female fisheries expert with extensive knowledge of the fish maw trade and a Cameroonian male researcher. Together, they conducted interviews with traders and surveyed stakeholders at various fish landing sites across the country.

The inclusion of a male-female research team brought a valuable dynamic to the fieldwork. In particular, the presence of a female researcher created a more comfortable environment for women involved in the fish maw supply chain to participate in the study and share their experiences. This gender-inclusive approach enabled the research to capture a broader and more nuanced understanding of the trade, including the often-overlooked roles that women play in processing, trading, and local decision-making. This was a significant contribution to the project, offering insights that might otherwise have gone undocumented in Gabon's context.

- **Stellenbosch University (Genetics lab):** From the outset of the project, TRAFFIC has maintained regular collaboration with the Genetics Department at Stellenbosch University to support the DNA analysis of fish maw samples. Given the highly processed and degraded state of the fish maw tissue, extracting viable DNA has presented significant challenges. To address these limitations, the research team at Stellenbosch have been exploring alternative approaches, including the identification and use of specific isotopes that may enhance the success rate of DNA extraction and analysis. This work has been informed by existing research, particularly studies conducted by the University of Hong Kong, which have provided valuable insights into the molecular analysis of fish maw. By drawing on these methodologies and adapting them to local contexts, the partnership aims to improve species identification techniques, which are critical for monitoring and regulating the fish maw trade.

Interactions with other stakeholders

- **Bloom Association & ADM Capital Foundation:** For the Hong Kong SAR segment of the project, TRAFFIC engaged extensively with local experts to ensure effective implementation of the surveys. One key collaborator was dried seafood specialist Stan Shea, whose in-depth knowledge of Hong Kong SAR's seafood markets was instrumental in preparing for the fieldwork. He provided valuable insights into the structure and dynamics of the dried seafood trade and facilitated a guided tour of the city's renowned Dried Seafood Street, helping the team better understand the commercial context of fish maw trading.

  In addition, TRAFFIC worked closely with the Wildlife Programme Coordinator at ADM Capital Foundation in the lead-up to the surveys. Their collaboration was crucial in identifying key fish maw traders and stakeholders for interviews, significantly contributing to the quality and relevance of the data collected. These partnerships strengthened the research process and provided a deeper understanding of the Hong Kong end of the fish maw supply chain, which is critical given the city's role as a major hub in the regional and international trade.

- **Wildlife Forensic Academy:** TRAFFIC has engaged with the Wildlife Forensics Academy on multiple occasions to share insights and present findings related to the fish maw trade in Africa. These sessions brought together a diverse audience, including US Homeland Security agents, university professors from the Netherlands, and students undergoing training in wildlife forensics.

  The presentations sparked significant interest, highlighting the fish maw trade as a relatively under-researched yet critical area of concern within the wildlife trafficking sector. Productive discussions followed, focusing on the potential for future academic research, particularly at the doctoral level, to deepen understanding of the trade's dynamics across Africa and other regions where data is currently limited. These engagements helped raise awareness of the issue within the forensic and academic communities, opening the door for future collaborations that could strengthen research, policy, and enforcement responses to the fish maw trade globally.

3. Project Achievements

3.1 Outputs

Output 1: Country-specific reports detailing improved knowledge and understanding of fish maw trade dynamics, including recommendations to address illegal catch, for Senegal, Gabon, and Madagascar

This output was achieved through undertaking three separate activities:

Activity 1.1: A comprehensive analysis of fish maw trade data was conducted for Senegal, Gabon, and Madagascar, using the most recent available customs records as of April 2024 (Annexes 5, 6, and 7). This assessment focused on identifying trends, discrepancies, and patterns in the legal trade of fish maws originating from these countries. The primary data source was the United Nations Comtrade Database, which was cross-referenced with import records from the Hong Kong Special Administrative Region (SAR), obtained from the Hong Kong SAR Bureau of Statistics.

The comparative analysis offered valuable insights into the officially reported trade flows and served as a foundation for understanding the legal export dynamics of fish maws from the selected countries. However, a critical component of the study was the discrepancy analysis, which revealed significant gaps in reporting. These discrepancies suggest widespread under-reporting or, in some cases, a complete absence of export declarations from the source countries, despite substantial corresponding import figures reported by the Hong Kong SAR.

Additionally, the analysis highlighted the primary destinations and trade routes involved in the fish maw trade, pointing to an active and possibly illicit trade network. These findings underscore the importance of improving transparency and enforcement in customs reporting.

The information generated through this activity is specifically targeted at supporting customs authorities in Senegal, Gabon, and Madagascar. By presenting clear evidence of under-reported trade, it aims to raise awareness of the ongoing fish maw trade, highlight common methods used to conceal fish maw consignments, and emphasise the high commercial value and volume of this commodity. The ultimate goal is to strengthen monitoring and enforcement mechanisms to better regulate and control the trade of fish maws in these regions.

Activity 1.2: Market surveys were conducted in each of the target countries: Senegal, Gabon, and Madagascar (Annexes 5, 6, and 7) by local consultants and guides with extensive experience in the fishing industry. These experts undertook systematic observations at key points along the supply chain, including fish landing sites, processing facilities, and seafood markets, to document practices related to the harvesting, processing, and sale of swim bladders.

In addition to direct observations, semi-structured interviews were carried out with a range of stakeholders involved in the trade, such as fishers, middlemen, processors, and exporters. These interviews provided critical qualitative data to help understand the inner workings and dynamics of the fish maw supply chain, including the value chain in each country.

A total of 220 traders were interviewed across Senegal, Gabon, and Madagascar, confirming eight fish species harvested for their swim bladders to supply the fish maw trade to Asia. The identified species include the Giant African Threadfin (*Polydactylus quadrifilis)*, Meagre (*Argyrosomus regius)*, Cassava Croaker (*Pseudotolithus senegalensis)*, Longneck croaker (*Pseudotolithus typus)*, Bobo croaker (*Pseudotolithus elongatus)*, Bearded Brotula (*Brotula barbata)*, Prickly puffer (*Ephippion guttifer)*, and the Conger eel (*Conger africus)*. Of these, only the Cassava Croaker (*Pseudotolithus senegalensis*) is listed as ‘Endangered’ on the IUCN Red List due to overfishing; the others are currently categorised as ‘Least Concern’.

Among the eight fish species identified in the study, three belong to the Croaker fish family (Sciaenidae), specifically the Cassava croaker, Longneck croaker, and Bobo croaker. The inclusion of these species in the fish maw trade highlights a critical link to IUCN Resolution 132, which calls upon member states to research the exploitation and trade of Croaker swim bladders. The Resolution also urges countries to implement effective measures to control, regulate, and monitor both the catch and international trade of Croaker species. By documenting the role of Croaker species in the fish maw supply chain, this study directly contributes to the goals of Resolution 132 and provides an evidence base to support national and regional policy responses.

Activity 1.3: E-commerce monitoring for the sale of fish maws was completed. This monitoring aimed to understand the use of e-commerce platforms in the source countries, particularly focusing on suppliers from Senegal, Gabon, and Madagascar. A targeted three-month online market survey was conducted from January to March 2024, strategically timed to cover the period before, during, and after the Chinese New Year. This timeframe was selected based on existing research indicating that consumer demand for high-value products, such as fish maws, typically peaks in the lead-up to major cultural festivals, when these items are often purchased as gifts or for celebratory consumption.

Despite this strategic timing, the survey revealed minimal online sales activity related to fish maws on major platforms such as Alibaba and 21Food. This low level of online visibility may suggest that e-commerce is not currently a significant channel for exporting fish maws from lower-income countries such as Senegal, Gabon, and Madagascar.

The limited presence of fish maws from these countries on global e-commerce platforms likely reflects the entrenched nature of existing trade relationships. Exporters and buyers in the fish maw trade seem to rely on direct connections and offline transactions, reducing the need for digital platforms to facilitate sales. These findings provide important context for understanding how the fish maw trade operates and highlight the limited role of online commerce in this sector, at least in the current landscape.

Output 2: Improved knowledge and understanding of consumer market dynamics in the Hong Kong Special Administrative Region (SAR) and consumer preferences for fish maws sourced from African countries.

Activity 2.1: Physical market surveys were conducted in September 2023 along Hong Kong's well-known Dried Seafood Street, Des Voeux Road, to gain a deeper understanding of consumer demand and preferences for fish maws reportedly sourced from African countries. This area, known for its high concentration of dried seafood retailers, served as a strategic location for assessing the visibility and market value of African-sourced products.

As part of the survey, semi-structured interviews were carried out with key stakeholders in the trade, including traders, wholesalers, and dried seafood shop owners. These discussions aimed to gather insights into sourcing practices, market demand, pricing trends, and the fish species perceived to be from Africa and sold as high-value fish maws.

To verify the authenticity of the product origins and species, a selection of fish maw samples marketed as originating from Africa was purchased. The samples were identified in the shops based on their Cantonese labels and further confirmed through discussions with shop owners. These samples were then sent for DNA analysis at Stellenbosch University.

The results of the DNA testing revealed that the fish maws labelled as African, specifically as originating from South Africa, were in fact from Asian Sea Bass (*Lates calcarifer*), a species not native to South African waters. This finding highlights significant issues related to mislabelling and potential fraudulent claims in the fish maw trade, raising concerns about traceability and transparency in the market.

A report documenting the findings from the Hong Kong SAR market surveys has been completed and is available in Annexe 8. The report aims to enhance awareness and promote greater oversight of fish maw sourcing and labelling practices within the Hong Kong SAR dried seafood markets.

Activity 2.2: Further online monitoring was conducted, in addition to activity 1.3 mentioned above, but this time to explore the use of e-commerce platforms by buyers and traders in market states, and their preferences for African fish maws. Two major Chinese e-commerce platforms, Taobao and Jingdong (JD.com), were monitored for one hour each day over one month. This effort aimed to identify online listings, assess consumer demand, and better understand market dynamics and the key African countries potentially involved in this trade.

The results of this monitoring yielded very limited data on the online sale of African-origin fish maws. Feedback from local experts suggested that a key reason for this low visibility is the purchasing habits of the main consumer demographic. Many fish maw buyers, particularly from the older generation, reportedly prefer shopping in traditional markets where they can physically inspect the product, rather than purchasing online. This cultural preference may explain the limited presence of African-sourced fish maws on these e-commerce platforms.

Complementing the online survey, a comprehensive analysis of international trade data for dried fish maws (classified under HS code: 03057210) was also conducted. This analysis covered imports from all African countries over the period 2015 to 2024, providing a broader understanding of trade volumes, trends, and the role of African nations in the global fish maw market.

Output 3: Improved awareness and understanding of issues around the trade in fish maw – including illegal catch and sustainability – for policy, resource management and enforcement officials in Senegal, Gabon, and Madagascar

The findings from the fish maw trade studies conducted in Senegal, Gabon, and Madagascar were shared with law enforcement authorities through two dedicated online webinars hosted on the Trade in Wildlife Information eXchange (TWIX) platform (Annexes 9 and 10). These webinars aimed to enhance the understanding of the fish maw trade among customs and fisheries officials across Africa. Specifically, the sessions sought to raise awareness about the growing trade in fish maw products, shed light on the critical issues arising from the absence of accurate export volume reporting, and provide insights into the complex supply chain dynamics that characterise the regional trade. In addition, the webinars addressed concerns surrounding the potential links between the fish maw trade and illegal activities, including unregulated harvesting, smuggling, and cross-border trafficking. By equipping enforcement personnel with this knowledge, the initiative aimed to support more informed monitoring responses to a trade that has gone unnoticed for the last decade.

Two regional webinars were held to raise awareness about the growing fish maw trade in Africa. The first focused on Central and West Africa, emphasising the cross-border nature of the supply chain and the need for coordinated enforcement. The second targeted SADC and East African countries, aiming to build early regional awareness. Both sessions promoted information sharing and encouraged countries to integrate fish maw monitoring into their enforcement and fisheries management systems, helping prevent the trade from becoming unmanageable.

Following the webinars, TRAFFIC held follow-up meetings to deepen engagement on the fish maw trade. In Senegal, officials from the Directorate of Water, Forestry, Hunting, and Soil Conservation welcomed the study and appreciated the discreet sharing of findings. Plans are underway for a round-table discussion to develop practical policy responses.

In Madagascar and Gabon, the findings were shared with key government ministries to align the research with national priorities. TRAFFIC is awaiting formal feedback and intends to support capacity-building efforts, particularly for customs and fisheries officials, to enhance trade monitoring and enforcement.

3.2 Outcome

The primary objective of this evidence project was to improve understanding of the fish maw trade dynamics from three African source countries to East Asia, providing a foundation for designing interventions to address illegal and unsustainable practices. At the project's outset, little to no information existed on the trade in Senegal, Gabon, and Madagascar, including which fish species were being harvested, their conservation status, and whether they were specifically targeted for their swim bladders. Awareness among government and law enforcement officials was also extremely limited, with no formal monitoring systems or regulations in place to address the trade.

By the end of the project, comprehensive country reports had significantly improved knowledge of the fish maw trade in each target country. The identification of eight fish species harvested for their swim bladders (Indicator 0.1) filled major knowledge gaps and shed light on species-specific market values and preferences among Asian traders. Preliminary recommendations and action points (Indicator 0.3) were developed to guide improved monitoring, regulation, and awareness.

Findings were disseminated through two online webinars aimed at raising awareness among customs, fisheries, and enforcement officials. Additionally, a dedicated meeting with the DEFCCS in Senegal, an important hub in the trade, allowed for a focused discussion on next steps. Officials expressed appreciation for receiving the study directly and acknowledged its value in sparking broader inter-agency dialogue. A round-table meeting is being planned to discuss regulatory options and strengthen national coordination on the fish maw trade.

Three policy briefs (Indicator 0.2, Annexe 12, 13, and 14) were developed based on recommendations from the country reports and will be shared with the relevant ministries. Its primary purpose is to guide government officials on priority issues related to the fish maw trade, including key areas for improved monitoring and regulation.

Critically, the various country studies highlighted how fishermen and processors are often exploited within the value chain. To avoid repeating past mistakes in fisheries management, such as policies that disproportionately affect small-scale fishers, future regulatory approaches must be inclusive and equitable.

Multi-stakeholder workshops and expert think tanks are needed to explore sustainable, community-centred solutions that promote fair trade practices, product quality, and conservation of fish species. Originally intended as a policy tool for government regulation of target fish species, the briefs have since evolved into a guiding document to support broader discussions. It now serves as a foundation for stakeholder engagement, research collaboration, and long-term planning in response to the growing complexity and scale of the fish maw trade.

3.3 Monitoring of assumptions

Assumption 1: Export permits for sending samples (from Senegal, Gabon, and Madagascar) to South Africa for DNA analysis are easily obtained.
Partially true. While export permits from the source countries were not a major obstacle, unanticipated delays occurred in obtaining the necessary import permits for South Africa. The primary issue lies with the requirement for a Section 20 permit, mandated by the South African government for importing animal samples. This process has been delayed due to a scheduled audit of the genetics laboratory at Stellenbosch University—required to confirm the lab's compliance with biosafety regulations—which will only take place in August 2025.

This delay was an unforeseen risk and has postponed the DNA analysis of the fish maw samples. However, it does not affect the main outcomes of the project. The fish species were identified by traders at markets and confirmed at landing sites during swim bladder harvesting. The DNA testing was intended to provide additional confirmation rather than serve as the primary method of species identification. Stellenbosch University has confirmed that the analysis will proceed as soon as the necessary approvals and permits are in place (see Annexe 15).

Assumption 2: Fishermen in coastal communities are willing to discuss and share local knowledge and practices.
True. While some initial hesitation was encountered, trust was successfully built once the project was clearly explained, anonymity was assured, and it was emphasised that the information would not be made public. This approach encouraged open dialogue and the sharing of local knowledge.
Surveys in Madagascar were particularly effective, likely due to the involvement of students as interviewers, who appeared to create a more relaxed environment compared to professional consultants used in Senegal and Gabon. Nevertheless, in both Senegal and Gabon, the presence of local assistants familiar with the communities played a key role in establishing trust and facilitating cooperation.

Assumption 3: Suppliers from Madagascar, Gabon, and Senegal advertising on Alibaba and 21Food indicate the country of origin of the fish maws.
True. While the country of origin was generally indicated on listings monitored through Alibaba and 21Food, the number of online sales from Madagascar, Senegal, and Gabon was limited. Similarly, only a small number of listings from African suppliers were observed on Asian platforms. This suggests that, for now, e-commerce does not appear to be a major channel for fish maw trade from African countries.

Assumption 4: Hong Kong retail and market traders are willing to share information about their business and role in the sale of fish maws.
True. While some retailers and traders declined to participate, the majority were open to sharing information. Over half of the shop owners either responded to questions during the initial visit or asked researchers to return at a more convenient time, after which they willingly provided insights into their business and involvement in the fish maw trade.

Assumption 5: Civil unrest in Hong Kong does not disrupt/delay market survey work

True. No civil unrest occurred during the survey period. However, a Level 10 Typhoon (Saola) near the end of the fieldwork led to the survey being cut short. Despite this, sufficient data was collected to inform the report, though additional time would have allowed for deeper insights and broader coverage.

Assumption 6: Key stakeholders, particularly Ministry officials, attend the virtual workshops and support the recommendations.

Partially true. Key Ministry stakeholders from Senegal attended the webinar, which led to productive follow-up meetings with the Directorate of Water, Forestry, Hunting, and Soil Conservation (DEFCCS). However, officials from the Ministry of Fisheries for Madagascar and Gabon did not attend the webinar. While general law enforcement representatives from those countries were present, they were not directly involved in fisheries-related issues. Since then, direct engagement with the relevant ministries in both Madagascar and Gabon has taken place, and the study results and policy brief have been shared to support future monitoring and dialogue on the fish maw trade.

3.4 Impact

Impact: Progress towards the legal and sustainable catch of targeted marine species in three African coastal States for the fish maw trade, and enhanced benefits for African fishers, processors, and traders.

This is an evidence project, and as such, the main impact of this project is through the evidence generated from the outputs, which can be used to improve regulations linked to the fish maw trade and potentially improve the livelihoods of local fishing communities participating in the fish maw supply chain through equitable, sustainable fish maw trade.

The outputs that have strengthened the knowledge base include three detailed country reports (Annexes 5, 6, and 7), which provide comprehensive insights into the fish maw trade in Senegal, Gabon, and Madagascar. The reports outline the trade dynamics, associated fisheries, species harvested for swim bladders, and the structure of the supply chains, highlighting the various actors involved and those reliant on the trade for their livelihoods.

A key output was the identification of fish species harvested for the fish maw trade, which addressed critical knowledge gaps and significantly enhanced understanding of the trade. This information will support the development of legal and sustainable harvesting practices, informing the design of regulatory frameworks and catch monitoring programmes, particularly for species impacted by overfishing. Additionally, improved processing techniques for species with stable populations can help maximise economic benefits for coastal communities.

Ultimately, the project emphasises that the fish maw trade can be sustainably managed through community-led initiatives. By integrating regulation, monitoring, and responsible export practices, coastal communities can benefit economically from the high-value fish maw trade while ensuring the conservation of the species involved.

4. Contribution to IWT Challenge Fund Programme Objectives

4.1 Thematic focus

This project supports the following two thematic focuses.

Strengthening law enforcement: The first step in strengthening law enforcement responses to the fish maw trade in Africa is raising awareness. Before this project, there was a widespread lack of knowledge about the trade across the scientific community, law enforcement agencies, and government officials. This is reflected in the absence of peer-reviewed research on the topic and the limited monitoring of fish maw exports from the continent. This project sought to address these gaps by producing detailed country reports for Senegal, Gabon, and Madagascar, providing foundational data on species involved, trade dynamics,

and supply chains. These findings were disseminated through two online webinars targeting law enforcement and customs officials, with the primary objective of raising awareness and placing the fish maw trade on their radar as an emerging issue. If left unregulated, the trade has the potential to escalate beyond manageable levels. Africa is currently at a pivotal point—while the fish maw trade is growing, it is not yet unmanageable. This provides a window of opportunity to establish robust enforcement mechanisms. Key recommendations to strengthen enforcement include:

- Developing national and regional monitoring programmes
- Improving awareness of customs tariff codes relevant to fish maw products
- Ensuring accurate export reporting
- Training officials to identify fish maws during inspections

The project offers a strong foundation for enforcement agencies to build upon. During the webinars, participants emphasised the need for additional capacity-building, particularly in Central and West Africa, where cross-border trade is common. TRAFFIC can support this next phase by delivering online training sessions tailored for customs officials operating at border posts. Follow-up sessions could target customs data analysts, focusing on detecting potential misclassification or misdeclaration of fish maw consignments, particularly flagging incorrect tariff codes that may be used to avoid taxes associated with high-value maws. Strengthening enforcement now will not only support legal and sustainable trade but also prevent the fish maw sector from following the same trajectory as other high-value wildlife products that have moved into untraceable and unregulated channels.

Ensuring effective legal frameworks and deterrents: The evidence gathered through the country assessments provided a solid foundation for formulating recommendations and actions aimed at improving the monitoring and regulation of the fish maw trade. Based on this, three policy briefs were developed for use by relevant authorities in Senegal, Gabon, and Madagascar. The documents outline key issues surrounding the fish maw trade, identify critical gaps in monitoring and enforcement, and propose potential regulatory improvements to support the sustainable management of the fish species involved. Importantly, the policy brief is not intended as a final set of prescriptions but as a guiding document to support national discussions. It is designed to be adapted and refined through inclusive, multi-stakeholder processes, including engagement with fisheries departments, law enforcement, coastal communities, and the scientific community. The project team strongly believes that effective legal frameworks must be co-developed with input from those directly impacted by and involved in the trade. Further engagement through workshops and dedicated think tanks will be essential to ensure that any regulations or monitoring programmes are not only enforceable but also socially equitable and ecologically sound. TRAFFIC will continue to advocate for this inclusive, evidence-based approach and encourage national stakeholders to use the policy brief as a starting point for collaborative decision-making. This will help avoid past mistakes where poorly designed regulations have marginalised coastal communities or driven trade underground, and instead, create frameworks that promote both conservation and community benefit.

4.2 Impact on species in focus

This project was designed as an evidence-gathering initiative to support informed decision-making aimed at combating the illegal and unsustainable harvest of fish species linked to the fish maw trade in Africa. One of the central goals was to address critical knowledge gaps regarding which species are being harvested to supply the trade and whether current practices are placing pressure on their populations.

This objective was successfully achieved through the identification of eight key fish species harvested for their swim bladders, destined primarily for consumer markets in Asia. Importantly, these species are not primarily targeted for their swim bladders; they are valued locally as food fish, providing a vital source of protein and income for coastal communities. The swim bladders are typically collected as a byproduct by those aware of their value, offering additional income opportunities.

However, evidence from Gabon suggests a shift in fishing behaviour, with some local fishers increasingly targeting certain species specifically for their swim bladders, reflecting growing awareness of their commercial value. Although the meat is still used and not wasted, this change in harvesting practices is placing increasing pressure on specific species.

Notably, three of the identified species — *Pseudotolithus senegalensis*, *Pseudotolithus typus*, and *Pseudotolithus elongatus* — belong to the Croaker family (Sciaenidae). Their identification is particularly significant as it contributes to the implementation of IUCN Resolution 132, which calls on member states to monitor, regulate, and control the trade in Croaker swim bladders. As IUCN members, the targeted countries have a responsibility to consider the trade's impact on these populations and introduce species-specific regulations and harvest controls where necessary.

These recommendations have been incorporated into the project's policy brief and serve as a call to action for governments to develop species-specific catch regulations, monitoring programmes, and trade controls to ensure long-term sustainability of these valuable fish resources.

4.3 Project support for multidimensional poverty reduction

While this project did not include direct poverty reduction interventions, the evidence collected revealed significant inequality within the fish maw value chain. In particular, the most vulnerable actors, namely small-scale fishers and women processors, are disproportionately disadvantaged. These stakeholders typically earn the least for their contributions, while the greatest financial gains are captured by intermediaries and traders further along the supply chain.

This imbalance is a key issue addressed in the final report and highlighted as a priority recommendation in the country policy briefs. Any future legal or regulatory frameworks must ensure that coastal communities and processors are meaningfully included in decision-making processes. Equity in benefit-sharing must be a central component of efforts to regulate and monitor the fish maw trade.

In recognition of this, TRAFFIC has begun developing proposals for follow-on projects in Madagascar focused on fostering fairness and inclusivity. These initiatives aim to bring communities together to discuss the fish maw trade, explore the formation of cooperatives, and establish transparent pricing mechanisms that promote equity along the value chain.

Such community-led approaches not only contribute to social justice but also lay a strong foundation for improved cooperation on sustainable harvesting practices. When coastal communities are empowered and included in governance, they are more likely to engage in and benefit from the sustainable management of marine resources.

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	

Women comprised 70% of the core project team and played a central role in its success. They held leadership positions and were directly involved in key aspects of project implementation, including management, finance, administration, and the delivery of core activities such as Output 1 and Activities

1.1 and 1.2. Women also led critical tasks such as data analysis and were part of the interview team for the market surveys.

TRAFFIC placed a strong emphasis on gender and social inclusion throughout the project, particularly recognising the essential role of women and marginalised groups along Africa's coastline. Women are deeply involved in fish preservation, an activity critical to the diets of both coastal and inland communities. Their position in the processing stage brings them into direct contact with buyers and end-users, making their insights invaluable for understanding the fisheries trade value chain.

Through semi-structured interviews with fishers, processors, and traders, TRAFFIC gained a clearer understanding of the roles of women and youth in the fish maw supply chain, particularly in processing fish swim bladders. These consultations shed light on their level of dependence on the resource and helped identify risks of exploitation.

Mapping the fish maw value chain also revealed opportunities to improve outcomes for women and vulnerable groups, including fairer compensation and better working conditions.

5. Monitoring and evaluation

Monitoring and evaluation (M&E) of the project was carried out by the core project team, comprising the Project Lead, Supervisor, and Finance and Administration staff. Quarterly meetings were held to review progress, assess deliverables, and address any necessary adjustments to timelines and the project logframe.

During the project, two formal change requests were submitted to respond to significant unforeseen challenges. The first change request was prompted by a deeply personal event: the Project Lead took four months of personal leave following the loss of a baby. This unexpected absence had a considerable impact on key project activities, particularly the engagement of consultants and coordination with in-country stakeholders for field surveys in the three target countries.

In addition to this, the team encountered persistent difficulties in working within the Republic of Congo, the original target country. There were repeated delays and challenges in building trust with local government officials, which hindered the engagement of local consultants and hampered project momentum.

To address these issues, two change requests were approved: one to extend the project timeline, and another to replace the Republic of Congo with Gabon as a focus country. This adjustment proved successful as field surveys were completed promptly in Gabon, yielding valuable data and insights. Gabon also emerged as a significant trading partner in the African fish maw trade, offering valuable findings for the project's objectives.

Despite the substantial challenges faced, the M&E framework allowed the team to remain flexible and responsive. Through effective adaptation and strong coordination, the team was able to achieve the project's intended outcomes, even while navigating complex and low-capacity operational environments.

6. Lessons learnt

This fish maw project was only the second such study of its kind to be conducted in Africa (TRAFFIC had done similar studies on two other African countries) While the project team had prior experience implementing fish maw trade field studies, this was the first time the work was undertaken in countries where TRAFFIC had no established presence, (Senegal and Gabon) and where the core Project team did not speak the local languages.

These circumstances presented unique challenges, but they also offered valuable learning opportunities. Throughout the project's implementation, the team gained critical insights into working in new geographic and linguistic contexts, building relationships with local stakeholders, and navigating unfamiliar regulatory and cultural landscapes.

One of the most important lessons from this project was the critical need to establish strong relationships with local organisations and institutions early in the project development phase. Building these partnerships from the outset is essential, particularly in countries where the project team lacks an on-the-ground presence. If local organisations are not aligned with the project's objectives, it is important to

identify and address this early to prevent delays and ensure smooth implementation. These local partners are often pivotal to the project's success, serving as facilitators, cultural interpreters, and bridges to local stakeholders.

A second, closely related lesson emerged in Madagascar, where TRAFFIC partnered with a local university rather than engaging external consultants, and this approach yielded significant advantages. While professional consultants bring expertise and credibility that can help build trust within fishing communities, as was the case in Senegal and Gabon, the university collaboration in Madagascar enabled broader outreach and deeper engagement.

In Madagascar, six university students conducted simultaneous surveys across three regions, reaching far more communities and individuals than the two consultants in the other countries, who were limited by time constraints and transportation challenges. The academic partnership also presented additional benefits, including the potential for sustained research, knowledge generation, and capacity building. Universities can support the development of smaller, student-led projects and long-term monitoring efforts, which are particularly valuable in an area like the fish maw trade, where research is scarce, and continuity is valuable. This experience has highlighted the strategic value of working with academic institutions in future projects, especially when aiming to expand research coverage, build local capacity, and foster sustained impact.

Another key challenge and lesson learned from this project was navigating language barriers, particularly while working in French-speaking countries with an English-speaking core project team. This language difference often led to extensive back-and-forth communication with consultants to ensure a shared understanding of the project's activities, goals, and objectives. In Madagascar, although TRAFFIC has an established office and local colleagues who supported negotiations and communication with consultants, the complexity and nuance of the fish maw trade required particularly clear and consistent messaging. Ensuring that consultants fully grasped the broader context and ultimate objectives of the project took considerable effort.

A similar experience occurred in Gabon and Senegal. Multiple meetings were required to align on project expectations, which at times delayed the start of key activities. Despite these initial communication hurdles, the consultants delivered excellent work, and the project objectives were ultimately achieved.
This experience reinforced an important insight: while language differences should not deter work in certain countries, they must be carefully accounted for in project planning. This includes allowing more time for discussions and negotiations and, critically, ensuring access to a capable translator with a strong grasp of both the project's language and its technical content. Doing so can significantly enhance clarity, efficiency, and collaboration.

While the ambition to conduct research across three countries was ultimately realised that future projects would benefit from a more focused approach, concentrating on one or two countries over an extended timeframe of approximately 18 months. This would allow for deeper engagement with in-country stakeholders, sustained communication throughout the project lifecycle, and more meaningful feedback and reflection at the project's conclusion.

Working across three countries proved particularly challenging when it came to engaging with government officials, as building trust and effective working relationships takes time. The compressed timeline limited opportunities for meaningful engagement, particularly during the final stages of the project, when follow-up and collaboration are most needed to solidify outcomes and promote sustainability. Nevertheless, TRAFFIC remains committed to continued engagement on the fish maw trade. Despite the formal end of this project, fish maw trade remains a priority area for the organisation and a key component of its ongoing work. The lessons learned here will inform more strategic, focused, and impactful efforts in future initiatives.

Finally, one of the most important lessons learned through the evolution of this project, and a deeper understanding of the fish maw trade, is the recognition that local fishing communities are generally not adequately included as key stakeholders in the discussions for fishery reform. While the primary focus was on engaging government and law enforcement officials — justifiably, given the lack of monitoring and reporting in this trade — it became increasingly clear that this approach often overlooks the fishing communities.

These communities play a central role in the fish maw value chain, responsible for catching, extracting, cleaning, and processing the swim bladders. Yet, they remain among the most vulnerable, often exploited by intermediaries and foreign actors. These actors frequently obscure the true market value of fish maws, leading fishers and processors to sell them for far less than they are worth.

There is an ongoing debate about whether revealing the true value of fish maws to fishing communities might lead to increased fishing effort. However, maintaining secrecy perpetuates a system in which the wealthy grow richer, and the vulnerable remain impoverished. True empowerment begins with transparency. Unless communities are informed and meaningfully included in decision-making processes, we risk reinforcing historical patterns of exploitation.

Effective regulation of the fish maw trade requires a shift in approach from top-down enforcement to inclusive governance. Government agencies must actively involve communities in the management of this resource. The fish maw trade, as a high-value byproduct of an existing fishery, holds immense potential for driving sustainable development and economic opportunity if it is managed equitably. This trade represents a unique opportunity for inclusive conservation and community-based economic growth in Africa. The project team believes Madagascar offers a promising starting point for future fish maw work. With existing partnerships, local engagement, and government interest, it could serve as a model for a joint community- and government-led initiative that prioritises equity, empowerment, knowledge-sharing, sustainability, and conservation.

7. Actions taken in response to Annual Report reviews

TRAFFIC received feedback from the reviewer in July 2024, and there were two queries requested to be addressed in this final report:

1. *It is unclear whether the trade is illegal in exporting countries, importing countries or both. If any of the three African states do not have legislation on discards at sea, is any law being broken?*

2. *In terms of sustainability being attained through engagement with organisations in the three states, is it anticipated that this will be a core activity for TRAFFIC in the future or will this engagement cease at the end of this project? Further information would be useful in your next report.*

   The fish maw trade is not illegal in either exporting or importing countries. However, before this project, evidence indicated that the trade was being used as a cover to illegally transport other wildlife products. The lack of awareness, regulation, and monitoring surrounding the fish maw trade has created significant gaps that can be exploited, exacerbating the broader issue of illegal wildlife trade. Given the high commercial value of fish maws, the project uncovered several concerning practices. Field research revealed consistent instances of mis-declared consignments, likely intended to avoid taxes associated with the high value of the product. In Gabon, surveys also documented cases where fishers were capturing species associated with the fish maw trade without the required fishing permits, motivated by the high financial return on the maws.

   The unregulated nature of the trade presents numerous vulnerabilities. These include opportunities for cross-border movement of goods without proper customs clearance, the mixing of fish maws with other illegal wildlife products within consignments, and illegal fishing activities, particularly by foreign nationals operating in Central and West African waters. While the trade in fish maws itself is not illegal, these findings highlight the urgent need for enhanced monitoring, better regulatory frameworks, and increased awareness among authorities and stakeholders. Without such measures, the trade remains highly susceptible to exploitation and may continue to act as a vehicle for broader illegal activity.

   Fish maw trade is a core focus area for TRAFFIC, and further engagement will continue beyond the conclusion of this project. The findings and insights gained will form the foundation for pursuing additional funding to expand fish maw related work, both within the original target countries and in other African nations where data and understanding of the trade remain limited.

8. Risk Management

In the final 12 months of the project, two risks emerged that impacted implementation.

The first challenge, previously detailed, involved attempts to work in the Republic of Congo. Despite multiple efforts, including outreach to local organisations, the team was unable to establish a viable partnership. As a result, the decision was made to redirect activities to Gabon. This shift proved effective as obtaining approvals to carry out the research in Gabon was significantly easier, and the project was able to proceed and achieve its intended objectives.

The second, unforeseen challenge arose in the final stages of the project and concerned the import of fish maw samples into South Africa for genetic analysis at Stellenbosch University. Under South African law, a Section 20 permit is required to import any animal material intended for genetic testing. As part of this process, the laboratory conducting the analysis must be audited and approved to meet biosafety and regulatory standards.

Unfortunately, the laboratory's most recent audit identified issues, and the re-audit is not scheduled until August 2025. As a result, the Section 20 permit has been put on hold, delaying the import and analysis of the collected fish maw samples. At present, the samples remain in customs and cannot be released until the permit is granted.

This was an unanticipated risk that had not been accounted for during project planning. However, Stellenbosch University has provided assurances that the genetic analysis will be completed as soon as the laboratory audit is successful, and the permit is approved (Annexe 15). TRAFFIC remains committed to following through with this component, recognising the importance of genetic identification in supporting long-term monitoring and regulation of the fish maw trade.

9. IWT Challenge Fund Identity

Due to the sensitive nature of the fish maw trade, the project did not implement a broad strategic communications campaign. This decision was informed by concerns that publicising the trade, given its high market value, could unintentionally stimulate demand or increase exploitation. Similar to other high-value seafood products such as shark fins and sea cucumbers, the fish maw trade is largely underreported and operates with limited transparency. Throughout the project, TRAFFIC was advised by multiple experts, including stakeholders interviewed during fieldwork, to avoid public dissemination and instead focus on sharing findings with targeted, relevant stakeholders.

Accordingly, the project prioritised direct engagement with key stakeholders such as government agencies, enforcement officials, and local partners. This approach aimed to promote informed dialogue and responsible action without amplifying market interest or incentivising illegal activity.

During the project's online feedback workshop, the DEFRA IWT Challenge Fund was acknowledged for their critical support in enabling the study. The logo was prominently featured in all presentations and documentation shared with government officials and stakeholders, in recognition of this important contribution.

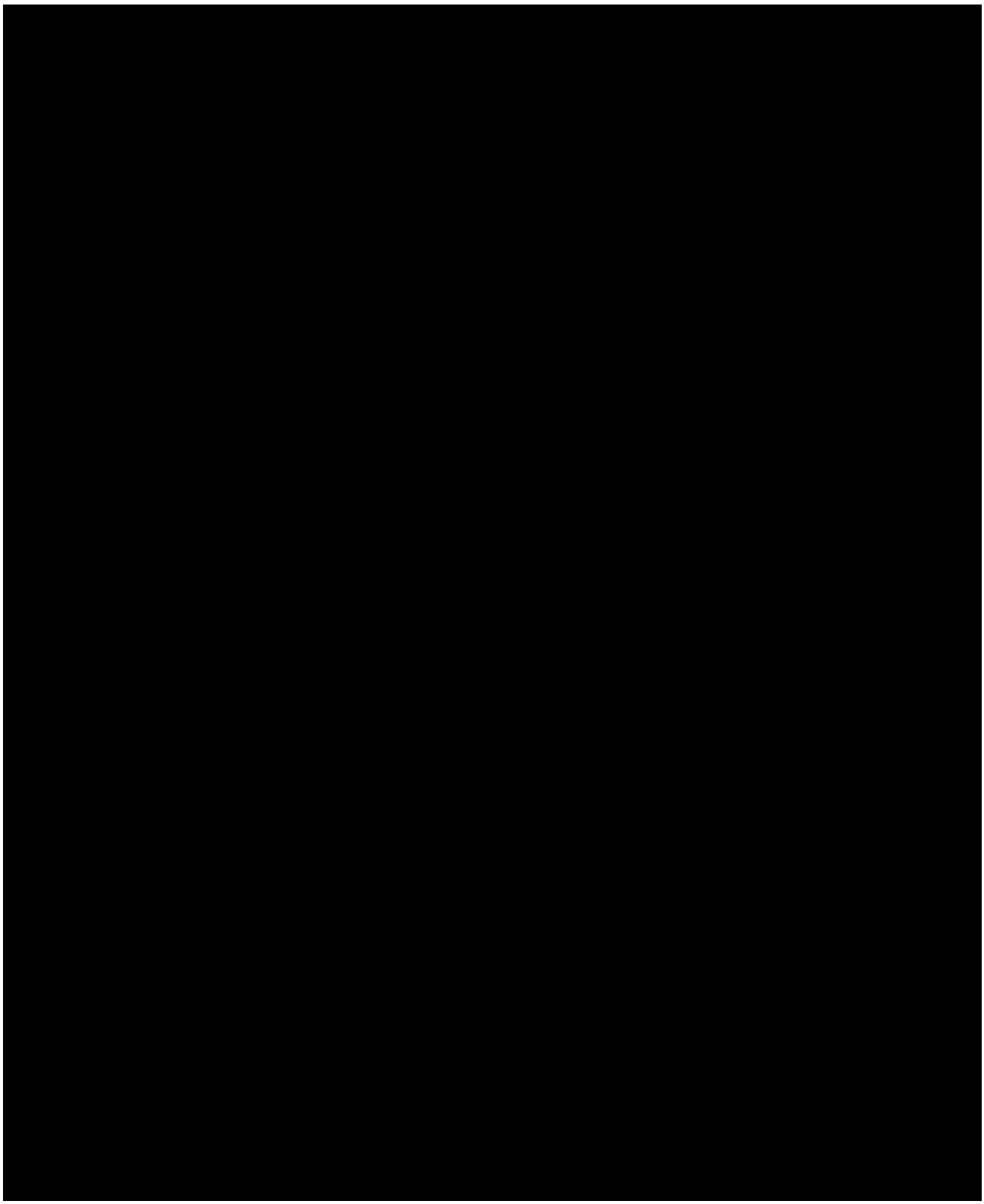
10. Scalability and Durability

The project team believes that the evidence gathered across the three target countries provides a critical foundation for advancing the monitoring and regulation of the fish maw trade. The findings can inform the development of much-needed monitoring programmes, awareness-raising materials for enforcement officials, and serve as a valuable starting point for discussions on regulatory and policy reform.

While some initial awareness-raising activities were undertaken during the project period, further engagement is essential, particularly with key government stakeholders and local fishing communities. Sustained and inclusive dialogue will be critical to advancing understanding of the trade and developing effective, equitable solutions. These efforts will be carried out in collaboration with local partner organisations in each country, and TRAFFIC will continue to support these initiatives beyond the project's formal end.

This project also served as a footprint from which to expand fish maw research to other African countries, and also to focus on the trade in fish maws from freshwater species and river systems in Africa.

11. Safeguarding



12. Finance and administration

12.1 Project expenditure

Project spend (indicative) since last Annual Report	2024/25 Grant (£)	2024/25 Total actual IWTCF Costs	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	53,039.48	59,070.44		

Staff employed (Name and position)	Cost (£)
David Newton, Programme Office Director, TRAFFIC Southern Africa Office	[redacted]
Markus Burgener, Senior Programme Co-ordinator, TRAFFIC Southern Africa Office	
Simone Louw, Project Manager, TRAFFIC Southern Africa Office	
Cynthia Nemakonde, Senior Finance and Administration Officer, TRAFFIC Southern Africa Office	
Linda Moyana, Project Finance and Administration Officer, TRAFFIC Southern Africa Office	
Sean Lam, Senior Project Administration Officer, TRAFFIC International	
Denis Mahonghol, Office Director, TRAFFIC Central Africa Office	
Sacha Riley-Smith, Data & Analysis Support Officer, TRAFFIC International (Year 1 actual cost adjustment)	

Marcus Cornthwaite, Communications Officer, TRAFFIC International	[redacted]
Glenn Sant, Senior Advisor - Fisheries, TRAFFIC International	
TOTAL	

Capital items – description	Capital items – cost (£)
N/A	0
TOTAL	0

Other items – description	Other items – cost (£)
Bank charge Bank charge Audit fee	[redacted]
TOTAL	

12.2 Additional funds or in-kind contributions secured

Matched funding leveraged by the partners to deliver the project	Total (£)
Paul Angell Family Foundation	[redacted]
TOTAL	

Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project	Total (£)
N/A	0
TOTAL	

12.3 Value for Money

This project has delivered value for money by producing the first-ever baseline data on the fish maw harvest and trade in Senegal, Gabon, and Madagascar. As the first comprehensive assessment of its kind in these countries, the research provides a unique and highly valuable foundation for future interventions aimed at strengthening law enforcement, raising awareness, and informing the development of regulatory frameworks and monitoring systems for the fish maw trade.

Beyond its enforcement and policy applications, the findings also offer significant potential for supporting sustainable, community-led initiatives. The data can guide projects designed to promote inclusive economic opportunities for coastal communities involved in the fish maw value chain, aligning with broader goals of conservation and sustainable development.

Given the cross-cutting nature of the insights generated, this research opens multiple pathways for action, tailored to the specific context and dynamics of each country. Whether through legislative reform, targeted enforcement strategies, or pilot community development programmes, the outputs of this project represent a high-return investment with long-term impact potential across sectors.

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

Project summary	Progress and achievements
Impact Progress towards the legal and sustainable catch of targeted marine species in three African coastal States for the fish maw trade, and enhanced benefits for African fishers, processors, and traders	This is an evidence project, and as such, the main impact is through the evidence generated from the outputs, which can be used to support policy reform on the fish maw trade and law enforcement. All project outputs were completed, including three detailed country reports on the fish maw trade in Senegal, Gabon, and Madagascar. These reports provide vital insights into trade dynamics, species harvested, supply chain structures, and the livelihoods dependent on this trade. A major achievement was identifying key fish species used for swim bladders, filling significant knowledge gaps and supporting sustainable harvesting, improved processing, and the development of regulatory and monitoring frameworks. Findings were shared with 33 stakeholders covering 15 African countries, and three draft policy briefs were produced to guide future regulation and raise awareness. It advocates for the development of monitoring programmes, further awareness raising amongst government officials, and inclusive, research-based decision-making to avoid harmful outcomes seen in similar high-value wildlife trades.
Outcome: Enhanced understanding of fish maw trade from three African countries to East Asia, provides evidence for the design of a full intervention to address illegal and unsustainable catch and trade	
Outcome indicator 0.1: By end 2024, identification of the fish species harvested and fish maw trade dynamics in Senegal, Gabon, and Madagascar to supply the maw trade to East Asia.	Eight fish species were positively identified to be harvested for their swim bladders and to supply the fish maw trade. These species were confirmed through direct observation of swim bladder removal at fish landings and interviews with fishers, processors, and traders on the primary species targeted for the trade. These are explained in section 3.1 and evidence provided in Annexes 5, 6, and 7 for the country reports.
Outcome indicator 0.2: By mid-2025, development of a policy brief with guidelines on the management and conservation of marine species associated with the fish maw trade in Madagascar, Gabon, and Senegal.	Based on the evidence gathered from the three country reports, three draft policy briefs (section 3.2 and 3.4 in the report, Annexe 12,13, and 14) were developed and shared with relevant ministries as a working document. Its primary purpose is to guide government officials on priority issues related to the fish maw trade, including key areas for improved monitoring, regulation, and inclusive decision-making around any regulations or legal reform involving community members active in the trade supply chain.
Outcome indicator 0.3: Preliminary recommendations for best practices in sustainable fishing of key species by coastal fishing communities	Preliminary recommendations were included in each of the country reports based on the evidence gathered from the in-depth trade analysis on customs records and the field surveys, interviews with supply chain actors, and identification of the fish species harvested for the trade (section 3.2 in the report, Annexes 5, 6, and 7).
Output 1: By the end of 2024, country-specific reports detailing improved knowledge and understanding of fish maw trade dynamics, including recommendations to address illegal catch, for Madagascar, Gabon, and Senegal.	

Output indicator 1.1: Trade data analysis on the volumes, value, trade routes, and key importing countries for fish maws from the Africa region completed by September 2023	A detailed analysis of fish maw trade data from Senegal, Gabon, and Madagascar (as of April 2024) revealed major discrepancies between reported exports and Hong Kong's import records. Using UN Comtrade and Hong Kong SAR statistics, the study found widespread under-reporting or missing export declarations from these African countries, despite significant imports recorded in Hong Kong. The findings suggest an active, potentially illicit trade network. This analysis aims to support customs authorities by highlighting trade routes, concealment tactics, and the high value of fish maws—ultimately to improve trade monitoring and enforcement (more details in section 3.1 and Annexes 5, 6, and 7).
Output indicator 1.2: Market and trade surveys in the three source countries to determine the fish maw supply chain, completed by January 2025	Market surveys in Senegal, Gabon, and Madagascar, conducted by local experts, investigated the fish maw supply chain through field observations and interviews at landing sites, markets, and processing facilities. Interviews with 220 stakeholders confirmed eight fish species used for fish maw exports to Asia, including three Croaker species (*Pseudotolithus senegalensis, P. typus, and P. elongatus*). Only *P. senegalensis* is listed as Endangered by the IUCN; the rest are of Least Concern. Further details are shared in section 3.1 and in Annexes 5, 6, and 7.
Output indicator 1.3: Online monitoring of e-commerce sites for the sale of fish maws supplied in Madagascar, Gabon, and Senegal completed by June 2024.	TRAFFIC conducted an e-commerce survey from January to March 2024 to monitor fish maw sales by source countries through identifying suppliers from each target country. The study was undertaken during the peak buying period around Chinese New Year (see section 3.1). The study found minimal online activity on major platforms like Alibaba and 21Food. This suggests that fish maws from countries like Senegal, Gabon, and Madagascar are rarely sold through e-commerce channels. The findings indicate that the fish maw trade remains largely offline, relying on direct relationships and traditional trade networks rather than digital platforms.
Output 2: By mid-2025, improved knowledge and understanding of consumer market dynamics in the Hong Kong Special Administrative Region (SAR) and consumer preferences for fish maws sourced from African countries.	
Output indicator 2.1: Physical market surveys in Hong Kong's dried seafood area 'Des Voeux Road' to better understand the demand and consumer preferences for fish maws sourced from African countries, completed by March 2024	In September 2023, market surveys were conducted on Hong Kong's Dried Seafood Street to assess the demand and authenticity of fish maws reportedly from Africa. Semi-structured interviews with traders and shop owners revealed market trends and sourcing practices. Fish maw samples labelled as African were purchased and sent for DNA testing at Stellenbosch University. The results showed mislabelling—samples marketed as South African were actually from Asian Sea Bass, a species not found in South African waters. This indicates potential fraud and a lack of traceability in the fish maw trade. Findings are detailed in section 3.1 and Annexe 8 to support improved oversight and transparency in Hong Kong's dried seafood markets.
Output indicator 2.2: Analysis of e-commerce platforms in Hong Kong and China to obtain information on suppliers advertising the sale of fish maws from African countries completed by March 2024	Alongside physical surveys, TRAFFIC monitored Chinese e-commerce platforms to understand the role of consumers in the market states purchasing African fish maws. The platforms, Taobao and JD.com, for one hour daily over a month to assess online sales of African-origin fish maws (see section 3.1 under Output 2). The monitoring found very few listings, which experts attribute to cultural

	preferences—many consumers, especially older buyers, favour inspecting products in traditional markets over buying online.
Output 3: Improved awareness and understanding of issues around the trade in fish maw – including illegal catch and sustainability – for policy, resource management and enforcement officials in Madagascar, Gabon, and Senegal	
Output indicator 3.1: Virtual stakeholder workshops at the country level to share the results and raise awareness on fish maw trade dynamics, completed by March 2025	Fish maw trade findings from Senegal, Gabon, and Madagascar were shared with African customs and fisheries officials via two TWIX webinars involving 33 law enforcement participants from 15 African countries, including the target countries. The purpose of the webinars was to raise awareness of trade growth, under-reporting, and links to illegal activities. The sessions emphasised cross-border cooperation and regional monitoring. See section 3.1 and Annexes 9 and 10.

Annex 2 Project's full current logframe as presented in the application form (unless changes have been agreed) most recent logframe after agreed changes in Dec 2024

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: Progress towards the legal and sustainable catch of targeted marine species in three African coastal States for the fish maw trade, and enhanced benefits for African fishers, processors, and traders. (Max 30 words)			
Outcome: (Max 30 words) Enhanced understanding of fish maw trade from three African countries to East Asia, provides evidence for the design of a full intervention to address illegal and unsustainable catch and trade	0.1 By the end of 2024, identification of the fish species harvested in Madagascar, Gabon and Senegal, to supply the maw trade to East Asia. 0.2 By March 2025, development of a policy brief with guidelines on the management and conservation of marine species associated with the fish maw trade in Madagascar, Gabon, and Senegal. 0.3 Preliminary recommendations for best practices in sustainable fishing of key species by coastal fishing communities	0.1 DNA results from specimens collected and analysed. Identification of species based on images from landing sites and markets. 0.2 Copy of policy brief identifying key actions and recommendations for the management and regulation of the fish maw trade in each source country 0.3 Country reports	Export permits for sending samples (from Senegal, Gabon and Madagascar) to South Africa for DNA analysis are easily obtained.
Outputs: **1**. By mid 2024, country specific reports detailing improved knowledge and understanding of fish maw trade dynamics, including recommendations to address illegal catch, for Madagascar, Gabon, and Senegal.	1.1 Trade data analysis on the volumes, value, trade routes, and key importing countries for fish maws from Africa region completed by September 2023 1.2 Market and trade surveys in the three source countries to determine the fish maw supply chain completed by January 2025 1.3 Online monitoring of e-commerce sites for the sale of fish maws from suppliers in Madagascar, Gabon, and Senegal completed by June 2024.	1.1 Customs data sourced from UN Comtrade and from the Hong Kong Census and Statistics Department 1.2 Copies of semi-structured interviews with fishers, processors, and traders. 1.3 Report of findings from a two-week online monitoring survey of e-commerce sites Alibaba and 21Food 1.4 Country reports of findings	Fishermen in coastal communities are willing to discuss and share local knowledge and practices. Suppliers from Madagascar, Gabon, and Senegal advertising on Alibaba and 21Food indicate the country source of the fish maws.
2. By mid 2024, improved knowledge and understanding of consumer market dynamics in Hong Kong Special Administrative Region (SAR) and consumer preferences for fish maws sourced from African countries.	2.1 Physical market surveys in Hong Kong's dried seafood area 'Des Voeux Road' to better understand the demand and consumer preferences for fish maws sourced from African countries completed by March 2024 2.2 Analysis of e-commerce platforms in Hong Kong and China to obtain information on suppliers advertising the sale of fish maws from African countries completed by March 2024	2.1 Hong Kong Market report 2.2. Report of findings from a two-week online monitoring survey of Taobao and JD e-commerce sites.	Hong Kong retail and market traders are willing share information about their business and role in the sale of fish maws. Civil unrest in Hong Kong does not disrupt/delay market survey work
3. Improved awareness and understanding of issues around the trade in fish maw – including illegal catch and sustainability – for policy, resource management and enforcement officials in Madagascar, Gabon, and Senegal	3.1 Virtual stakeholder workshops to share the results and raise awareness on fish maw trade dynamics completed by March 2025	3.1 Attendance records of workshops (in-person or online) 3.2 Surveys pre and post workshops demonstrating a change in awareness and understanding	Key stakeholders, in particular Ministry officials, attend the virtual workshops and support recommendations.

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)

1.1 Conduct physical surveys of fish markets and landing sites in the three African source countries (Gabon, Senegal, Madagascar) for fish maw, and interviews undertaken with stakeholders in the supply chain (fishers, processors, middlemen, and exporters)
1.2 Undertake DNA analyses of fish maw samples collected in each country to determine the fish species harvested for the trade
1.3 Undertake analysis of Customs trade data for fish maws in international trade (volume, value, trade routes, and key importing countries) sourced from the three countries.
1.4 Analysis of legislation covering the fishing of species targeted for fish maws, and trade in fish maws.
1.5 Undertake desk-based surveys and interviews with government officials to determine any knowledge of swim bladder removal and discarding the rest of the fish at sea, or other illegal and/or unsustainable fishing practises of source species and related trade in fish maws.
1.6 Online monitoring of e-commerce sites (Alibaba and 21Food) to determine the prevalence of online sales in fish maw products advertised as having their origin in Gabon, Senegal, or Madagascar.
1.7 Review catch records and stock status (where available) of target species
1.8 Write up field and desk research findings for each country, translate into French, and disseminate to key stakeholders.

2.1 Conduct physical market surveys in Hong Kong SAR and interviews with fish maw traders and retailers to better understand the market dynamics for fish maws and consumer preferences/value attributes, with a focus on maws sourced from the three countries and/or African countries (for example: species, origin, size/thickness of the maws, pricing, traded names).
2.2 Analysis of e-commerce platforms in Hong Kong and China to obtain information on suppliers advertising fish maw from African countries (in particular Gabon, Senegal, Madagascar), to determine species composition, price, and to obtain information on fish maw attributes that denote value such as size, shape, thickness, source country/region, age – to assist in assessing current and future risks to species from African costal States.
2.3 Undertake DNA analysis of fish maw samples collected in Hong Kong markets to determine source.
2.4 Compile report on findings and disseminate to key stakeholders in Hong Kong (AFCD, Customs, Hong Kong Sustainable Seafood Coalition (HKSSC) and others).
2.5 Incorporate relevant findings from this research into the country reports for Gabon, Senegal, and Madagascar (Activity 1.8).

3.1 Based on recommendations from country level reports, develop policy briefings with guidelines on the management and conservation of marine species associated with the fish maw trade, sourced from African coastal States, translate into French and disseminate to key stakeholders.
3.2 Design and deliver online workshops to share the findings of the studies and raise awareness on the fish maw trade for fisheries, customs, and law enforcement agencies in Madagascar, Gabon, and Senegal.
3.3 Workshop (online) in Hong Kong SAR to share the research findings with key agencies (AFCD, Customs, HKSSC)
3.4. Based on findings, prepare and disseminate briefings for the Global Fish Maw workshops

Table 1 Project Standard Indicators

Please see the Standard Indicator Guidance for more information on how to report in this section, including appropriate disaggregation. N.B. The annual total is not cumulative. For each year, only include the results achieved in that year. The total achieved should be the sum of the annual totals.

IWTCF Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Total to date	Total planned during the project
IWTCFB01	By end of Year 2, twenty customs officials trained in the fish maw trade dynamics and the HS codes used to monitor the export of fish maw products in each target country.	Number	Gender Age Group	0		33	20
IWTCFB01	By end of Year 2, five senior fisheries officials, are trained in the fish maw supply chain dynamics to promote monitoring of fish landing sites in target countries.	Number	Gender Age group	0		5	5
IWTCFB03	By end of Year 2, one fish maw management plan available to address issues of the trade in three African countries	Number	Local language Policy Brief	0		1	1
IWTCFB24	By end of Year 2, three government institutions (customs, fisheries, and police) are enhanced with awareness and understanding of the illegal fish maw trade	Number	Government institutions	0		10	3
IWTCF-D20	By end of Year 2, at least three webinars with 20 attendees each	Number	Number of webinars Attendees Gender			2 22 18	3

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?	X
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the subject line.	X
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.	X
If you are submitting photos for publicity purposes, **do these meet the outlined requirements (see section 14)?**	n/a
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.	X
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.	
Have you involved your partners in preparation of the report and named the main contributors?	n/a
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	